

Integrated Dell™ Remote
Access Controller 6 (iDRAC6)
Enterprise for Blade Servers
Version 2.2
User Guide



Notes and Cautions



NOTE: A NOTE indicates important information that helps you make better use of your computer.



CAUTION: A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.

**Information in this document is subject to change without notice.
© 2009 Dell Inc. All rights reserved.**

Reproduction of these materials in any manner whatsoever without the written permission of Dell Inc. is strictly forbidden.

Trademarks used in this text: *Dell*, the *DELL* logo, *OpenManage*, and *PowerEdge* are trademarks of Dell Inc.; *Microsoft*, *Windows*, *Windows Server*, *Internet Explorer*, *MS-DOS*, *Windows Vista*, *ActiveX*, and *Active Directory* are either trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries; *Red Hat* and *Red Hat Enterprise Linux* are registered trademarks of Red Hat, Inc. in the United States and other countries; *Novell* and *SUSE* are registered trademarks of Novell, Inc. in the United States and other countries; *Intel* is a registered trademark of Intel Corporation in the U.S. and other countries; *UNIX* is a registered trademark of The Open Group in the United States and other countries; *Thawte* is a registered trademark of Thawte and its affiliated and subsidiaries in the United States and in foreign countries; *VeriSign* is a registered trademark of VeriSign, Inc. and its subsidiaries in the United States and in foreign countries; *Sun* and *Java* are trademarks or registered trademarks of Sun Microsystems, Inc. or its subsidiaries in the United States and other countries.

Copyright 1998-2009 The OpenLDAP Foundation. All rights reserved. Redistribution and use in source and binary forms, with or without modification, are permitted only as authorized by the OpenLDAP Public License. A copy of this license is available in the file LICENSE in the top-level directory of the distribution or, alternatively, at www.OpenLDAP.org/license.html. OpenLDAP is a registered trademark of the OpenLDAP Foundation. Individual files and/or contributed packages may be copyrighted by other parties and subject to additional restrictions. This work is derived from the University of Michigan LDAP v3.3 distribution. This work also contains materials derived from public sources. Information about OpenLDAP can be obtained at www.openldap.org/. Portions Copyright 1998-2004 Kurt D. Zeilenga. Portions Copyright 1998-2004 Net Boolean Incorporated. Portions Copyright 2001-2004 IBM Corporation. All rights reserved. Redistribution and use in source and binary forms, with or without modification, are permitted only as authorized by the OpenLDAP Public License. Portions Copyright 1999-2003 Howard Y.H. Chu. Portions Copyright 1999-2003 Symas Corporation. Portions Copyright 1998-2003 Hallvard B. Furuseth. All rights reserved. Redistribution and use in source and binary forms, with or without modification, are permitted provided that this notice is preserved. The names of the copyright holders may not be used to endorse or promote products derived from this software without their specific prior written permission. This software is provided "as is" without express or implied warranty. Portions Copyright (c) 1992-1996 Regents of the University of Michigan. All rights reserved. Redistribution and use in source and binary forms are permitted provided that this notice is preserved and that due credit is given to the University of Michigan at Ann Arbor. The name of the University may not be used to endorse or promote products derived from this software without specific prior written permission. This software is provided "as is" without express or implied warranty. Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. Dell Inc. disclaims any proprietary interest in trademarks and trade names other than its own.

December 2009

Contents

1	iDRAC6 Enterprise Overview	27
	IPv6 Ready Logo Certification	28
	iDRAC6 Security Features	28
	iDRAC6 Enterprise and VFlash Media	29
	Supported Platforms	31
	Supported Operating Systems	31
	Supported Web Browsers	31
	Supported Remote Access Connections	32
	iDRAC6 Ports	32
	Other Documents You May Need	33
2	Configuring iDRAC6 Enterprise	37
	Before You Begin	37
	Interfaces for Configuring iDRAC6	37
	Configuration Tasks	41
	Configure the Management Station	41
	Configure iDRAC6 Networking	41
	Configure iDRAC6 Users	42
	Configure Directory Services.	42
	Configure IP Filtering and IP Blocking	42

Configure Platform Events	43
Enabling or Disabling Local Configuration Access.	43
Configure iDRAC6 Services.	43
Configure Secure Sockets Layer (SSL).	44
Configure Virtual Media.	44
Configure a VFlash Media Card.	44
Install the Managed Server Software	44
Configure the Managed Server for the Last Crash Screen Feature	44
Configuring Networking Using CMC	
Web Interface	45
Launching iDRAC6 Web Interface From CMC	45
Configuring Networking for iDRAC6	47
Viewing FlexAddress Mezzanine Card	
Fabric Connections	48
FlexAddress MAC for iDRAC6	48
Remote Syslog	50
Remote File Share	51
Updating iDRAC6 Firmware	53
Downloading the Firmware or Update Package	54
Executing the Firmware Update	54
Verifying the Digital Signature for Linux DUPs	55
Using iDRAC6 Web Interface	58
Updating iDRAC6 Firmware Using RACADM	60
Using the DOS Update Utility	60
Clear Your Browser's Cache	61

	Updating the USC Repair Package	61
	Configuring iDRAC6 For Use With IT Assistant.	61
	Using iDRAC6 Configuration Utility to Enable Discovery and Monitoring.	61
	Using iDRAC6 Web Interface to Enable Discovery and Monitoring.	62
	Using IT Assistant to View iDRAC6 Status and Events	64
3	Configuring the Management Station	65
	Management Station Set Up Steps	65
	Management Station Network Requirements	65
	Configuring a Supported Web Browser.	66
	Opening Your Web Browser	66
	Configuring Your Web Browser to Connect to the Web Interface	66
	Adding iDRAC6 to the List of Trusted Domains	69
	Viewing Localized Versions of the Web Interface	70
	Setting the Locale in Linux	71
	Disabling the Whitelist Feature in Firefox	72

Installing iDRAC6 Software on the Management Station	72
Installing and Uninstalling RACADM on a Management Station	73
Installing and Uninstalling RACADM on Linux	73
Installing a Java Runtime Environment (JRE)	73
Installing Telnet or SSH Clients	74
Telnet with iDRAC6	75
Configuring the Backspace Key For Telnet Sessions	75
SSH With iDRAC6	76
Installing a TFTP Server	77
Installing Dell OpenManage IT Assistant	78
Installing Dell Management Console	78
4 Configuring the Managed Server	79
Installing the Software on the Managed Server	79
Configuring the Managed Server to Capture the Last Crash Screen	80
Disabling the Windows Automatic Reboot Option	81
5 Configuring iDRAC6 Enterprise Using the Web Interface	83
Accessing the Web Interface	84
Logging In	84
Logging Out	85

Using Multiple Browser Tabs and Windows	85
Configuring iDRAC6 NIC	86
Configuring the Network, IPMI and VLAN Settings	86
Configuring IP Filtering and IP Blocking	91
Configuring Platform Events	92
Configuring Platform Event Filters (PEF)	93
Configuring Platform Event Traps (PET)	94
Configuring E-Mail Alerts.	94
Configuring IPMI Over LAN	96
Adding and Configuring iDRAC6 Users	97
Public Key Authentication over SSH	97
Securing iDRAC6 Communications Using SSL and Digital Certificates	104
Secure Sockets Layer (SSL)	105
Certificate Signing Request (CSR)	105
Accessing the SSL Main Menu	106
Generating a New Certificate Signing Request	107
Uploading a Server Certificate	108
Viewing a Server Certificate	109
Configuring and Managing Microsoft Active Directory Certificates	110
Configuring Active Directory (Standard Schema and Extended Schema)	111
Viewing an Active Directory CA Certificate	117
Enabling or Disabling Local Configuration Access	117
Enabling Local Configuration Access	117
Disabling Local Configuration Access	118

Configuring iDRAC6 Services	118
Updating iDRAC6 Firmware	120
Updating iDRAC6 Firmware Using CMC	121
iDRAC6 Firmware Rollback	122
6 Using iDRAC6 Directory Service	125
Using iDRAC6 With Microsoft Active Directory.	125
Prerequisites for Enabling Active Directory Authentication for iDRAC6	126
Supported Active Directory Authentication Mechanisms	126
Extended Schema Active Directory Overview	127
Extending the Active Directory Schema	127
Active Directory Schema Extensions.	127
Overview of iDRAC6 Schema Extensions.	128
Active Directory Object Overview	128
Accumulating Privileges Using Extended Schema.	130
Configuring Extended Schema Active Directory to Access iDRAC6	131
Installing the Dell Extension to the Active Directory Users and Computers Snap-In	137
Adding iDRAC6 Users and Privileges to Active Directory	138
Configuring Microsoft Active Directory With Extended Schema Using iDRAC6 Web Interface	140
Configuring Active Directory With Extended Schema Using RACADM.	142

Standard Schema Active Directory Overview	144
Single Domain Versus Multiple Domain Scenarios	146
Configuring Standard Schema Active Directory to Access iDRAC6	147
Configuring Active Directory With Standard Schema Using iDRAC6 Web Interface	147
Configuring Active Directory With Standard Schema Using RACADM.	150
Testing Your Configurations	153
Enabling SSL on a Domain Controller	153
Exporting the Domain Controller Root CA Certificate to iDRAC6	154
Importing iDRAC6 Firmware SSL Certificate	155
Using Active Directory to Log In to iDRAC6.	156
Using Active Directory Single Sign-On	157
Configuring iDRAC6 to Use Single Sign-On	157
Logging Into iDRAC6 Using Single Sign-On	158
Using iDRAC6 with LDAP Directory Service	159
Login Syntax (Directory User versus Local User)	159
Configuring Generic LDAP Directory Service Using iDRAC6 Web-Based Interface.	159
Frequently Asked Questions.	163
Active Directory Log In Issues	163
Active Directory Certificate Validation.	166
Extended and Standard Schema	167
Miscellaneous	167

7	Configuring Smart Card Authentication	169
	Configuring Smart Card Login in iDRAC6	169
	Logging Into iDRAC6 Using Active Directory Smart Card Authentication	170
	Troubleshooting the Smart Card Logon in iDRAC6	171
8	Enabling Kerberos Authentication	175
	Prerequisites for single sign-on and Active Directory Authentication Using Smart Card.	176
	Configuring iDRAC6 for single sign-on and Active Directory Authentication Using Smart Card.	178
	Configuring Active Directory Users for single sign-on Logon.	178
	Logging Into iDRAC6 Using single sign-on for Active Directory Users	179
	Configuring Active Directory Users for Smart Card Logon.	179
	iDRAC6 Login Scenarios with TFA and SSO.	180
9	Viewing the Configuration and Health of the Managed Server	183
	System Summary	183
	System Details	183
	Main System Enclosure.	183

Integrated Dell Remote Access Controller 6 - Enterprise	185
WWN/MAC	187
Server Health	187
iDRAC6	187
CMC	187
Batteries	188
Temperatures	188
Voltages	188
Power Monitoring	188
CPU	189
POST	189
Misc Health	189
10 Configuring and Using Serial Over LAN	191
Enabling Serial Over LAN in the BIOS	191
Configuring Serial Over LAN in iDRAC6 Web GUI	192
Using Serial Over LAN (SOL)	195
Model for Redirecting SOL Over Telnet or SSH	195
Model for the SOL Proxy	196
Model for Redirecting SOL Over IPMItool	196
Disconnecting SOL session in iDRAC6 Command Line Console	196
Using SOL over PuTTY	197
Using SOL over Telnet with Linux	197
Using SOL over OpenSSH with Linux	198
Using SOL over IPMItool	198
Opening SOL with SOL proxy	199

Operating System Configuration	204
Linux Enterprise Operating System	204
Windows 2003 Enterprise	209
11 Using GUI Console Redirection	211
Overview	211
Using Console Redirection	211
Clear Your Browser's Cache	212
Supported Screen Resolutions and Refresh Rates	213
Configuring the Management Station	213
Configuring Console Redirection and Virtual Media in iDRAC6 Web Interface	214
Opening a Console Redirection Session	216
Using the Video Viewer	219
Synchronizing the Mouse Pointers	223
Disabling or Enabling Local Console	223
Launching vKVM and Virtual Media Remotely	224
URL Format	224
General Error Scenarios	224
Frequently Asked Questions	225
12 Configuring the VFlash Media Card for Use With iDRAC6	231
Installing a VFlash Media Card	231
Removing a VFlash Media Card	232

Configuring the VFlash Media Card	
Using iDRAC6 Web Interface	232
SD Card Properties	232
VFlash Drive	234
Viewing the Virtual Flash Key Size	235
Configuring the VFlash Media	
Card Using RACADM.	235
Enabling or Disabling the VFlash	
Media Card	235
Resetting the VFlash Media Card.	235
13 Configuring and Using	
Virtual Media	237
Overview.	237
Windows-Based Management Station	238
Linux-Based Management Station.	239
Configuring Virtual Media.	239
Running Virtual Media.	241
Disconnecting Virtual Media	243
Booting From Virtual Media	243
Installing Operating Systems	
Using Virtual Media	244
Using Virtual Media When the	
Server's Operating System Is Running	244
Frequently Asked Questions.	245

14 Using the RACADM Command Line Interface	249
RACADM Subcommands.	250
Supported RACADM Interfaces	252
Using local RACADM Commands	254
Using the RACADM Utility to Configure iDRAC6	255
Displaying Current iDRAC6 Settings	255
Managing iDRAC6 Users with RACADM	256
Adding an iDRAC6 User.	257
Enabling an iDRAC6 User With Permissions	257
Uploading, Viewing, and Deleting SSH Keys Using RACADM	258
Removing an iDRAC6 User	259
Testing E-mail Alerting	259
Testing iDRAC6 SNMP Trap Alert Feature	260
Configuring iDRAC6 Network Properties.	260
Configuring IPMI Over LAN.	261
Configuring PEF.	263
Configuring PET.	264
Configuring IP Filtering (IP Range)	265
Configuring IP Blocking.	268
Configuring iDRAC6 Telnet and SSH Services Using Local RACADM.	270
Remote and SSH/Telnet RACADM	270
Remote RACADM Usage	271
Remote RACADM Options	272

	Using an iDRAC6 Configuration File.	273
	Creating an iDRAC6 Configuration File.	273
	Configuration File Syntax.	273
	Modifying iDRAC6 IP Address in a Configuration File.	275
	Loading the Configuration File Into iDRAC6	276
	Configuring Multiple iDRAC6s.	277
15	Power Monitoring and Power Management	279
	Configuring and Managing Power	279
	Power Monitoring	280
	Viewing Power Monitoring	280
	Power Budgeting	282
	Viewing Power Budget.	283
	Power Budget Threshold.	284
	Power Control	285
	Executing Power Control Operations on the Server.	285
16	Using iDRAC6 Enterprise SM-CLP Command Line Interface	287
	System Management With SM-CLP	288
	iDRAC6 SM-CLP Support	288
	How to start an SM-CLP session.	288

SM-CLP Features	289
Navigating the MAP Address Space	291
Targets	292
Using the Show Verb	292
Using the -display Option	292
Using the -level Option	293
Using the -output Option	293
iDRAC6 SM-CLP Examples	293
Server Power Management	293
SEL Management	294
MAP Target Navigation	294
17 Using the WS-MAN Interface	299
WS-Management Features	299
Supported CIM Profiles	300
18 Deploying Your Operating System Using iVMCLI	305
Before You Begin	305
Remote System Requirements	305
Network Requirements	305
Creating a Bootable Image File	306
Creating an Image File for Linux Systems	306
Creating an Image File for Windows Systems	306

Preparing for Deployment	306
Configuring the Remote Systems.	306
Deploying the Operating System	307
Using the Virtual Media Command	
Line Interface Utility	308
Installing the iVMCLI Utility.	309
Command Line Options	310
iVMCLI Parameters.	310
iVMCLI Operating System Shell Options	313
19 Using iDRAC6 Configuration	
Utility	315
Overview	315
Starting iDRAC6 Configuration Utility	316
Using iDRAC6 Configuration Utility	316
iDRAC6 LAN.	317
IPMI Over LAN	317
LAN Parameters	318
Virtual Media Configuration	321
System Services	322
LAN User Configuration	322
Reset to Default.	325
System Event Log Menu	325
Exiting iDRAC6 Configuration Utility	326

20 Recovering and Troubleshooting the Managed System	327
Safety First – For You and Your System	327
Trouble Indicators	328
LED Indicators	328
Hardware Trouble Indicators	329
Other Trouble Indicators	329
Problem Solving Tools	330
Checking the System Health	330
Checking the System Event Log (SEL)	331
Checking the Post Codes	332
Viewing the Last System Crash Screen.	332
Viewing the Most Recent Boot Sequences	333
Checking the Server Status Screen for Error Messages	334
Viewing iDRAC6 Log	342
Viewing System Information	343
Identifying the Managed Server in the Chassis	344
Using the Diagnostics Console	344
Managing Power on a Remote System.	345
Troubleshooting and Frequently Asked Questions	347
A RACADM Subcommand Overview	353
help	353
config	354
getconfig	356
getssninfo	358

getsysinfo	360
getractime	364
setniccfg	365
getniccfg	367
getsvctag	368
racreset	369
racresetcfg	370
serveraction	371
getraclog	372
clrraclog	373
getsel	374
clrsel	375
gettracelog	376
sslcsrgen	377
sslcertupload	379
sslcertdownload	380
sslcertview	381
testemail	383
testtrap	384
vmdisconnect	386
clearasrscreen	386

localconredirdisable	387
fwupdate	387
krbkeytabupload	389
vmkey	390
version	391
arp	391
coredump	392
coredumpdelete	393
ifconfig	394
netstat	394
ping	395
ping6	396
racdump	396
tracert	397
tracert6	398
remoteimage	399
sshpkauth	400

B iDRAC6 Enterprise Property Database Group and Object Definitions 403

Displayable Characters 403

idRacInfo 404

idRacProductInfo (Read Only) 404

idRacDescriptionInfo (Read Only) 404

idRacVersionInfo (Read Only) 404

idRacBuildInfo (Read Only) 405

idRacName (Read Only) 405

idRacType (Read Only) 405

cfgOobSnmp 406

cfgOobSnmpAgentCommunity (Read/Write) 406

cfgOobSnmpAgentEnable (Read/Write) 406

cfgLanNetworking 407

cfgNicIPv4Enable (Read/Write) 407

cfgDNSDomainNameFromDHCP (Read/Write) 407

cfgDNSDomainName (Read/Write) 408

cfgDNSRacName (Read/Write) 408

cfgDNSRegisterRac (Read/Write) 409

cfgDNSServersFromDHCP (Read/Write) 409

cfgDNSServer1 (Read/Write) 409

cfgDNSServer2 (Read/Write) 410

cfgNicEnable (Read/Write) 410

cfgNicIpAddress (Read/Write) 411

cfgNicNetmask (Read/Write) 411

cfgNicGateway (Read/Write) 411

cfgNicUseDhcp (Read/Write) 412

cfgNicMacAddress (Read Only) 412

cfgNicVLanEnable (Read Only) 413

cfgNicVLanID (Read Only)	413
cfgNicVLanPriority (Read Only).	413
cfgIPv6URL	414
cfgIPv6URLstring (Read Only)	414
cfgIPv6LanNetworking.	414
cfgIPv6Enable.	414
cfgIPv6Address1 (Read/Write)	415
cfgIPv6Gateway (Read/Write)	415
cfgIPv6PrefixLength (Read/Write)	415
cfgIPv6AutoConfig (Read/Write)	416
cfgIPv6LinkLocalAddress (Read Only)	416
cfgIPv6Address2 (Read Only).	416
cfgIPv6DNSServersFromDHCP6 (Read/Write)	417
cfgIPv6DNSServer1 (Read/Write)	417
cfgIPv6DNSServer2 (Read/Write)	417
cfgIPv6Address3 (Read Only).	418
cfgIPv6Address4 (Read Only).	418
cfgIPv6Address5 (Read Only).	418
cfgIPv6Address6 (Read Only).	418
cfgIPv6Address7 (Read Only).	418
cfgIPv6Address8 (Read Only).	419
cfgIPv6Address9 (Read Only).	419
cfgIPv6Address10 (Read Only)	419
cfgIPv6Address11 (Read Only)	419
cfgIPv6Address12 (Read Only)	420
cfgIPv6Address13 (Read Only)	420
cfgIPv6Address14 (Read Only)	420
cfgIPv6Address15 (Read Only)	420

cfgUserAdmin	420
cfgUserAdminIndex (Read Only)	421
cfgUserAdminIpmiLanPrivilege (Read/Write)	421
cfgUserAdminPrivilege (Read/Write)	421
cfgUserAdminUserName (Read/Write)	423
cfgUserAdminPassword (Write Only)	423
cfgUserAdminEnable (Read/Write).	424
cfgUserAdminSolEnable (Read/Write).	424
cfgEmailAlert	424
cfgEmailAlertIndex (Read Only)	424
cfgEmailAlertEnable (Read/Write)	425
cfgEmailAlertAddress (Read/Write)	425
cfgEmailAlertCustomMsg (Read/Write)	425
cfgSessionManagement	426
cfgSsnMgtConsRedirMaxSessions (Read/Write)	426
cfgSsnMgtWebserverTimeout (Read/Write)	426
cfgSsnMgtSshIdleTimeout (Read/Write).	427
cfgSsnMgtTelnetTimeout (Read/Write)	427
cfgSerial	428
cfgSerialSshEnable (Read/Write)	428
cfgSerialTelnetEnable (Read/Write)	429
cfgRemoteHosts	429
cfgRhostsSmtplibAddr (Read/Write)	429
cfgRhostsFwUpdateTftpEnable (Read/Write)	429
cfgRhostsFwUpdateIpAddr (Read/Write)	430
cfgRhostsFwUpdatePath (Read/Write).	430
cfgRhostsSyslogEnable (Read/Write)	430
cfgRhostsSyslogPort (Read/Write).	431
cfgRhostsSyslogServer1 (Read/Write).	431
cfgRhostsSyslogServer2 (Read/Write).	431

cfgRhostsSyslogServer3 (Read/Write)	432
cfgUserDomain	432
cfgUserDomainIndex (Read Only)	432
cfgUserDomainName (Read/Write)	433
cfgServerPower	433
cfgServerPowerStatus (Read Only)	433
cfgServerActualPowerConsumption (Read Only)	433
cfgServerPeakPowerConsumption (Read Only)	434
cfgServerPeakPowerConsumptionTimestamp (Read Only)	434
cfgServerPowerConsumptionClear (Write Only)	434
cfgServerPowerCapWatts (Read Only).	435
cfgServerPowerCapBtuhr (Read Only).	435
cfgServerPowerCapPercent (Read Only).	435
cfgRacTuning	436
cfgRacTuneHttpPort (Read/Write)	436
cfgRacTuneHttpsPort (Read/Write).	436
cfgRacTuneIpRangeEnable	436
cfgRacTuneIpRangeAddr	437
cfgRacTuneIpRangeMask	437
cfgRacTuneIpBlkEnable	437
cfgRacTuneIpBlkFailCount	438
cfgRacTuneIpBlkFailWindow	438
cfgRacTuneIpBlkPenaltyTime	439
cfgRacTuneSshPort (Read/Write)	439
cfgRacTuneConRedirEnable (Read/Write)	439
cfgRacTuneTelnetPort (Read/Write)	440

cfgRacTuneConRedirEncryptEnable (Read/Write)	440
cfgRacTuneConRedirPort (Read/Write)	440
cfgRacTuneConRedirVideoPort (Read/Write)	441
cfgRacTuneAsrEnable (Read/Write)	441
cfgRacTuneWebserverEnable (Read/Write)	441
cfgRacTuneLocalServerVideo (Read/Write)	442
cfgRacTuneDaylightOffset (Read/Write)	442
cfgRacTuneTimezoneOffset (Read/Write)	442
cfgRacTuneLocalConfigDisable (Read/Write)	443
ifcRacManagedNodeOs	443
ifcRacMnOsHostname (Read Only)	444
ifcRacMnOsOsName (Read Only)	444
cfgRacSecurity	444
cfgSecCsrCommonName (Read/Write)	444
cfgSecCsrOrganizationName (Read/Write)	445
cfgSecCsrOrganizationUnit (Read/Write)	445
cfgSecCsrLocalityName (Read/Write)	445
cfgSecCsrStateName (Read/Write)	446
cfgSecCsrCountryCode (Read/Write)	446
cfgSecCsrEmailAddr (Read/Write)	446
cfgSecCsrKeySize (Read/Write)	447
cfgRacVirtual	447
cfgRacVirMediaAttached (Read/Write)	447
cfgVirMediaBootOnce (Read/Write)	448
cfgVirMediaKeyEnable (Read/Write)	448
cfgVirtualFloppyEmulation (Read/Write)	448
cfgSDWriteProtect (Read only)	449
cfgIpmiLan	449
cfgIpmiLanEnable (Read/Write)	449
cfgIpmiLanPrivLimit (Read/Write)	450

cflpmlanAlertEnable (Read/Write)	450
cflpmlenEncryptionKey (Read/Write)	450
cflpmlpetCommunityName (Read/Write)	451
cflpmlpetIpv6	451
cflpmlpetIpv6Index (Read Only)	451
cflpmlpetIpv6AlertDestIpAddr	451
cflpmlpetIpv6AlertEnable (Read/Write)	452
cflpmlpef	452
cflpmlpefName (Read Only)	452
cflpmlpefIndex (Read/Write)	453
cflpmlpefAction (Read/Write)	453
cflpmlpefEnable (Read/Write)	453
cflpmlpet	454
cflpmlpetIndex (Read Only)	454
cflpmlpetAlertDestIpAddr (Read/Write)	454
cflpmlpetAlertEnable (Read/Write)	454
cflpmlsmartCard	455
cflpmlsmartCardLogonEnable (Read/Write)	455
cflpmlactiveDirectory	455
cflpmladSSOEnable (Read/Write)	455
cflpmladRacDomain (Read/Write)	456
cflpmladRacName (Read/Write)	456
cflpmladEnable (Read/Write)	456
cflpmladAuthTimeout (Read/Write)	457
cflpmladDomainController1 (Read/Write)	457
cflpmladDomainController2 (Read/Write)	458
cflpmladDomainController3 (Read/Write)	458
cflpmladGlobalCatalog1 (Read/Write)	458
cflpmladGlobalCatalog2 (Read/Write)	459
cflpmladGlobalCatalog3 (Read/Write)	459

cfgADType (Read/Write)	459
cfgADCertValidationEnable (Read/Write)	460
cfgADDcSRVLookupEnable (Read/Write)	460
cfgADDcSRVLookupbyUserdomain (Read/Write)	461
cfgADDcSRVLookupDomainName (Read/Write)	461
cfgADGcSRVLookupEnable (Read/Write)	462
cfgADGcRootDomain (Read/Write)	462
cfgLDAP	462
cfgLdapEnable (Read/Write)	463
cfgLdapServer (Read/Write)	463
cfgLdapPort (Read/Write)	463
cfgLdapBasedn (Read/Write)	464
cfgLdapUserAttribute (Read/Write)	464
cfgLdapGroupAttribute (Read/Write).	464
cfgLdapGroupAttributeIsDN (Read/Write)	465
cfgLdapBinddn (Read/Write)	465
cfgLdapBindpassword (Write only)	466
cfgLdapSearchFilter (Read/Write)	466
cfgLDAPCertValidationEnable (Read/Write)	466
cfgLdapRoleGroup	467
cfgLdapRoleGroupIndex (Read Only).	467
cfgLdapRoleGroupDN (Read/Write)	467
cfgLdapRoleGroupPrivilege (Read/Write)	468
cfgStandardSchema	468
cfgSSADRoleGroupIndex (Read Only)	468
cfgSSADRoleGroupName (Read/Write)	468
cfgSSADRoleGroupDomain (Read/Write)	469
cfgSSADRoleGroupPrivilege (Read/Write).	469

cfgIpmiSol	470
cfgIpmiSolEnable (Read/Write)	470
cfgIpmiSolBaudRate (Read/Write)	470
cfgIpmiSolMinPrivilege (Read/Write)	471
cfgIpmiSolAccumulateInterval (Read/Write)	471
cfgIpmiSolSendThreshold (Read/Write)	471
 Index	 473

iDRAC6 Enterprise Overview


The Integrated Dell™ Remote Access Controller (iDRAC6) Enterprise is a systems management hardware and software solution that provides remote management capabilities, crashed system recovery, and power control functions for Dell PowerEdge™ systems.

iDRAC6 uses an integrated system-on-chip microprocessor for the remote monitor/control system, and co-exists on the system board with the managed Dell PowerEdge server. The server operating system executes application programs; iDRAC6 monitors and manages the server's environment and state outside of the operating system.

iDRAC6 can be configured to send an e-mail or Simple Network Management Protocol (SNMP) trap alert for warnings or errors. To help you diagnose the cause of a system crash, iDRAC6 can log event data and capture an image of the screen when it detects that the system has crashed.

Managed servers are installed in a Dell M1000e system enclosure (chassis) with modular power supplies, cooling fans, and a Chassis Management Controller (CMC). CMC monitors and manages all components installed in the chassis. A redundant CMC can be added to provide hot failover if the primary CMC fails. The chassis provides access to iDRAC6 devices through its LCD display, local console connections, and its Web interface. Each blade in a chassis has an iDRAC6. A total of 16 blades can be installed in the M1000e.

All network connections to iDRAC6 are routed through CMC network interfaces (CMC RJ45 connection port labeled "GB1"). CMC routes traffic to the iDRAC6 devices through a private, internal network. This private management network is outside of the server's data path and outside of the operating system's control—that is, it is *out-of-band*. The managed server's *inband* network interfaces are accessed through I/O modules (IOMs) installed in the chassis.

 **NOTE:** It is recommended that you isolate or separate the chassis management network, used by iDRAC6 and CMC, from your production network(s). Mixing management and production or application network traffic may cause congestion or network saturation resulting in CMC and iDRAC6 communication delays. The delays may cause unpredictable chassis behavior such as CMC displaying that iDRAC6 is offline even though it is operating properly. This may also cause other unpredictable behavior.

iDRAC6 network interface is disabled by default. It must be configured before iDRAC6 is accessible. After iDRAC6 is enabled and configured on the network, it can be accessed through its assigned IP address with iDRAC6 Web interface, Telnet or SSH, and supported network management protocols, such as Intelligent Platform Management Interface (IPMI).

IPv6 Ready Logo Certification

The IPv6 Ready Logo Committee's mission is to define the test specifications for IPv6 conformance and interoperability testing, to provide access to self-test tools, and to deliver the IPv6 Ready Logo.

iDRAC6 is **Phase-2 IPv6 Ready Logo** certified and the Logo ID is 02-C-000380. For information on the IPv6 Ready Logo Program, see <http://www.ipv6ready.org/>.

iDRAC6 Security Features

- User authentication through Microsoft Active Directory, generic LDAP Directory Service, or locally administered user IDs and passwords
- Two-factor authentication provided by the Smart-Card logon feature. The two-factor authentication is based on what the users *have* (the Smart-Card) and what they *know* (the PIN)
- Role-based authorization, which enables an administrator to configure specific privileges for each user
- User ID and password configuration
- SM-CLP and Web interfaces that support 128-bit and 40-bit encryption (for countries where 128 bit is not acceptable), using the SSL 3.0 standard
- Session time-out configuration (in seconds)
- Configurable IP ports (where applicable)

- Secure Shell (SSH), which uses an encrypted transport layer for higher security
- Login failure limits per IP address, with login blocking from that IP address when the limit is exceeded
- Configurable client IP address range for clients connecting to iDRAC6

iDRAC6 Enterprise and VFlash Media

iDRAC6 Enterprise provides an SD slot for VFlash Media. For more information about iDRAC6 Enterprise and VFlash Media, see your *Hardware Owner's Manual* at support.dell.com/manuals.

Table 1-1 lists the features available for iDRAC6 Enterprise and VFlash Media.



















Table 1-1. iDRAC6 Feature List

Feature	iDRAC6 Enterprise	iDRAC6 Enterprise with VFlash
Interface and Standards Support		
IPMI 2.0		
Web GUI		
SNMP		
WS-MAN		
SM-CLP		
RACADM Command Line		
Connectivity		
Shared/Failover Network Modes		
IPv4		
VLAN Tagging		
IPv6		

Table 1-1. iDRAC6 Feature List (continued)

Feature	iDRAC6 Enterprise	iDRAC6 Enterprise with VFlash
Dynamic DNS	✓	✓
Dedicated NIC	✓	✓
Security and Authentication		
Role-based Authorization	✓	✓
Local Users	✓	✓
Active Directory	✓	✓
Two-factor Authentication	✓	✓
Single sign-on	✓	✓
SSL Encryption	✓	✓
Remote Management and Remediation		
Remote Firmware Update	✓	✓
Server Power Control	✓	✓
Serial-over-LAN (with proxy)	✓	✓
Serial-over-LAN (no proxy)	✓	✓
Power Capping	✓	✓
Last Crash Screen Capture	✓	✓
Boot Capture	✓	✓
Virtual Media	✓	✓
Remote File Share	✓	✓
Virtual Console	✓	✓
Virtual Console Sharing	✓	✓

Table 1-1. iDRAC6 Feature List (continued)

Feature	iDRAC6 Enterprise	iDRAC6 Enterprise with VFlash
VFlash		
Monitoring		
Sensor Monitoring and Alerting		
Real-time Power Monitoring		
Real-time Power Graphing		
Historical Power Counters		
Logging		
System Event Log (SEL)		
RAC Log		
Trace Log		
Remote Syslog		

 = Supported;  = Not Supported

Supported Platforms


For the latest supported platforms, see iDRAC6 Readme file and the *Dell Systems Software Support Matrix* available at support.dell.com/manuals.

Supported Operating Systems

For the latest information, see iDRAC6 Readme file and the *Dell Systems Software Support Matrix* available at support.dell.com/manuals.

Supported Web Browsers

For the latest information, see iDRAC6 Readme file and the *Dell Systems Software Support Matrix* available at support.dell.com/manuals.

 **NOTE:** Support for SSL 2.0 has been discontinued because of security flaws. Ensure that your browser is configured to enable SSL 3.0.

Supported Remote Access Connections

Table 1-2 lists the connection features.

Table 1-2. Supported Remote Access Connections

Connection	Features
iDRAC6 NIC	<ul style="list-style-type: none">• 10Mbps/100Mbps/1Gbps Ethernet via CMC Gb Ethernet port.• DHCP support.• SNMP traps and e-mail event notification.• SM-CLP shell and RACADM commands for operations such as iDRAC6 configuration, system boot, reset, power on, and shutdown commands are supported through SSH and Telnet.• Support for IPMI utilities, such as IPMITool and ipmish.

iDRAC6 Ports

Table 1-3 lists the ports on which iDRAC6 listens for connections. Table 1-4 identifies the ports that iDRAC6 uses as a client. This information is required when opening firewalls for remote access to an iDRAC6.


 **CAUTION:** iDRAC6 does not check for conflicts between configurable ports. When setting port configurations, verify that the port assignments do not conflict with each other.

Table 1-3. iDRAC6 Server Listening Ports

Port Number	Function
22*	Secure Shell (SSH)
23*	Telnet
80*	HTTP
443*	HTTPS
623	RMCP/RMCP+
3668, 3669	Virtual Media Service

Table 1-3. iDRAC6 Server Listening Ports (continued)

Port Number	Function
3670, 3671	Virtual Media Secure Service
5900*	Console Redirection keyboard/mouse
5901*	Console Redirection video
5988*	Used for WSMAN

* Configurable port

Table 1-4. iDRAC6 Client Ports

Port Number	Function
25	SMTP
53	DNS
68	DHCP-assigned IP address
69	TFTP
162	SNMP trap
636	LDAPS
3269	LDAPS for global catalog (GC)

Other Documents You May Need

In addition to this *User Guide*, the following documents provide additional information about the setup and operation of iDRAC6 in your system:

- iDRAC6 online help provides information about using the Web interface.
- The *Dell Systems Software Support Matrix* provides information about the various Dell systems, the operating systems supported by these systems, and the Dell OpenManage™ components that can be installed on these systems.
- The *Dell OpenManage Server Administrator Installation Guide* contains instructions to help you install Dell OpenManage Server Administrator.

- The *Dell OpenManage Management Station Software Installation Guide* contains instructions to help you install Dell OpenManage management station software that includes Baseboard Management Utility, DRAC Tools, and Active Directory Snap-In.
- The *Dell Chassis Management Controller User Guide* and the *Dell Chassis Management Controller Administrator Reference Guide* provide information about using the controller that manages all modules in the chassis containing your Dell PowerEdge server.
- The *Dell OpenManage IT Assistant User's Guide* provides information about using IT Assistant.
- The *Dell Management Console User's Guide* provides information about using Dell Management Console.
- The *Dell OpenManage Server Administrator User's Guide* provides information about installing and using Server Administrator.
- The *Dell Update Packages User's Guide* provides information about obtaining and using Dell Update Packages as part of your system update strategy.
- The *Dell Lifecycle Controller User Guide* provides information on the Unified Server Configurator (USC), the Unified Server Configurator – Lifecycle Controller Enabled (USC – LCE), and Remote Services.
- The *iDRAC6 CIM Element Mapping* and *iDRAC6 SM-CLP Property Database* documents available on the Dell Enterprise Technology Center at www.delltechcenter.com provide information on iDRAC6 SM-CLP Property Database, mapping between WS-MAN classes and SM-CLP targets and Dell implementation details.

The following system documents are also available to provide more information about the system in which iDRAC6 is installed:

- The safety instructions that came with your system provide important safety and regulatory information. For additional regulatory information, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance. Warranty information may be included within this document or as a separate document.
- The *Getting Started Guide* provides an overview of system features, setting up your system, and technical specifications.
- The *Hardware Owner's Manual* provides information about system features and describes how to troubleshoot the system and install or replace system components.
- Systems management software documentation describes the features, requirements, installation, and basic operation of the software.
- Operating system documentation describes how to install (if necessary), configure, and use the operating system software.
- Documentation for any components you purchased separately provides information to configure and install these options.
- Updates are sometimes included with the system to describe changes to the system, software, and/or documentation.



NOTE: Always read the updates first because they often supersede information in other documents.

- Release notes or readme files may be included to provide last-minute updates to the system or documentation or advanced technical reference material intended for experienced users or technicians.

For information on terms used in this document, see the *Glossary* available on the Dell Support website at support.dell.com/manuals.

Configuring iDRAC6 Enterprise

This section provides information about how to establish access to iDRAC6 and to configure your management environment to use iDRAC6.

Before You Begin

Gather the following items prior to configuring iDRAC6:

- *Dell Chassis Management Controller Firmware User Guide*
- *Dell Systems Management Tools and Documentation DVD*

The *Dell Systems Management Tools and Documentation DVD* includes the following components:

- DVD root — Contains the Dell™ Systems Build and Update Utility, which provides server setup and system installation information
- SYSMGMT — Contains the systems management software products including Dell OpenManage® Server Administrator

For more information, see the *Dell OpenManage Server Administrator Installation Guide* and the *Dell OpenManage Management Station Software Installation Guide* available on the Dell Support website at support.dell.com/manuals.

Interfaces for Configuring iDRAC6

You can configure iDRAC6 using iDRAC6 Configuration Utility, iDRAC6 Web interface, Chassis Management Controller (CMC) Web interface, Chassis LCD Panel, the local and remote RACADM CLI, iVMCLI, or the SM-CLP CLI. The local RACADM CLI is available after you have installed the operating system and the Dell OpenManage software on the managed server. Table 2-1 describes these interfaces.

For greater security, access to iDRAC6 configuration through iDRAC6 Configuration Utility or the local RACADM CLI can be disabled by means of a RACADM command (see "RACADM Subcommand Overview") or from the GUI (see "Enabling or Disabling Local Configuration Access").


 **NOTE:** Using more than one configuration interface at the same time may generate unexpected results.

Table 2-1. Configuration Interfaces

Interface	Description
iDRAC6 Configuration Utility	Accessed at boot time, iDRAC6 Configuration Utility is useful when installing a new Dell PowerEdge™ server. Use it for setting up the network and basic security features and for enabling other features.
iDRAC6 Web Interface	iDRAC6 Web interface is a browser-based management application that you can use to interactively manage iDRAC6 and monitor the managed server. It is the primary interface for day-to-day tasks, such as monitoring system health, viewing the system event log, managing local iDRAC6 users, and launching CMC Web interface and console redirection sessions.
CMC Web Interface	In addition to monitoring and managing the chassis, CMC Web interface can be used to view the status of a managed server, update iDRAC6 firmware, configure iDRAC6 network settings, logon to iDRAC6 Web interface, and to start, stop, or reset the managed server.

Table 2-1. Configuration Interfaces (continued)

Interface	Description
Chassis LCD Panel	<p>The LCD panel on the chassis containing iDRAC6 can be used to view the high-level status of the servers in the chassis. During initial configuration of CMC, the configuration wizard allows you to enable DHCP configuration of iDRAC6 networking.</p>
Local and Remote RACADM	<p>The local RACADM command line interface runs on the managed server. It is accessed from either the iKVM or a console redirection session initiated from iDRAC6 Web interface. RACADM is installed on the managed server when you install Dell OpenManage Server Administrator.</p> <p>Remote RACADM is a client utility which runs on a management station. It uses the out-of-band network interface to run RACADM commands on the managed server. The <code>-r</code> option runs the RACADM command over a network.</p> <p>RACADM commands provide access to nearly all iDRAC6 features. You can inspect sensor data, system event log records, and the current status and configuration values maintained in iDRAC6. You can alter iDRAC6 configuration values, manage local users, enable and disable features, and perform power functions such as shutting down or rebooting the managed server.</p>
iVMCLI	<p>iDRAC6 Virtual Media Command Line Interface (iVMCLI) provides the managed server access to media on the management station. It is useful for developing scripts to install operating systems on multiple managed servers.</p>

Table 2-1. Configuration Interfaces (continued)

Interface	Description
SM-CLP	<p>SM-CLP is the Server Management Workgroup Server Management-Command Line Protocol (SM-CLP) implementation incorporated in iDRAC6. The SM-CLP command line is accessed by logging in to iDRAC6 using Telnet or SSH and typing <code>smc1p</code> at the CLI prompt.</p> <p>SM-CLP commands implement a useful subset of the local RACADM commands. The commands are useful for scripting since they can be executed from a management station command line. The output of commands can be retrieved in well-defined formats, including XML, facilitating scripting and integration with existing reporting and management tools.</p>
IPMI	<p>IPMI defines a standard way for embedded management subsystems, such as iDRAC6, to communicate with other embedded systems and management applications.</p> <p>You can use iDRAC6 Web interface, SM-CLP, or RACADM commands to configure IPMI Platform Event Filters (PEF) and Platform Event Traps (PET).</p> <p>PEFs cause iDRAC6 to perform specific actions (for example, rebooting the managed server) when it detects a condition. PETs instruct iDRAC6 to send e-mail or IPMI alerts when it detects specified events or conditions.</p> <p>You can also use standard IPMI tools such as IPMITool and ipmish with iDRAC6 when you enable IPMI Over LAN.</p>

Configuration Tasks

This section is an overview of the configuration tasks for the management station, iDRAC6, and the managed server. The tasks to be performed include configuring iDRAC6 so that it can be accessed remotely, configuring iDRAC6 features you want to use, installing the operating system on the managed server, and installing management software on your management station and the managed server.

The configuration tasks that can be used to perform each task are listed beneath the task.



NOTE: Before performing the configuration procedures in this guide, CMC and I/O modules must be installed in the chassis and configured, and the Dell PowerEdge™ server must be physically installed in the chassis.

Configure the Management Station

Set up a management station by installing the Dell OpenManage software, a Web browser, and other software utilities. See "Configuring the Management Station."

Configure iDRAC6 Networking

Enable iDRAC6 network and configure IP, netmask, gateway, and DNS addresses.



NOTE: Access to iDRAC6 configuration through iDRAC6 Configuration Utility or local RACADM CLI can be disabled by means of a RACADM command (see "RACADM Subcommand Overview") or from the GUI (see "Enabling or Disabling Local Configuration Access").



NOTE: Changing iDRAC6 network settings terminates all current network connections to iDRAC6.



NOTE: The option to configure the server using the LCD panel is available *only* during CMC initial configuration. Once the chassis is deployed, the LCD panel cannot be used to reconfigure iDRAC6.



NOTE: The LCD panel can be used only to enable DHCP to configure iDRAC6 network.

- Chassis LCD Panel — See the *Dell Chassis Management Controller Firmware User Guide*
- iDRAC6 Configuration Utility — See "Using iDRAC6 Configuration Utility"
- CMC Web interface — See "Configuring Networking Using CMC Web Interface"
- Remote and local RACADM — See "cfgLanNetworking"

Configure iDRAC6 Users

Set up the local iDRAC6 users and permissions. iDRAC6 holds a table of sixteen local users in firmware. You can set usernames, passwords, and roles for these users.



NOTE: <, >, and \ are not allowed in usernames or passwords.

- iDRAC6 Configuration Utility (configures administrative user only) — See "LAN User Configuration"
- iDRAC6 Web interface — See "Adding and Configuring iDRAC6 Users"
- Remote and local RACADM — See "Adding an iDRAC6 User"



NOTE: When using iDRAC6 in an Active Directory / generic LDAP Directory Service environment, ensure that your user names conform to the Active Directory / generic LDAP Directory Service naming convention in force.

Configure Directory Services

In addition to the local iDRAC6 users, you can use Microsoft® Active Directory® or generic LDAP Directory Service to authenticate iDRAC6 user logins.

For more information, see "Using iDRAC6 Directory Service."

Configure IP Filtering and IP Blocking

In addition to user authentication, you can prevent unauthorized access by rejecting connection attempts from IP addresses outside of a defined range and by temporarily blocking connections from IP addresses where authentication has failed multiple times within a configurable timespan.

- iDRAC6 Web interface — See "Configuring IP Filtering and IP Blocking"

- RACADM — See "Configuring IP Filtering (IP Range)" and "Configuring IP Blocking"

Configure Platform Events

Platform events occur when iDRAC6 detects a warning or critical condition from one of the managed server's sensors.

Configure Platform Event Filters (PEF) to choose the events you want to detect, such as rebooting the managed server, when an event is detected.

- iDRAC6 Web interface — See "Configuring Platform Event Filters (PEF)"
- RACADM — See "Configuring PEF"

Configure Platform Event Traps (PET) to send alert notifications to an IP address, such as a management station with IPMI software or to send an e-mail to a specified e-mail address.

- iDRAC6 Web interface — See "Configuring Platform Event Traps (PET)"
- RACADM — See "Configuring PET"

Enabling or Disabling Local Configuration Access

Access to critical configuration parameters, such as network configuration and user privileges, can be disabled. Once disabled, the setting remains persistent across reboots. Configuration write access is blocked for both the local RACADM program and iDRAC6 Configuration Utility (at boot). Web access to configuration parameters is unimpeded and configuration data is always available for viewing. For information about iDRAC6 Web interface, see "Enabling or Disabling Local Configuration Access." For RACADM commands, see "cfgRacTuning."

Configure iDRAC6 Services

Enable or disable iDRAC6 network services — such as Telnet, SSH, and the Web server interface — and reconfigure ports and other service parameters.

- iDRAC6 Web interface — See "Configuring iDRAC6 Services"
- RACADM — See "Configuring iDRAC6 Telnet and SSH Services Using Local RACADM"

Configure Secure Sockets Layer (SSL)

Configure SSL for iDRAC6 Web server.

- iDRAC6 Web interface — See "Secure Sockets Layer (SSL)"
- RACADM — See "cfgRacSecurity," "sslcsrgen," "sslcertupload," "sslcertdownload," and "sslcertview"

Configure Virtual Media

Configure the virtual media feature so that you can install the operating system on the Dell PowerEdge server. Virtual media allows the managed server to access media devices on the management station or ISO CD/DVD images on a network share as if they were devices on the managed server.

- iDRAC6 Web interface — See "Configuring and Using Virtual Media"
- iDRAC6 Configuration Utility — See "Virtual Media Configuration"

Configure a VFlash Media Card

Install and configure a VFlash Media card for use with iDRAC6.

- iDRAC6 Web interface — See "Configuring the VFlash Media Card for Use With iDRAC6"

Install the Managed Server Software

Install the operating system on the Dell PowerEdge server using virtual media and then install the Dell OpenManage software on the managed Dell PowerEdge server and set up the last crash screen feature.

- Console redirection — See "Installing the Software on the Managed Server"
- iVMCLI — See "Using the Virtual Media Command Line Interface Utility"

Configure the Managed Server for the Last Crash Screen Feature

Set up the managed server so that iDRAC6 can capture the screen image after an operating system crash or freeze.

- Managed server — See "Configuring the Managed Server to Capture the Last Crash Screen" and "Disabling the Windows Automatic Reboot Option"

Configuring Networking Using CMC Web Interface



NOTE: You must have Chassis Configuration Administrator privilege to set up iDRAC6 network settings from CMC.



NOTE: The default CMC username is **root** and the default password is **calvin**.



NOTE: CMC IP address can be found in iDRAC6 Web interface by clicking **System**→**Remote Access**→**CMC**. You can also launch CMC Web interface from this screen.

Launching iDRAC6 Web Interface From CMC

CMC provides limited management of individual chassis components, such as servers. For complete management of these individual components, CMC provides a launch point for the server's iDRAC6 Web interface.

To launch iDRAC6 from the **Servers** screen:

- 1 Log in to CMC Web interface.
- 2 In the system tree, select **Servers**.
The **Servers Status** screen appears.
- 3 Click the **Launch iDRAC6 GUI** icon for the server you want to manage.

You can also launch iDRAC6 Web interface for a single server using the **Servers** list in the system tree:

- 1 Log in to CMC Web interface.
- 2 Expand **Servers** in the system tree.
All of the servers (1–16) appear in the expanded **Servers** list.
- 3 Click the server you want to view.
The **Server Status** screen for the server you selected displays.
- 4 Click the **Launch iDRAC6 GUI** icon.

Single Sign-On

Using the single sign-on feature, you can launch iDRAC6 Web interface from CMC without having to log in a second time. Single sign-on policies are described below.

- CMC user who has **Server Administrator** set under **User Privileges** is automatically logged in to iDRAC6 Web interface using single sign-on. After logging in, the user is automatically granted iDRAC6 Administrator privileges. This is true even if the same user does not have an account on iDRAC6, or if the account does not have Administrator privileges.
- CMC user who does not have **Server Administrator** set under **User Privileges**, but has the same account on iDRAC6, is automatically logged in to iDRAC6 using single sign-on. Once logged in to iDRAC6 Web interface, this user is granted the privileges that were created for iDRAC6 account.



NOTE: In this context, "the same account" means that the user has the same username and password for CMC as for iDRAC6. A user who has the same username but a different password is not recognized as a valid user.

- CMC user who does not have **Server Administrator** set under **User Privileges**, or the same account on iDRAC6, is *not* automatically logged in to iDRAC6 using single sign-on. This user is directed to iDRAC6 log in screen after clicking **Launch iDRAC6 GUI**.



NOTE: In this case, users may be prompted to log in to iDRAC6.



NOTE: If iDRAC6 network LAN is disabled (LAN Enabled = No), single sign-on is not available.



NOTE: If the server is removed from the chassis, iDRAC6 IP address is changed, or there is a problem in iDRAC6 network connection, then clicking the **Launch iDRAC6 GUI** icon may display an error screen.

Configuring Networking for iDRAC6

1 Click **System**→**Remote Access**→**iDRAC6**.

2 Click the **Network/Security** tab:

To enable or disable Serial Over LAN:

a Click **Serial Over LAN**.

The **Serial Over LAN** screen appears.

b Select the **Enable Serial Over LAN** check box. You may also change the **Baud Rate** and **Channel Privilege Level Limit** settings.

c Click **Apply**.

To enable or disable IPMI Over LAN:

a Click **Network**.

The **Network** screen appears.

b Click **IPMI Settings**.

c Select the **Enable IPMI Over LAN** check box. You may also change the **Channel Privilege Level Limit** and **Encryption Key** settings.

d Click **Apply**.

To enable or disable DHCP:

a Click **Network**.

The **Network** screen appears.

b Select the **DHCP Enable** check box in the **IPv4 Settings** section and the **Autoconfiguration Enable** check box in the **IPv6 Settings** section to enable DHCP. To use DHCP to obtain DNS server addresses, select the **Use DHCP to obtain DNS Server Addresses** check box.


c Click **Apply**.



NOTE: If you choose not to enable DHCP, you must enter the static IP address, netmask, and default gateway for the server.

Viewing FlexAddress Mezzanine Card Fabric Connections

The M1000e includes FlexAddress, an advanced multilevel, multistandard networking system. FlexAddress allows the use of persistent, chassis-assigned World Wide Names and MAC addresses (WWN/MAC) for each managed server port connection.

 **NOTE:** In order to avoid errors that may lead to an inability to power on the managed server, you *must* have the correct type of mezzanine card installed for each port and fabric connection.

Configuration of the FlexAddress feature is performed using CMC Web interface. For more information on the FlexAddress feature and its configuration, see the *Dell Chassis Management Controller User Guide* and the *Chassis Management Controller (CMC) Secure Digital (SD) Card Technical Specification* document.

After the FlexAddress feature has been enabled and configured for the chassis, click **System**→**Properties** tab→**WWN/MAC** to view a list of installed mezzanine cards, the fabrics to which they are connected, type of fabric, and server-assigned or chassis-assigned MAC addresses for each installed embedded Ethernet and optional mezzanine card port.

The **Server-Assigned** column displays the server-assigned WWN/MAC addresses embedded in the controller's hardware. WWN/MAC addresses showing N/A indicate that an interface for the specified fabric is not installed.

The **Chassis-Assigned** column displays the chassis-assigned WWN/MAC addresses used for the particular slot. WWN/MAC addresses showing N/A indicate that the FlexAddress feature is not installed. A green check mark in the **Server-Assigned** and **Chassis-Assigned** columns indicates the active addresses.

FlexAddress MAC for iDRAC6

The FlexAddress feature replaces the server-assigned MAC addresses with chassis-assigned MAC addresses and is implemented for iDRAC6 along with blade LOMs, mezzanine cards and I/O modules. iDRAC6 FlexAddress feature supports preservation of slot specific MAC address for iDRAC6s in a chassis.

The chassis–assigned MAC address is stored in CMC non–volatile memory and is sent to iDRAC6 during an iDRAC6 boot or when CMC FlexAddress page settings are changed.

If CMC enables chassis–assigned MAC addresses, iDRAC6 displays the value in the **MAC Address** field on the following screens:

- System→Properties tab→System Details→iDRAC6 Information
- System→Properties tab→WWN/MAC
- System→Remote Access→iDRAC6→Properties tab→Remote Access Information→Network Settings
- System→Remote Access→iDRAC6→Network/Security tab→Network→Network Interface Card Settings



CAUTION: With FlexAddress enabled, if you switch from a server–assigned MAC address to a chassis–assigned MAC address and vice–versa, iDRAC6 IP address also changes.



NOTE: You can enable or disable the FlexAddress feature only through CMC. iDRAC6 GUI only reports the status. Any existing vKVM or vMedia session terminates if the FlexAddress setting is changed in CMC FlexAddress page.

Enabling FlexAddress through RACADM

You cannot enable FlexAddress from iDRAC6. Enable FlexAddress at the slot and fabric levels from CMC.

- 1 From CMC console, enable FlexAddress for the managed server on the slot with the following RACADM command:

```
racadm setflexaddr -i <slot_no> 1
```

, where <slot_no> is the slot number on which to enable FlexAddress.
- 2 Next, from CMC console, enable FlexAddress at the fabric level by executing the following RACADM command:

```
racadm setflexaddr -f <fabric_name> 1
```

, where <fabric_name> is A, B, or C.
- 3 To enable FlexAddress for all iDRAC6s in the chassis, from the CMC console, execute the following RACADM command:

```
racadm setflexaddr -f idrac 1
```

See the *Dell Chassis Management Controller Administrator Reference Guide* for more information on CMC RACADM subcommands.

Remote Syslog

iDRAC6 Remote Syslog feature allows you to remotely write the RAC log and the System Event Log (SEL) to an external syslog server. You can read all logs from the entire server farm from a central log.

The Remote Syslog protocol does not need any user authentication. For the logs to be entered in the Remote Syslog server, ensure that there is proper network connectivity between iDRAC6 and the Remote Syslog server and that the Remote Syslog server is running on the same network as iDRAC6. The Remote Syslog entries are carried in UDP packets sent to the Remote Syslog server's syslog port. If network failures occur, iDRAC6 does not send the same log again. The remote logging happens real time as and when the logs are recorded in iDRAC6's RAC log and SEL log. You can also change iDRAC6 Remote Syslog settings through CMC.

Remote Syslog can be enabled through the remote Web interface:

- 1 Open a supported Web browser window.
- 2 Log in to iDRAC6 Web interface.
- 3 In the system tree, select **System**→**Setup** tab→**Remote Syslog Settings**. The **Remote Syslog Settings** screen is displayed.

Table 2-2 lists the Remote Syslog settings.

Table 2-2. Remote Syslog Settings

Attribute	Description
Remote Syslog Enabled	Select this option to enable the transmission and remote capture of the syslog on the specified server. Once syslog is enabled, new log entries are sent to the Syslog server(s).
Syslog Server 1–3	Enter the Remote Syslog server address to log iDRAC6 messages like SEL Log and RAC Log. Syslog server addresses allows alphanumeric, -, ., :, and _ symbols.
Port Number	Enter the port number of the Remote Syslog server. The port number should be between 1 to 65535. Default is 514.



NOTE: The severity levels defined by the Remote Syslog protocol differ from the standard IPMI System Event Log (SEL) severity levels. Hence all iDRAC6 Remote Syslog entries are reported in the syslog server with severity level as **Notice**.

The following example shows the configuration objects and the RACADM command usage to change remote syslog settings:

```
racadm config -g cfgRemoteHosts -o
cfgRhostsSyslogEnable [1/0] ; default is 0

racadm config -g cfgRemoteHosts -o
cfgRhostsSyslogServer1 <servername1> ; default is
blank

racadm config -g cfgRemoteHosts -o
cfgRhostsSyslogServer2 <servername2>; default is
blank

racadm config -g cfgRemoteHosts -o
cfgRhostsSyslogServer3 <servername3>; default is
blank

racadm config -g cfgRemoteHosts -o
cfgRhostsSyslogPort <portnumber>; default is 514
```

Remote File Share

iDRAC6 Remote File Share (RFS) feature allows you to specify a CD/DVD ISO image file located on a network share and make it available to the managed server's operating system as a virtual drive by mounting it as a CD or DVD using NFS or CIFS.



NOTE: This feature works only with IPv4 addresses. IPv6 addresses are currently not supported.

CIFS shared image path should be in the format:

```
//<ipaddress or domain
name>/<share_name>/<pathtoimage>
```

The NFS shared image path should be in the format:


```
<ipaddress>:/<pathtoimage>
```

If a username contains a domain name, then the username must be entered in the form of <user name>@<domain>. For example, `user1@dell.com` is a valid username whereas `dell\user1` is not.

A filename that ends with the IMG extension is redirected as a Virtual Floppy and a filename ending with the ISO extension is redirected as a Virtual CDROM. Remote file share supports only .IMG and .ISO image file formats.

The RFS feature utilizes the underlying virtual media implementation in iDRAC6. You must have Virtual Media privileges to perform an RFS mounting. If a virtual drive is already used by Virtual Media, then the drive will not be available to mount as RFS and vice versa. For RFS to work, Virtual Media in iDRAC6 must be in the *Attach* or *Auto-Attach* modes.

Connection status for RFS is available in iDRAC6 log. Once connected, an RFS mounted virtual drive does not disconnect even if you log out from iDRAC6. The RFS connection is closed if iDRAC6 is reset or the network connection is dropped. GUI and command line options are also available in CMC and iDRAC6 to close the RFS connection. The RFS connection from CMC always overrides an existing RFS mount in iDRAC6.

 **NOTE:** iDRAC6 VFlash feature and RFS are not related.

To enable remote file sharing through iDRAC6 Web interface, do the following:

- 1 Open a supported Web browser window.
- 2 Log in to iDRAC6 Web interface.
- 3 Select **System**→**Remote File Share** tab.

The **Remote File Share** screen is displayed.

Table 2-3 lists the remote file share settings.

Table 2-3. Remote File Server Settings

Attribute	Description
User Name	Username to connect for NFS/CIFS file system.
Password	Password to connect for NFS/CIFS file system.
Image File Path	Path of the file to be shared through remote file share.

Table 2-3. Remote File Server Settings (continued)

Attribute	Description
Status	Connected: The file is shared. Not Connected: The file is not shared. Connecting... : Busy connecting to the share

Click **Connect** to establish a file share connection. The **Connect** button is disabled after successfully establishing a connection.



NOTE: Even if you have configured remote file sharing, the GUI does not display this information due to security reasons.

For remote file share, the remote RACADM command is

```
racadm remoteimage.  
racadm remoteimage <options>
```

Options are:

- c ; connect image
- d ; disconnect image
- u <username>; username to access the network share
- p <password>; password to access the network share
- l <image_location>; image location on the network share; use double quotes around the location
- s ; display current status



CAUTION: All characters including alphanumeric and special characters are allowed as part of username, password, and image_location except the following characters: ' (single quote), " (double quote), ,(comma), < (less than), and > (greater than). When using remote file share, the characters listed above are not allowed as part of the user name, password, and image_location.

Updating iDRAC6 Firmware

Updating iDRAC6 firmware installs a new firmware image in the flash memory. You can update the firmware using any of the following methods:

- iDRAC6 Web interface
- RACADM CLI

- Dell Update Package (for Linux or Microsoft Windows)
- DOS iDRAC6 firmware update utility
- CMC Web interface

Downloading the Firmware or Update Package

Download the firmware from support.dell.com. The firmware image is available in several different formats to support the different update methods available.

To update iDRAC6 firmware using iDRAC6 Web interface or to recover iDRAC6 using CMC Web interface, download the binary image packaged as a self-extracting archive.

To update iDRAC6 firmware from the managed server, download the operating system-specific Dell Update Package (DUP) for the operating system running on the server whose iDRAC6 you are updating.

To update iDRAC6 firmware using the DOS iDRAC6 Firmware update utility, download both the update utility and the binary image, which are packaged in self-extracting archive files.

Executing the Firmware Update



NOTE: When iDRAC6 firmware update begins, all existing iDRAC6 sessions are disconnected and new sessions are not permitted until the update process is completed.



NOTE: The chassis fans run at 100% during iDRAC6 firmware update. When the update is complete, normal fan speed regulation resumes. This is normal behavior, designed to protect the server from overheating during a time when it cannot send sensor information to CMC.


To use a Dell Update Package for Linux or Microsoft Windows, execute the operating-specific DUP on the managed server.


When using iDRAC6 Web interface or CMC Web interface, place the firmware binary image on a disk that is accessible to the management station from which you are running the Web interface. See "Updating iDRAC6 Firmware."



NOTE: iDRAC6 Web interface also allows you to reset iDRAC6 configuration to the factory defaults.

You can use CMC Web interface or CMC RACADM to update iDRAC6 firmware. This feature is available when iDRAC6 firmware is in Normal mode, as well as when it is corrupted. See "Updating iDRAC6 Firmware Using CMC."

 **NOTE:** If the configuration is not preserved during firmware update, iDRAC6 generates new SHA1 and MD5 keys for the SSL certificate. Because the keys are different from those in the open Web browser, all browser windows that are connected to iDRAC6 must be closed after the firmware update is complete. If the browser windows are not closed, an **Invalid Certificate** error message is displayed.

 **NOTE:** If you are rolling back iDRAC6 firmware to an earlier version, delete the existing Internet Explorer ActiveX[®] browser plug-in on any Windows-based management station to allow the firmware to install a compatible version of the ActiveX plug-in.


Verifying the Digital Signature for Linux DUPs

A digital signature is used to authenticate the identity of the signer of a file and to certify that the original content of the file has not been modified since it was signed.

If you do not already have it installed on your system, you must install the Gnu Privacy Guard (GPG) to verify a digital signature. To use the standard verification procedure, perform the following steps:

- 1 Download the Dell Linux public GnuPG key by navigating to lists.us.dell.com and clicking the **Dell Public GPG** key link. Save the file to your local system. The default name is **linux-security-publickey.txt**.
- 2 Import the public key to your GPG trust database by running the following command:

```
gpg --import <Public Key Filename>
```

 **NOTE:** You must have your private key to complete the process.

- 3 To prevent a distrusted-key warning, change the trust level for the Dell Public GPG key.
 - a Enter the following command:

```
gpg --edit-key 23B66A9D
```
 - b Within the GPG key editor, enter **fpr**. The following message appears:

```
pub 1024D/23B66A9D 2001-04-16 Dell, Inc.  
(Product Group) <linux-security@dell.com>  
Primary key fingerprint: 4172 E2CE 955A 1776  
A5E6 1BB7 CA77 951D 23B6 6A9D
```

If the fingerprint of your imported key is the same as above, you have a correct copy of the key.

- c** While still in the GPG key editor, enter `trust`. The following menu appears:

```
Please decide how far you trust this user to  
correctly verify other users' keys (by looking  
at passports, checking fingerprints from  
different sources, etc.)
```


```
1 = I don't know or won't say  
2 = I do NOT trust  
3 = I trust marginally  
4 = I trust fully  
5 = I trust ultimately  
m = back to the main menu
```

Your decision?

- d** Enter `5`, then press `<Enter>`. The following prompt appears:
Do you really want to set this key to ultimate trust? (y/N)
- e** Enter `y` `<Enter>` to confirm your choice.
- f** Enter `quit` `<Enter>` to exit the GPG key editor.

You must import and validate the public key only once.

- 4** Obtain the package you need (for example, the Linux DUP or self-extracting archive) and its associated signature file from the Dell Support website at support.dell.com/support/downloads.

 **NOTE:** Each Linux Update Package has a separate signature file, which is shown on the same Web page as the Update Package. You need both the Update Package and its associated signature file for verification. By default, the signature file has the same name as the DUP filename with a `.sig`

extension. For example, iDRAC6 firmware image has an associated `.sign` file (`IDRAC_FRMW_LX_2.2.BIN.sign`), which is included in the self-extracting archive with the firmware image (`IDRAC_FRMW_LX_2.2.BIN`). To download the files, right-click the **Download** link and use the **Save Target As** option.

5 Verify the Update Package:

```
gpg --verify <Linux Update Package signature filename> <Linux Update Package filename>
```

The following example illustrates the steps that you must follow to verify a Dell PowerEdge™ M610 iDRAC6 Update Package:

1 Download the following two files from support.dell.com:

- `IDRAC_FRMW_LX_2.2.BIN.sign`
- `IDRAC_FRMW_LX_2.2.BIN`

2 Import the public key by running the following command line:

```
gpg --import <linux-security-publickey.txt>
```

The following output message appears:

```
gpg: key 23B66A9D: "Dell Computer Corporation  
(Linux Systems Group) <linux-  
security@dell.com>" not changed  
gpg: Total number processed: 1  
gpg: unchanged: 1
```

3 Set the GPG trust level for the Dell public key, if you haven't done so previously.

a Enter the following command:

```
gpg --edit-key 23B66A9D
```

b At the command prompt, enter the following commands:

```
fpr  
trust
```

c Enter 5, then press <Enter> to choose `I trust ultimately` from the menu.

d Enter `y` <Enter> to confirm your choice.

e Enter `quit` <Enter> to exit the GPG key editor.

This completes validation of the Dell public key.

- 4 Verify the Dell PowerEdge M610 iDRAC6 package digital signature by running the following command:

```
gpg --verify IDRAC_FRMW_LX_2.2.BIN.sign  
IDRAC_FRMW_LX_2.2.BIN
```

The following output message appears:

```
gpg: Signature made Fri Jul 11 15:03:47 2008  
CDT using DSA key ID 23B66A9D  
gpg: Good signature from "Dell, Inc. (Product  
Group) <linux-security@dell.com>"
```

If you have not validated the key as shown in step 3, you will receive additional messages:

```
gpg: WARNING: This key is not certified with a trusted  
signature!  
gpg: There is no indication that the signature belongs  
to the owner.  
Primary key fingerprint: 4172 E2CE 955A 1776 A5E6 1BB7  
CA77 951D 23B6 6A9D
```

Using iDRAC6 Web Interface



NOTE: If iDRAC6 firmware update progress is interrupted before it completes, iDRAC6 firmware may be corrupted. In such cases, you can recover iDRAC6 using CMC Web interface.



NOTE: The firmware update, by default, retains the current iDRAC6 settings. During the update process, you have the option to reset iDRAC6 configuration to the factory defaults. If you set the configuration to the factory defaults, external network access will be disabled when the update completes. You must enable and configure the network using iDRAC6 Configuration Utility.

- 1 Start iDRAC6 Web interface.
- 2 In the system tree, select **System**→**Remote Access**→**iDRAC6**.
- 3 Click the **Update** tab.

The **Firmware Update** screen appears.



NOTE: To update the firmware, iDRAC6 must be placed in an update mode. Once in this mode, iDRAC6 will automatically reset, even if you cancel the update process.


- 4 In the **Upload (Step 1 of 4)** section, click **Browse** to locate the firmware image that you downloaded. You can also enter the path in the text field. For example:

C:\Updates\V2.2*image_name*.

The default firmware image name is **firming.imc**.


- 5 Click **Upload**.

The file uploads to iDRAC6. This may take several minutes to complete.

 **NOTE:** During the upload process, you abort the firmware upgrade process by clicking **Cancel**. Clicking **Cancel** resets iDRAC6 to normal operating mode.

When the upload is complete, the **Firmware Update - Validation (page 2 of 4)** screen displays.

- If the image file uploaded successfully and passed all verification checks, a message appears indicating that the firmware image has been verified.
- If the image did not upload successfully, or it did not pass the verification checks, the firmware update returns to the **Firmware Update** screen. You can try upgrading iDRAC6 again or click **Cancel** to reset iDRAC6 to normal operating mode.

 **NOTE:** If you deselect the **Preserve Configuration** check box, iDRAC6 resets to its default settings. In the default settings, the LAN is disabled, and you cannot log in to iDRAC6 Web interface. You must reconfigure the LAN settings using **iDRAC6 Configuration Utility** during BIOS POST or through CMC.

- 6 By default, the **Preserve Configuration** option is enabled (checked) to preserve the current settings on iDRAC6 after an upgrade. If you do not want the settings to be preserved, clear the **Preserve Configuration** check box.
- 7 Click **Begin Update** to start the upgrade process. Do not interrupt the upgrade process.
- 8 In the **Firmware Update - Updating (page 3 of 4)** window, you will see the status of the update. The progress of the firmware upgrade operation, measured in percentage, appears in the **Progress** column.
- 9 Once the firmware update is complete, the **Firmware Update - Update Results (page 4 of 4)** window will appear and iDRAC6 will reset automatically. You must close the current browser window and reconnect to iDRAC6 using a new browser window.

Updating iDRAC6 Firmware Using RACADM

You can update iDRAC6 firmware using remote RACADM.

- 1 Download iDRAC6 firmware image from the Dell Support website at support.dell.com to the managed system.

For example:

```
C:\downloads\firmimg.imc
```

- 2 Run the following RACADM command:

For example:

```
racadm -r <iDRAC6 IP address> -u <username> -p  
<password> fwupdate -g -u -a <path>
```

where *path* is the location on the TFTP server where **firmimg.imc** is stored.

Using the DOS Update Utility

To update iDRAC6 firmware using the DOS update utility, boot the managed server to DOS, and execute the **idrac16d** command. The syntax for the command is:

```
idrac16d [-f] [-i=<filename>] [-l=<logfile>]
```

When executed with no options, the **idrac16d** command updates iDRAC6 firmware using the firmware image file **firmimg.imc** in the current directory.

The options are as follows:

- **-f** — Forces the update. The **-f** option can be used to *downgrade* the firmware to an earlier image.
- **-i=<filename>** — Specifies the file name of the firmware image. This option is required if the firmware file name has been changed from the default name **firmimg.imc**.
- **-l=<logfile>** — Logs output from the update activity. This option is used for debugging.



NOTE: If you enter incorrect arguments to the **idrac16d** command, or supply the **-h** option, you may notice an additional option, **-nopresconfig** in the usage output. This option is used to update the firmware without preserving any configuration information. It is recommended to **not** use this option because it *deletes* all of your existing iDRAC6 configuration information such as IP addresses, users, and passwords.

Clear Your Browser's Cache

To use the latest iDRAC6 features, clear the browser's cache to remove/delete any *old* Web pages that may be stored on the system.

Updating the USC Repair Package

See the *Dell Lifecycle Controller User Guide* for information on updating the USC repair package from iDRAC6 Web interface.

Configuring iDRAC6 For Use With IT Assistant

Dell OpenManage IT Assistant can discover managed devices that comply with Simple Network Management Protocol (SNMP) v1 and v2c and Intelligent Platform Management Interface (IPMI) v2.0.

iDRAC6 complies with IPMI v2.0. This section describes the steps necessary to configure iDRAC6 for discovery and monitoring by IT Assistant. There are two ways to accomplish this: through iDRAC6 Configuration Utility and through iDRAC6 graphical Web interface.

Using iDRAC6 Configuration Utility to Enable Discovery and Monitoring

To set up iDRAC6 for IPMI discovery and sending alert traps at iDRAC6 Configuration Utility level, restart your managed server (blade) and observe its power-up using the iKVM and either a remote monitor and console keyboard or a Serial over LAN (SOL) connection. When `Press <Ctrl-E> for Remote Access Setup` displays, press `<Ctrl><E>`.

When iDRAC6 Configuration Utility screen appears, use the arrow keys to scroll down.

- 1 Enable IPMI over LAN.
- 2 Enter your site's RMCP+ Encryption Key, if used.



NOTE: See your senior Network Administrator or CIO to discuss implementing this option because it adds valuable security protection and must be implemented site-wide in order to function properly.

- 3 At LAN Parameters, press `<Enter>` to enter the sub-screen. Use Up and Down arrows to navigate.

- 4 Toggle **LAN Alert Enabled** to **On** using the spacebar.
- 5 Enter the IP address of your Management Station into **Alert Destination 1**.
- 6 Enter a name string into **iDRAC6 Name** with a consistent naming convention across your data center. The default is `iDRAC6-{Service Tag}`.

Exit iDRAC6 Configuration Utility by pressing <Esc>, <Esc>, and then pressing <Enter> to save your changes. Your server will now boot into normal operation, and it will be discovered during IT Assistant's next scheduled Discovery pass.



NOTE: You can also use Dell Management Console, the next generation one-to-many systems management application, to enable discovery and monitoring. See the *Dell Management Console User's Guide* on the Dell Support site at support.dell.com/manuals for more information.

Using iDRAC6 Web Interface to Enable Discovery and Monitoring

IPMI Discovery can also be enabled through the remote Web interface:

- 1 Open a supported Web browser window.
- 2 Log in to iDRAC6 Web interface using a login and password with Administrator rights.
- 3 In the system tree, select **System**→**Remote Access**→**iDRAC6**.
- 4 Click the **Network/Security** tab.
The **Network** screen appears.
- 5 Click **IPMI Settings**.
- 6 Ensure the **Enable IPMI Over LAN** check box is selected (checked).
- 7 Select **Administrator** from the **Channel Privilege Level Limit** drop-down menu.
- 8 Enter your site's **RMCP+ Encryption Key**, if used.
- 9 Click **Apply** if you made any changes on this screen.
- 10 In the system tree, select **System**.
- 11 Click the **Alert Management** tab, and then click **Platform Events**.

The **Platform Events** screen appears, displaying a list of events for which you can configure iDRAC6 to generate e-mail alerts.

12 Enable e-mail alerts for one or more events by selecting the check box in the **Generate Alert** column.

13 Click **Apply** if you made any changes on this screen.

14 Click **Trap Settings**.

The **Trap Settings** screen appears.

15 In the first available **Destination IP Address** field in the **IPv4 Destination List** section, select the **Enabled** check box, and then enter the IP address of your Management Station.

16 Click **Apply** if you made any changes on this screen.

You can now send a test trap by clicking the **Send** link in the **Test Trap** column.

Dell highly recommends that for security purposes you create a separate User for IPMI commands with its own user name, IPMI over LAN privileges, and password:

1 In the system tree, select **System**→**Remote Access**→**iDRAC6**.

2 Click the **Network/Security** tab, and then click **Users**.

The **Users** screen appears, displaying a list of all users (defined or undefined).

3 Click the **User ID** of an undefined User.

The **User Configuration** screen for the selected User ID appears.

4 Select the **Enable User** check box, and then enter the user's name and password.

5 In the **IPMI LAN Privilege** section, ensure that **Maximum LAN User Privilege Granted** is set to **Administrator**.

6 Set other user privileges as needed.

7 Click **Apply** to save the new User settings.

Using IT Assistant to View iDRAC6 Status and Events

After discovery is complete, iDRAC6 devices appear in the **Servers** category of the **ITA Devices detail** screen, and iDRAC6 information can be seen by clicking the iDRAC6 name. This is different from DRAC 5 systems, where the management card shows up in the RAC group.

iDRAC6 error and warning traps can now be seen in the primary **Alert Log** of IT Assistant. They display in the **Unknown** category, but the trap description and severity will be accurate.

For more information on using IT Assistant to manage your data center, see the *Dell OpenManage IT Assistant User's Guide*.



NOTE: You can also use Dell Management Console, the next generation one-to-many systems management application, to view iDRAC6 status and events. See the *Dell Management Console User's Guide* on the Dell Support website at support.dell.com/manuals for more information.

Configuring the Management Station

A management station is a computer used to monitor and manage the Dell PowerEdge™ servers and other modules in the chassis. This section describes software installation and configuration tasks that set up a management station to work with iDRAC6 Enterprise. Before you begin configuring iDRAC6, follow the procedures in this section to ensure that you have installed and configured the tools you will need.

Management Station Set Up Steps

To set up your Management Station, perform the following steps:

- 1 Set up the management station network.
- 2 Install and configure a supported Web browser.
- 3 Install a Java® Runtime Environment (JRE) (required if using Firefox).
- 4 Install Telnet or SSH clients, if required.
- 5 Install a TFTP server, if required.
- 6 Install Dell OpenManage IT Assistant (optional).
- 7 Install Dell Management Console (DMC) (optional).

Management Station Network Requirements

To access iDRAC6, the management station must be on the same network as CMC RJ45 connection port labeled "GB1". It is possible to isolate CMC network from the network the managed server is on, so that your management station may have LAN access to iDRAC6 but not to the managed server.

Using iDRAC6 console redirection feature (see "Configuring and Using Serial Over LAN"), you can access the managed server's console even if you do not have network access to the server's ports. You can also perform several management functions on the managed server, such as rebooting the computer and using iDRAC6 facilities. To access network and application services hosted on the managed server, however, you may need an additional NIC in the managed server.

Configuring a Supported Web Browser

The following sections provide instructions for configuring the supported Web browsers for use with iDRAC6 Web interface.

Opening Your Web Browser

iDRAC6 Web interface is designed to be viewed in a supported Web browser at a minimum screen resolution of 800 pixels wide by 600 pixels high. In order to view the interface and access all features, ensure that your resolution is set to at least 800 by 600 pixels and/or resize your browser, as needed.



NOTE: In some situations, most often during the first session after a firmware update, users of Internet Explorer 6 may see the message **Done, with errors** displayed in the browser status bar along with a partially rendered screen in the main browser window. This error can also occur if you are experiencing connectivity problems. This is a known issue with Internet Explorer 6. Close the browser and start again.

Configuring Your Web Browser to Connect to the Web Interface

If you are connecting to iDRAC6 Web interface from a management station that connects to the Internet through a proxy server, you must configure the Web browser to access the Internet from this server.

To configure the Internet Explorer Web browser to access a proxy server, perform the following steps:

- 1 Open a Web browser window.
- 2 Click **Tools**, and click **Internet Options**.
The **Internet Options** window appears.
- 3 Select **Tools**→**Internet Options**→**Security**→**Local Network**.
- 4 Click the **Custom Level**.

- 5 Select **Medium-Low** from the drop-down menu and click **Reset**. Click **OK** to confirm. You will need to re-enter the **Custom Level** dialog by clicking its button.
- 6 Then, scroll down to the section labeled ActiveX controls and plug-ins and check each setting, as different versions of IE have differing settings in **Medium-Low** state:
 - Automatic prompting for ActiveX controls: Enable
 - Binary and script behaviors: Enable
 - Download signed ActiveX controls: Prompt
 - Initialize and script ActiveX controls not marked as safe: Prompt
 - Run ActiveX controls and plug-ins: Enable
 - Script ActiveX controls marked safe for scripting: Enable

In the section on **Downloads**:

- Automatic prompting for file downloads: Enable
- File download: Enable
- Font download: Enable

In the **Miscellaneous** section:

- Allow META-REFRESH: Enable
- Allow scripting of Internet Explorer Web browser control: Enable
- Allow script-initiated windows without size or position constraints: Enable
- Don't prompt for client certificate selection when no certificates or only one certificate exists: Enable
- Launching programs and files in an IFRAME: Enable
- Open files based on content, not file extension: Enable
- Software channel permissions: Low safety
- Submit nonencrypted form data: Enable
- Use Pop-up Blocker: Disable

In the **Scripting** section:

- Active scripting: Enable

- Allow paste operations via script: Enable
- Scripting of Java[®] applets: Enable

7 Select **Tools**→**Internet Options**→**Advanced**.

8 Make sure the following items are checked or unchecked:

In the **Browsing** section:

- Always send URLs as UTF-8: checked
- Disable script debugging (Internet Explorer): checked
- Disable script debugging: (Other): checked
- Display a notification about every script error: unchecked
- Enable Install On demand (Other): checked
- Enable page transitions: checked
- Enable third-party browser extensions: checked
- Reuse windows for launching shortcuts: unchecked

In the **HTTP 1.1 settings** section:

- Use HTTP 1.1: checked
- Use HTTP 1.1 through proxy connections: checked

In the **Java (Sun)** section:

- Use JRE 1.6.x_yz: checked (optional; version may differ)

In the **Multimedia** section:

- Enable automatic image resizing: checked
- Play animations in Web pages: checked
- Play videos in Web pages: checked
- Show pictures: checked

In the **Security** section:

- Check for publishers' certificate revocation: unchecked
- Check for signatures on downloaded programs: unchecked
- Check for signatures on downloaded programs: checked
- Use SSL 2.0: unchecked

- Use SSL 3.0: checked
- Use TLS 1.0: checked
- Warn about invalid site certificates: checked
- Warn if changing between secure and not secure mode: checked
- Warn if forms submittal is being redirected: checked



NOTE: If you choose to alter any of the above settings, it is recommended that you learn and understand the consequences of doing so. For example, if you choose to block pop-ups, portions of iDRAC6 Web interface will not function properly.

- 9 Click **Apply**, then **OK**.
- 10 Click the **Connections** tab.
- 11 Under **Local Area Network (LAN) settings**, click **LAN Settings**.
- 12 If the **Use a proxy server** box is selected, select the **Bypass proxy server for local addresses** box.
- 13 Click **OK** twice.
- 14 Close and restart your browser to make sure all changes take effect.

Adding iDRAC6 to the List of Trusted Domains

When you access iDRAC6 Web interface through the Web browser, you may be prompted to add iDRAC6 IP address to the list of trusted domains if the IP address is missing from the list. When completed, click **Refresh** or relaunch the Web browser to establish a connection to iDRAC6 Web interface.

On some operating systems, Internet Explorer (IE) 8 may not prompt you to add iDRAC6 IP address to the list of trusted domains if the IP address is missing from the list.

To add iDRAC6 IP address to the list of trusted domains in IE8, do the following:

- 1 Select **Tools**→**Internet Options**→**Security**→**Trusted sites**→**Sites**.
- 2 Enter iDRAC6 IP address to the **Add this website to the zone**.
- 3 Click **Add**.
- 4 Click **OK**.

- 5 Click **Close**.
- 6 Click **OK** and then refresh your browser.

When you launch vKVM for the first time through IE8 with Active-X plug-in, a "Certificate Error: Navigation Blocked" message may be displayed.

- 1 Click **Continue to this website**.
- 2 Click **Install** to install Active-X controls on the **Security Warning** window.

The vKVM session is launched.

Viewing Localized Versions of the Web Interface

iDRAC6 Web interface is supported for the following operating system languages:

- English (en-us)
- French (fr)
- German (de)
- Spanish (es)
- Japanese (ja)
- Simplified Chinese (zh-cn)

The ISO identifiers in parentheses denote the specific language variants which are supported. Use of the interface with other dialects or languages is not supported and may not function as intended. For some supported languages, resizing the browser window to 1024 pixels wide may be necessary in order to view all features.

iDRAC6 Web interface is designed to work with localized keyboards for the specific language variants listed above. Some features of iDRAC6 Web interface, such as Console Redirection, may require additional steps to access certain functions/letters. For more details on how to use localized keyboards in these situations, see "Using the Video Viewer." Use of other keyboards is not supported and may cause unexpected problems.



NOTE: See the browser documentation on how to configure or setup different languages and view localized versions of iDRAC6 Web interface.

Setting the Locale in Linux

The console redirection viewer requires a UTF-8 character set to display correctly. If your display is garbled, check your locale and reset the character set if needed.

To set the character set on a Linux client with a Simplified Chinese GUI:

- 1 Open a command terminal.
- 2 Enter `locale` and press <Enter>. Output similar to the following output appears:

```
LANG=zh_CN.UTF-8
LC_CTYPE="zh_CN.UTF-8"
LC_NUMERIC="zh_CN.UTF-8"
LC_TIME="zh_CN.UTF-8"
LC_COLLATE="zh_CN.UTF-8"
LC_MONETARY="zh_CN.UTF-8"
LC_MESSAGES="zh_CN.UTF-8"
LC_PAPER="zh_CN.UTF-8"
LC_NAME="zh_CN.UTF-8"
LC_ADDRESS="zh_CN.UTF-8"
LC_TELEPHONE="zh_CN.UTF-8"
LC_MEASUREMENT="zh_CN.UTF-8"
LC_IDENTIFICATION="zh_CN.UTF-8"
LC_ALL=
```

- 3 If the values include `zh_CN.UTF-8`, no changes are required. If the values do not include `zh_CN.UTF-8`, go to step 4.
- 4 Edit the `/etc/sysconfig/i18n` file with a text editor.
- 5 In the file, apply the following changes:

Current entry:

```
LANG="zh_CN.GB18030"
SUPPORTED="zh_CN.GB18030:zh_CN.GB2312:zh_CN:zh"
```

Updated entry:

```
LANG="zh_CN.UTF-8"
SUPPORTED="zh_CN.UTF-8:zh_CN.GB18030:zh_CN.GB2312:zh_CN:zh"
```

- 6 Log out and then log in to the operating system.

When you switch from any other language, ensure that this fix is still valid. If not, repeat this procedure.

Disabling the Whitelist Feature in Firefox

Firefox has a "whitelist" security feature that requires user permission to install plugins for each distinct site that hosts a plugin. If enabled, the whitelist feature requires you to install a console redirection viewer for each iDRAC6 you visit, even though the viewer versions are identical.

To disable the whitelist feature and avoid unnecessary plugin installations, perform the following steps:

- 1 Open a Firefox Web browser window.
- 2 In the address field, enter `about:config` and press <Enter>.
- 3 In the **Preference Name** column, locate and double-click `xpinstall.whitelist.required`.

The values for **Preference Name**, **Status**, **Type**, and **Value** change to bold text. The **Status** value changes to `user set` and the **Value** value changes to `false`.

- 4 In the **Preferences Name** column, locate `xpinstall.enabled`.
Ensure that **Value** is `true`. If not, double-click `xpinstall.enabled` to set **Value** to `true`.

Installing iDRAC6 Software on the Management Station

Your system includes the *Dell Systems Management Tools and Documentation* DVD. This DVD includes the following components:

- DVD root - Contains the Dell Systems Build and Update Utility, which provides server setup and system installation information
- SYSMGMT - Contains the systems management software products including Dell OpenManage Server Administrator

Installing and Uninstalling RACADM on a Management Station

To use the remote RACADM functions, install RACADM on a management station. See the *Dell OpenManage Management Station Software Installation Guide* available at support.dell.com/manuals for information on how to install DRAC Tools on a management station running Microsoft Windows operating system.

Installing and Uninstalling RACADM on Linux

- 1 Log on as root to the system where you want to install the management station components.
- 2 If necessary, mount the *Dell Systems Management Tools and Documentation* DVD using the following command or a similar command:

```
mount /media/cdrom
```
- 3 Navigate to the `/linux/rac` directory and execute the following command:

```
rpm -ivh *.rpm
```

For help with the RACADM command, type `racadm help` after issuing the previous commands.

To uninstall RACADM, open a command prompt and type:

```
rpm -e <racadm_package_name>
```

where `<racadm_package_name>` is the RPM package used to install iDRAC6 software.

For example, if the RPM package name is `srvadmin-racadm5`, type:

```
rpm -e srvadmin-racadm5
```

Installing a Java Runtime Environment (JRE)




NOTE: If you use Internet Explorer, an ActiveX control is provided for the console viewer. You can also use the Java console viewer with Firefox if you install a JRE and configure the console viewer in iDRAC6 Web interface before you launch the viewer. See "Configuring Console Redirection and Virtual Media in iDRAC6 Web Interface" for more information.

You can choose to use the Java viewer instead before you launch the viewer.

If you use the Firefox browser you must install a JRE (or a Java Development Kit [JDK]) to use the console redirection feature. The console viewer is a Java application that is downloaded to the management station from iDRAC6 Web interface and then launched with Java Web Start on the management station.


Go to java.sun.com to install a JRE or JDK. Version 1.6 (Java 6.0) or higher is recommended.

The Java Web Start program is automatically installed with the JRE or JDK. The file `viewer.jnlp` is downloaded to your desktop and a dialog box prompts you for what action to take. It may be necessary to associate the `.jnlp` extension type with the Java Web Start application in your browser. Otherwise, click **Open with** and then select the `javaws` application, which is located in the `bin` subdirectory of your JRE installation directory.

 **NOTE:** If the `.jnlp` file type is not associated with Java Web Start after installing JRE or JDK, you can set the association manually. For Windows (`javaws.exe`) click **Start**→**Control Panel**→**Appearance and Themes**→**Folder Options**. Under the **File Types** tab, highlight `.jnlp` under **Registered file types**, and then click **Change**. For Linux (`javaws`), start Firefox, and click **Edit**→**Preferences**→**Downloads**, and then click **View and Edit Actions**.


For Linux, once you have installed either JRE or JDK, add a path to the Java `bin` directory to the front of your system `PATH`. For example, if Java is installed in `/usr/java`, add the following line to your local `.bashrc` or `/etc/profile`:

```
PATH=/usr/java/bin:$PATH; export PATH
```

 **NOTE:** There may already be `PATH`-modification lines in the files. Ensure that the path information you enter does not create conflicts.

Installing Telnet or SSH Clients

By default, iDRAC6 Telnet service is disabled and the SSH service is enabled. Since Telnet is an insecure protocol, you should use it only if you cannot install an SSH client or your network connection is otherwise secured.

 **NOTE:** iDRAC6 supports up to 4 Telnet sessions and 4 SSH sessions simultaneously.

Telnet with iDRAC6

Telnet is included in Windows and Linux operating systems, and can be run from a command shell. You may also choose to install a commercial or freely available Telnet client with more convenience features than the standard version included with your operating system.

If your management station is running Windows XP SP1 or Windows 2003, you may experience an issue with the characters in an iDRAC6 Telnet session. This issue may occur as a frozen login where the return key does not respond and the password prompt does not appear.

To fix this issue, download hotfix 824810 from the Microsoft Support website at support.microsoft.com. See Microsoft Knowledge Base article 824810 for more information.



NOTE: The hotfix is needed only for Windows XP SP1 and Windows 2003. Windows XP SP2 fixed the issue.

Configuring the Backspace Key For Telnet Sessions

Depending on the Telnet client, using the <Backspace> key may produce unexpected results. For example, the session may echo ^h. However, most Microsoft and Linux Telnet clients can be configured to use the <Backspace> key.

To configure Microsoft Telnet clients to use the <Backspace> key, perform the following steps:

- 1 Open a command prompt window (if required).
- 2 If you are not running a Telnet session, enter:

```
telnet
```

If you are running a Telnet session, press <Ctrl><]>.

- 3 At the prompt, enter:

```
set bsasdel
```

The following message appears:

```
Backspace will be sent as delete.
```

To configure a Linux Telnet session to use the <Backspace> key, perform the following steps:

- 1 Open a shell and enter:

```
stty erase ^h
```

- 2 At the prompt, enter:

```
telnet
```

SSH With iDRAC6

Secure Shell (SSH) is a command line connection with the same capabilities as a Telnet session, but with session negotiation and encryption to improve security. iDRAC6 supports SSH version 2 with password authentication. SSH is enabled by default on iDRAC6.

You can use free programs like PuTTY or OpenSSH on a management station to connect to the managed server's iDRAC6. When an error occurs during the login procedure, the SSH client issues an error message. The message text is dependent on the client and is not controlled by iDRAC6.



NOTE: OpenSSH should be run from a VT100 or ANSI terminal emulator on Windows. Running OpenSSH at the Windows command prompt does not result in full functionality (that is, some keys do not respond and no graphics are displayed).

iDRAC6 supports up to 4 Telnet sessions and 4 SSH sessions simultaneously. However, only one of those 8 potential sessions may use SM-CLP. That is, iDRAC6 supports only one SM-CLP session at a time. The session timeout is controlled by the `cfgSsnMgtSshIdleTimeout` property as described in "iDRAC6 Enterprise Property Database Group and Object Definitions."

iDRAC6 SSH implementation supports multiple cryptography schemes, as shown in Table 3-1.



NOTE: SSHv1 is not supported.

Table 3-1. Cryptography Schemes

Scheme Type	Scheme
Asymmetric Cryptography	Diffie-Hellman DSA/DSS 512-1024 (random) bits per NIST specification
Symmetric Cryptography	<ul style="list-style-type: none">• AES256-CBC• RIJNDAEL256-CBC• AES192-CBC• RIJNDAEL192-CBC• AES128-CBC• RIJNDAEL128-CBC• BLOWFISH-128-CBC• 3DES-192-CBC• ARCFOUR-128
Message Integrity	<ul style="list-style-type: none">• HMAC-SHA1-160• HMAC-SHA1-96• HMAC-MD5-128• HMAC-MD5-96
Authentication	<ul style="list-style-type: none">• Password

Installing a TFTP Server



NOTE: If you use only iDRAC6 Web interface to transfer SSL certificates and upload new iDRAC6 firmware, no TFTP server is required.

Trivial File Transfer Protocol (TFTP) is a simplified form of the File Transfer Protocol (FTP). It is used with the SM-CLP and RACADM command line interfaces to transfer files to and from iDRAC6.

The only times when you need to copy files to or from iDRAC6 are when you update iDRAC6 firmware or install certificates on iDRAC6. If you choose to use RACADM when you perform these tasks, a TFTP server must be running on a computer iDRAC6 can access through IP address or DNS name.

You can use the `netstat -a` command on Windows or Linux operating systems to see if a TFTP server is already listening. Port 69 is the TFTP default port. If no server is running, you have the following options:

- Find another computer on the network running a TFTP service.
- If you are using Linux, install a TFTP server from your distribution.
- If you are using Windows, install a commercial or free TFTP server.

Installing Dell OpenManage IT Assistant

Your system includes the Dell OpenManage system management software kit. This kit includes, but is not limited to, the following components:

- *Dell Systems Management Tools and Documentation* DVD
- Dell Support website and Readme files — Check Readme files and the Dell Support website at support.dell.com/manuals for the most recent information about your Dell products.

For information on installing IT Assistant, see the *Dell OpenManage IT Assistant User's Guide* available at support.dell.com/manuals.

Installing Dell Management Console

Dell Management Console (DMC) is the next generation one-to-many systems management application that provides similar functionality as the Dell OpenManage IT Assistant and also provides enhanced discovery, inventory, monitoring, and reporting features. It is a Web-based GUI, which is installed on a management station in a networked environment.

You can install DMC from the *Dell Management Console* DVD or download and install it from the Dell website at www.dell.com/openmanage.

See the *Dell Management Console User's Guide* available at support.dell.com/manuals for instructions on installing this software.

Configuring the Managed Server

This section describes tasks to set up the managed server to enhance your remote management capabilities. These tasks include installing the Dell Open Manage Server Administrator software and configuring the managed server to capture the last crash screen.

Installing the Software on the Managed Server

The Dell management software includes the following features:

- **RACADM CLI** — Allows you to configure and administer iDRAC6. It is a powerful tool for scripting configuration and management tasks.
- **Server Administrator** — Is required to use iDRAC6 last-crash-screen feature.
- **Server Administrator Instrumentation Service** — Provides access to detailed fault and performance information gathered by industry-standard systems management agents and allows remote administration of monitored systems, including shutdown, startup, and security.
- **Server Administration Storage Management Service** — Provides storage management information in an integrated graphical view.
- **Server Administrator Logs** — Displays logs of commands issued to or by the system, monitored hardware events, POST events, and system alerts. You can view logs on the home page, print or save them as reports, and send them by e-mail to a designated service contact.

Use the *Dell Systems Management Tools and Documentation* DVD to install Dell OpenManage Server Administrator. For instructions on installing this software, see the *Dell OpenManage Server Administrator Installation Guide* available at support.dell.com/manuals.

Configuring the Managed Server to Capture the Last Crash Screen

iDRAC6 can capture the last crash screen so that you can view it in the Web interface to help troubleshoot the cause of the managed server crash. Follow these steps to enable the last crash screen feature.

- 1 Install the managed server software. For more information, see the *Dell OpenManage Server Administrator Installation Guide* and the *Dell OpenManage Management Station Software Installation Guide*. You can access these documents on the Dell Support website at support.dell.com/manuals.
- 2 If you are running Windows, ensure that **Automatically Reboot** is deselected in the **Windows Startup and Recovery Settings**. See "Disabling the Windows Automatic Reboot Option."
- 3 Enable the **Last Crash Screen** (disabled by default) in iDRAC6 Web interface.

To enable the **Last Crash Screen** in iDRAC6 Web interface, click **System**→**Remote Access**→**iDRAC6**→**Network/Security** tab→**Services**, then check the **Enabled** check box under the **Automated System Recovery Agent Settings** heading.

To enable the Last Crash Screen using local RACADM, open a command prompt on the managed server and enter the following command:

```
racadm config -g cfgRacTuning -o  
cfgRacTuneAsrEnable 1
```

- 4 In the Server Administrator Web interface, enable the **Auto Recovery** timer and set the **Auto Recovery** action to **Reset**, **Power Off**, or **Power Cycle**.

For information about how to configure the **Auto Recovery** timer, see the *Dell OpenManage Server Administrator User's Guide*. To ensure that the last crash screen can be captured, the **Auto Recovery** timer should be set to 60 seconds. The default setting is 480 seconds.

The last crash screen is not available when the **Auto Recovery** action is set to **Shutdown** or **Power Cycle** if the managed server is powered off.

Disabling the Windows Automatic Reboot Option

To ensure that iDRAC6 can capture the last crash screen, disable the **Automatic Reboot** option on managed servers running Windows Server or Windows Vista®.

- 1** Open the Windows **Control Panel** and double-click the **System** icon.
- 2** Click the **Advanced** tab.
- 3** Under **Startup and Recovery**, click **Settings**.
- 4** Deselect the **Automatically Reboot** check box.
- 5** Click **OK** twice.

Configuring iDRAC6 Enterprise Using the Web Interface

iDRAC6 provides a Web interface that enables you to configure iDRAC6 properties and users, perform remote management tasks, and troubleshoot a remote (managed) system for problems. You would typically use the Web interface to perform your daily system management tasks. This chapter provides information about how to perform common systems management tasks with iDRAC6 Web interface and provides links to related information.

Most configuration tasks for which you would use the web interface could also be performed with local or remote RACADM commands or with SM-CLP commands.

Local RACADM commands are executed from the managed server. Remote RACADM is a client utility run on a management station, and makes use of the out-of-band interface to communicate with the managed server. This utility is used with the `-r` option to execute commands over a network. For more information about RACADM, see "Using the RACADM Command Line Interface."

SM-CLP commands are executed in a shell that can be accessed remotely with a Telnet or Secure Shell (SSH) connection. For more information about SM-CLP, see "Using iDRAC6 Enterprise SM-CLP Command Line Interface."

Accessing the Web Interface

To access iDRAC6 Web interface, perform the following steps:

- 1 Open a supported Web browser window.
- 2 In the **Address** field, enter `https://<iDRAC6-IP-address>` and press <Enter>.

If the default HTTPS port number (port 443) has been changed, enter:

`https://<iDRAC6-IP-address>:<port-number>`

where *iDRAC6-IP-address* is the IP address for iDRAC6 and *port-number* is the HTTPS port number.


iDRAC6 **Log in** window appears.

Logging In

You can log in as either an iDRAC6 user, a Microsoft® Active Directory® user, or an LDAP user. The default user name and password are **root** and **calvin**, respectively.

You must have been granted **Login to iDRAC** privilege by the administrator to log in to iDRAC6.

To log in, perform the following steps:

- 1 In the **Username** field, enter one of the following:
 - Your iDRAC6 user name.
 -  **NOTE:** The user name for local users is *case-sensitive*. Examples are `root`, `it_user`, `IT_user`, or `john_doe`.
 - Your Active Directory (AD) user name. The AD domain name can also be selected from the drop-down menu.

You can use any of the following forms for Active Directory names: `<domain>\<username>`, `<domain>/<username>`, or `<user>@<domain>`. They are not case-sensitive. Examples are `dell.com\john_doe`, or `JOHN_DOE@DELL.COM`. Alternatively, you can enter the domain in the **Domain** field.
 - LDAP user name (with no domain name).
- 2 In the **Password** field, enter either your iDRAC6 user password, Active Directory user password, or LDAP password. Passwords are case-sensitive.

- 3 Click **OK** or press <Enter>.

Logging Out

- 1 In the upper-right corner of the main window, click **Log out** to close the session.
- 2 Close the browser window.



NOTE: The **Log out** button does not appear until you log in.



NOTE: Closing the browser without gracefully logging out may cause the session to remain active until the session timeout is reached. It is recommended that you click the **Log out** button to end a session.



NOTE: Closing iDRAC6 Web interface within Internet Explorer® using the close button ("x") at the top right corner of the window may generate an application error. To fix this issue, download the latest Cumulative Security Update for Internet Explorer from the Microsoft Support website, located at support.microsoft.com.



CAUTION: If you have opened multiple Web GUI sessions either through <Ctrl+T> or <Ctrl+N> to access the same iDRAC6 from the same management station, and then log out of any one session, all the Web GUI sessions will be terminated.

Using Multiple Browser Tabs and Windows

Different versions of Web browsers exhibit different behaviors when opening new tabs and windows. Microsoft Internet Explorer 6 does not support tabs; therefore, each browser window opened becomes a new iDRAC6 Web interface session. Internet Explorer (IE) 7 and IE 8 have the option to open tabs as well as windows. Each tab inherits the characteristics of the most recently opened tab. Press <Ctrl+T> to open a new tab and <Ctrl+N> to open a new browser window from the active session. You will be logged in with your already authenticated credentials. Closing any one tab expires all iDRAC6 Web interface tabs. Also, if a user logs in with Power User privileges on one tab, and then logs in as Administrator on another tab, both open tabs then have Administrator privileges.

Tab behavior in Firefox 2 and Firefox 3 is the same as IE 7 and IE 8; new tabs are new sessions. Window behavior in Firefox is different. Firefox windows will operate with the same privileges as the latest window opened. For example, if one Firefox window is open with a Power User logged in and another window is opened with Administrator privileges, **both** users will now have Administrator privileges.

Table 5-1. User Privilege Behavior in Supported Browsers

Browser	Tab Behavior	Window Behavior
Microsoft Internet Explorer 6	Not applicable	New session
Microsoft IE7 and IE8	From latest session opened	New session
Firefox 2 and Firefox 3	From latest session opened	From latest session opened

Configuring iDRAC6 NIC

This section assumes that iDRAC6 has already been configured and is accessible on the network. See "Configure iDRAC6 Networking" for help with the initial iDRAC6 network configuration.

Configuring the Network, IPMI and VLAN Settings



NOTE: You must have **Configure iDRAC6** privilege to perform the following steps.



NOTE: Most DHCP servers require a server to store a client identifier token in its reservations table. The client (iDRAC6, for example) must provide this token during DHCP negotiation. iDRAC6 supplies the client identifier option using a one-byte interface number (0) followed by a six-byte MAC address.

- 1 Click **System**→**Remote Access**→**iDRAC6**.
- 2 Click the **Network/Security** tab.
The **Network** screen appears.
- 3 Configure the **Network**, **IPMI**, and **VLAN** settings as needed. See Table 5-2, Table 5-3, and Table 5-4 for descriptions of the **Network**, **IPMI**, and **VLAN Settings** options.
- 4 Click **Apply**.
- 5 Click the appropriate button to continue.

Table 5-2. Network Settings

Setting	Description
Network Interface Card Settings	

Table 5-2. Network Settings (continued)

Setting	Description
MAC Address	Displays the Media Access Control (MAC) address that uniquely identifies each node in a network. The MAC address cannot be changed.
Enable NIC	When checked, indicates that the NIC is enabled and activates the remaining controls in this group. When a NIC is disabled, all communication to and from iDRAC6 through the network is blocked. The default is Unchecked .
Common Settings	
Register iDRAC6 on DNS	Registers iDRAC6 name on the DNS server. The default is Unchecked .
DNS iDRAC6 Name	Displays iDRAC6 name. The default name is <i>idrac-service_tag</i> , where <i>service_tag</i> is the service tag number of the Dell server. For example: iDRAC-HM8912S.
Use DHCP for DNS Domain Name	Checked : Enable acquisition of DNS from DHCP. Unchecked : Disable acquisition of DNS from DHCP.
DNS Domain Name	The default DNS Domain Name is blank. When the Use DHCP for DNS Domain Name check box is selected, this option is grayed out and the field cannot be modified.
IPv4 Settings	
Enabled	Enables (Checked) or disables (Unchecked) IPv4 protocol support. The Enable NIC option should be checked to activate this setting.
DHCP Enable	If Checked , the Server Administrator obtains the IP address for iDRAC6 NIC from the DHCP server. It also deactivates the IP Address , Subnet Mask , and Gateway fields.
IP Address	Allows you to enter or edit a static IP address for iDRAC6 NIC. To change this setting, deselect the DHCP Enable option.
Subnet Mask	Allows you to enter or edit a subnet mask for iDRAC6 NIC. To change this setting, deselect the DHCP Enable option.
Gateway	Allows you to enter or edit a static IPv4 gateway for iDRAC6 NIC. To change this setting, deselect the DHCP Enable option.

Table 5-2. Network Settings (continued)

Setting	Description
Use DHCP to obtain DNS server addresses	Select the DHCP Enable option to obtain DNS server addresses by selecting the Use DHCP to obtain DNS server addresses check box. When not using DHCP to obtain the DNS server addresses, provide the IP addresses in the Preferred DNS Server and Alternate DNS Server fields.
Preferred DNS Server	Allows you to enter or edit a static IP address for the preferred DNS server. To change this setting, first deselect the Use DHCP to obtain DNS server addresses option.
Alternate DNS Server	Uses the secondary DNS server IP address when Use DHCP to obtain DNS server addresses is not selected. Enter an IP address of 0.0.0.0 if there is no alternate DNS server.
IPv6 Settings	
Enabled	If the check box is Checked , IPv6 is enabled. If the check box is Unchecked , IPv6 is disabled. The default is Unchecked .
Autoconfiguration Enable	Selecting this option allows iDRAC6 to obtain the IPv6 address for iDRAC6 NIC from the Dynamic Host Configuration Protocol (DHCPv6) server. Enabling Autoconfiguration Enable also deactivates and flushes out the static values for IPv6 Address , Prefix Length , and Gateway .
IPv6 Address	Configures the IPv6 address for iDRAC6 NIC. To change this setting, you must first disable Autoconfiguration Enable by deselecting the associated check box. NOTE: Only two IPv6 addresses (Link Local address and the global address) are displayed if your network setup has IPv6 DHCP configured and all sixteen IPv6 addresses are displayed if you have configured your network router to send Router Advertisement messages. NOTE: iDRAC6 does not allow you to save the settings if you enter an IPv6 Address consisting of more than eight groups.
Prefix Length	Configures the prefix length of the IPv6 address. It can be a value between 1 and 128 inclusive. To change this setting, you must first disable Autoconfiguration Enable by deselecting the associated check box.

Table 5-2. Network Settings (continued)

Setting	Description
Gateway	Configures the static IPv6 gateway for iDRAC6 NIC. To change this setting, you must first disable Autoconfiguration Enable by deselecting the associated check box.
Use DHCPv6 to obtain DNS Server addresses	Enable DHCP to obtain IPv6 DNS server addresses by selecting the Use DHCPv6 to obtain DNS Server addresses check box. When not using DHCP to obtain the DNS server addresses, provide the IP addresses in the Preferred DNS Server and Alternate DNS Server fields. The default value is Unchecked . NOTE: When the Use DHCPv6 to obtain DNS Server addresses check box is selected, IP addresses cannot be entered into the Preferred DNS Server and Alternate DNS Server fields.
Preferred DNS Server	Configures the static IPv6 address for the preferred DNS server. To change this setting, deselect Use DHCPv6 to obtain DNS Server Addresses .
Alternate DNS Server	Configures the static IPv6 address for the alternate DNS server. To change this setting, deselect Use DHCPv6 to obtain DNS Server Addresses .

Table 5-3. IPMI Settings

Setting	Description
Enable IPMI Over LAN	When selected, indicates that the IPMI LAN channel is enabled. The default is Unchecked .
Channel Privilege Level Limit	Configures the maximum privilege level for the user that can be accepted on the LAN channel. Select one of the following options: Administrator , Operator , or User . The default is Administrator .
Encryption Key	Configures the encryption key. The encryption key must consist of an even number of hexadecimal characters with a maximum of 40 characters with no spaces. The default IPMI encryption key is all zeros.

Table 5-4. VLAN Settings

Button	Description
Enable VLAN ID	Yes—Enabled. No—Disabled. If enabled, only matched Virtual LAN (VLAN) ID traffic is accepted. NOTE: The VLAN settings can only be configured through CMC Web Interface. iDRAC6 only displays the current enablement status; you can not modify the settings on this screen.
VLAN ID	VLAN ID field of 802.1g fields. Displays a value from 1 to 4094 except 4001 to 4020.
Priority	Priority field of 802.1g fields. This is used to identify the priority of the VLAN ID and displays a value from 0 to 7 for the VLAN Priority.

Table 5-5. Network Configuration Buttons

Button	Description
Advanced Settings	Displays the Network Security screen, allowing you to enter the IP Range and IP Blocking attributes.
Print	Prints the Network configuration values that appear on the screen.
Refresh	Reloads the Network screen.
Apply	Saves any new settings made to the network configuration screen. NOTE: Changes to the NIC IP address settings close all user sessions and require users to reconnect to iDRAC6 Web interface using the updated IP address settings. All other changes require the NIC to be reset, which may cause a brief loss in connectivity.

Configuring IP Filtering and IP Blocking



NOTE: You must have **Configure iDRAC6** privilege to perform the following steps.

- 1 Click **System**→**Remote Access**→**iDRAC6**.
- 2 Click the **Network/Security** tab.
The **Network** screen appears.
- 3 Click **Advanced Settings**.
The **Network Security** screen appears.
- 4 Configure IP filtering and blocking settings as needed. See Table 5-6 for descriptions of the IP filtering and blocking settings.
- 5 Click **Apply**.
- 6 Click the appropriate button to continue. See Table 5-7.

Table 5-6. IP Filtering and Blocking Settings

Settings	Description
IP Range Enabled	Enables the IP Range checking feature, which defines a range of IP addresses that can access iDRAC6. The default is Disabled .
IP Range Address	Determines the acceptable IP subnet address. The default is 192.168.1.0.
IP Range Subnet Mask	Defines the significant bit positions in the IP address. The subnet mask should be in the form of a netmask, where the more significant bits are all 1's with a single transition to all zeros in the lower-order bits. The default is 255.255.255.0.
IP Blocking Enabled	Enables the IP address blocking feature, which limits the number of failed login attempts from a specific IP address for a preselected time span. The default is Disabled .
IP Blocking Fail Count	Sets the number of login failures attempted from an IP address before the login attempts are rejected from that address. The default is 10.
IP Blocking Fail Window	Determines the time span in seconds within which IP Block Fail Count failures must occur to trigger the IP Block Penalty Time. The default is 3600.

Table 5-6. IP Filtering and Blocking Settings (continued)

Settings	Description
IP Blocking Penalty Time	The time span in seconds that login attempts from an IP address with excessive failures are rejected. The default is 3600.

Table 5-7. Network Security Buttons

Button	Description
Print	Prints the Network Security values that appear on the screen.
Refresh	Reloads the Network Security screen.
Apply	Saves any new settings that you made to the Network Security screen.
Go Back to Network Configuration Page	Returns to the Network screen.

Configuring Platform Events

Platform event configuration provides a mechanism for configuring iDRAC6 to perform selected actions on certain event messages. The actions include no action, reboot system, power cycle system, power off system, and generate an alert (Platform Event Trap [PET] and/or e-mail).

The filterable platform events are listed in Table 5-8.

Table 5-8. Filterable Platform Events

Index	Platform Event
1	Battery Probe Warning
2	Battery Probe Failure
3	Discrete Voltage Probe Failure
4	Temperature Probe Warning
5	Temperature Probe Failure
6	Processor Failure

Table 5-8. Filterable Platform Events (continued)

Index	Platform Event
7	Processor Absent
8	Hardware Log Failure
9	Automatic System Recovery
10	SD Card Failure
11	Redundancy Lost

When a platform event occurs (for example, a *Battery Probe Warning*), a system event is generated and recorded in the System Event Log (SEL). If this event matches a platform event filter (PEF) that is enabled and you have configured the filter to generate an alert (PET or e-mail), then a PET or e-mail alert is sent to one or more configured destinations.

If the same platform event filter is also configured to perform an action (such as rebooting the system), the action is performed.

Configuring Platform Event Filters (PEF)



NOTE: Configure platform event filters before you configure the platform event traps or e-mail alert settings.

- 1 Log in to iDRAC6 Web interface.
- 2 Click **System**, and then click the **Alert Management** tab.
The **Platform Events** screen appears.
- 3 Select the **Generate Alert** option beside each event for which you want an alert to be generated.




NOTE: You may enable or disable alert generation for all events by selecting or deselecting the check box next to the **Generate Alert** column heading.

- 4 Select the radio button below the action you would like to enable for each event. You can only select one action for each event.
- 5 Click **Apply**.




NOTE: The event's **Generate Alert** check box must be selected in order for an alert to be sent for that event.


Configuring Platform Event Traps (PET)

 **NOTE:** You must have **Configure iDRAC** permission to add or enable/disable an SNMP alert. The following options will not be available if you do not have **Configure iDRAC** permission.

- 1 Log in to iDRAC6 Web interface.
- 2 Ensure that you followed the procedures in "Configuring Platform Event Filters (PEF)."
- 3 Click **System**, and then click the **Alert Management** tab.
The **Platform Events** screen appears.
- 4 Click **Trap Settings**.
The **Trap Settings** screen is displayed.
- 5 Configure your PET destination IP address:
 - a Select the **Enabled** check box next to the **Destination Number** you would like to activate.
 - b Enter an IP address in the appropriate IPv4 or IPv6 **Destination IP Address** box.

 **NOTE:** The destination community string must be the same as iDRAC6 community string.

- c Click **Apply**.

 **NOTE:** To successfully send a trap, configure the **Community String** value. The **Community String** value indicates the community string to use in a Simple Network Management Protocol (SNMP) alert trap sent from iDRAC6. SNMP alert traps are transmitted by iDRAC6 when a platform event occurs. The default setting for the **Community String** is **Public**.

- d To test the configured alert, click **Send**.
- e To add an additional destination IP address, repeat step a through step d. You may specify up to four IPv4 and four IPv6 destination addresses.

Configuring E-Mail Alerts

- 1 Log in to iDRAC6 Web interface.
- 2 Ensure that you followed the procedures in "Configuring Platform Event Filters (PEF)."

- 3 Click **System**, and then click the **Alert Management** tab.

The **Platform Events** screen appears.

- 4 Click **Email Alert Settings**.

The **Email Alert Settings** screen appears.

- 5 Configure your e-mail alert destination.

- a Select the **Enabled** check box for the first undefined e-mail alert.
- b Enter a valid e-mail address in the **Destination Email Address** field.
- c Click **Apply**.




NOTE: To successfully send a test e-mail, the SMTP (Email) Server must be configured in the **SMTP (Email) Server Address Settings** section of the **Email Alert Settings** screen. Specify an SMTP server in the field provided using either the dot separated format (for example, 192.168.1.1) or the DNS name. The IP address of the SMTP Server communicates with iDRAC6 to send e-mail alerts when a platform event occurs.

- d In the **Modify Source Email Name** field, enter the originator e-mail for the alert, or leave it blank to use the default e-mail originator. The default is blade_slot@iDRAC6 IP Address.
 - If the **Modify Source Email Name** field is blank, iDRAC6 host name is configured, and DNS Domain Name is active, then the source e-mail address is: <iDRAC6 host name>@<DNS Domain name>.
 - If the field is blank, iDRAC6 host name is blank, and the DNS Domain Name is active, then the source e-mail address is :<iDRAC6 Slotx>@<DNS Domain name>.
 - If the field is blank, iDRAC6 host name is blank, and the DNS Domain Name is blank, then the source e-mail address is: <iDRAC6 Slotx>@<iDRAC6 IP Address>.
 - If the field is "a string without @", and DNS Domain Name is active, then the source e-mail address is: <a string without @>@<DNS Domain name>.
 - If the field is "a string without @", and DNS Domain Name is blank, then the source e-mail address is :<a string without @>@<iDRAC6 IP Address>.


- If the field is "a string with @", and DNS Domain Name is active, then the source e-mail address is: <a string with @>@<DNS Domain name>.
 - If the field is "a string with @", and the DNS Domain Name is blank, then the source e-mail address is: <a string with @>@<iDRAC6 IP Address>.
- e** Click **Send** to test the configured e-mail alert (if desired).
- f** To add an additional e-mail alert destination, repeat **step a** through **step e**. You may specify up to four e-mail alert destinations.

Configuring IPMI Over LAN


- 1** Log in to iDRAC6 Web interface.
- 2** Configure IPMI over LAN:
 - a** Click **System**→**Remote Access**→**iDRAC6**, and then click the **Network/Security** tab.
The **Network** screen appears.
 - b** Click **IPMI Settings**.
 - c** Select the **Enable IPMI Over LAN** check box.
 - d** Update the **Channel Privilege Level Limit**, if required:

 **NOTE:** This setting determines the IPMI commands that can be executed from the IPMI over LAN interface. For more information, see the IPMI 2.0 specifications.

Under **IPMI Settings**, click the **Channel Privilege Level Limit** drop-down menu, select **Administrator**, **Operator**, or **User**, and then click **Apply**.
 - e** Set the IPMI LAN channel encryption key, if required.

 **NOTE:** iDRAC6 IPMI supports the RMCP+ protocol.

Under **IPMI Settings** in the **Encryption Key** field, enter the encryption key.
 - f** Click **Apply**.
- 3** Configure IPMI Serial over LAN (SOL):

- a Click **System**→**Remote Access**→**iDRAC6**, and then click the **Network/Security** tab.
The **Network** screen appears.
 - b Click the **Serial Over LAN** tab.
 - c Select **Enable Serial Over LAN**.
 - d Update the **IPMI SOL Baud Rate**, if needed, by selecting a data speed from the **Baud Rate** drop-down menu.
-  **NOTE:** To redirect the serial console over the LAN, ensure that the **SOL Baud Rate** is identical to your managed server's baud rate.
- e Click **Apply**.
 - f Configure IP filtering and blocking settings as needed in the **Advanced Settings** page.

Adding and Configuring iDRAC6 Users

To manage your system with iDRAC6 and maintain system security, create unique users with specific administrative permissions (or *role-based authority*).

To add and configure iDRAC6 users, perform the following steps:

 **NOTE:** You must have **Configure iDRAC** permission to perform the following steps.

- 1 Click **System**→**Remote Access**→**iDRAC6**→**Network/Security**→**Users**.

The **Users** screen displays each user's **User ID**, **State**, **User Name**, **IPMI LAN Privileges**, **iDRAC6 Privileges**, and **Serial Over LAN** capability.

 **NOTE:** **User-1** is reserved for the IPMI anonymous user and is not configurable.

- 2 In the **User ID** column, click a user ID number.
- 3 On the **User Main Menu** page (see Table 5-9, Table 5-10, and Table 5-11), you can either configure a user, upload a SSH public key file, or view or delete a specified SSH key or all SSH keys.

Public Key Authentication over SSH

iDRAC6 supports the Public Key Authentication (PKA) over SSH. This authentication method improves SSH scripting automation by removing the need to embed or prompt for a user ID/password.

Before you Begin

You can configure up to 4 public keys *per user* that can be used over an SSH interface. Before adding or deleting public keys, ensure that you use the view command to see what keys are already set up, so a key is not accidentally overwritten or deleted. When the PKA over SSH is set up and used correctly, you do not have to enter the password when logging into iDRAC6. This can be very useful for setting up automated scripts to perform various functions.

When getting ready to set up this functionality, be aware of the following:

- You can manage this feature with RACADM and also from the GUI.
- When adding new public keys, ensure that the existing keys are not already at the index where the new key is added. iDRAC6 does not perform checks to ensure previous keys are deleted before a new one is added. As soon as a new key is added, it is automatically in effect as long as the SSH interface is enabled.

Generating Public Keys for Windows

Before adding an account, a public key is required from the system that will access iDRAC6 over SSH. There are two ways to generate the public/private key pair: using *PuTTY Key Generator* application for clients running Windows or *ssh-keygen* CLI for clients running Linux. The *ssh-keygen* CLI utility comes by default on all standard installations.

This section describes simple instructions to generate a public/private key pair for both applications. For additional or advanced usage of these tools, see the application Help.

To use the *PuTTY Key Generator* for Windows clients to create the basic key:

- 1** Start the application and select either SSH-2 RSA or SSH-2 DSA for the type of key to generate. SSH-1 is not supported.
- 2** Enter the number of bits for the key. The supported key generation algorithms are RSA and DSA only. The number must be between 768 and 4096 bits for RSA and 1024 bits for DSA.
- 3** Click **Generate** and move the mouse in the window as directed. After the key is created, you can modify the key comment field. You can also enter a passphrase to make the key secure. Ensure that you save the private key.

- 4 You can save the public key to a file using the **Save public key** option to upload it later. All uploaded keys must be in RFC 4716 or openSSH formats. If not, you must convert the same into those formats.

Generating Public Keys for Linux

The *ssh-keygen* application for Linux clients is a command line tool with no graphical user interface.

Open a terminal window and at the shell prompt, enter:

```
ssh-keygen -t rsa -b 1024 -C testing
```



NOTE: The options are case-sensitive.

where,

-t can be either *dsa* or *rsa*.

-b specifies the bit encryption size between 768 and 4096.

-C allows modifying the public key comment and is optional.

After the command executes, upload the public file.



NOTE: Keys generated from the Linux management station using *ssh-keygen* are not in RFC4716 but openSSH format. The openSSH public keys can be uploaded to iDRAC6. iDRAC6 public key algorithm validates both the openSSH and RFC4716 keys, internally converts the RFC4716 keys to the openSSH format, and then internally stores the keys.



NOTE: iDRAC6 does not support *ssh-agent* forward of keys.

Logging in Using Public Key Authentication

After the public keys are uploaded, you can log into iDRAC6 over SSH without entering a password. You also have the option of sending a single RACADM command as a command line argument to the SSH application. The command line options behave like remote RACADM since the session ends after the command is completed.

For example:

Logging in:

```
ssh username@<domain>
```

or

```
ssh username@<IP_address>
```

where IP_address is the IP address of iDRAC6.

Sending RACADM commands:

```
ssh username@<domain> racadm getversion
```

```
ssh username@<domain> racadm getsetl
```

See "Uploading, Viewing, and Deleting SSH Keys Using RACADM" for information on how to upload, view, and delete SSH keys using RACADM.

Table 5-9. SSH Key Configurations

Option	Description
Upload SSH Key(s)	Allows the local user to upload a SSH public key file. If a key is uploaded, the content of the key file is displayed in a non-editable text box on the User Configuration page.
View/Remove SSH Key(s)	Allows the local user to view or delete a specified SSH key or all SSH keys.

The **Upload SSH Key(s)** page allows you to upload a SSH public key file. If a key is uploaded, the contents of the key file is displayed in a non-editable text box on the **View/Remove SSH Key(s)** page.

Table 5-10. Upload SSH Key(s)

Option	Description
File/Text	Select the File option and type the path where the key is located. You can also select the Text option and paste the contents of the key file in the box. You can upload new key(s) or overwrite existing key(s). To upload a key file, click Browse , select the file, and then click the Apply button. NOTE: The Key text paste option is supported for public keys in the openSSH format. Text paste option for the RFC4716 format key is not supported.
Browse	Click this button to locate the full path and file name of the key.

The **View/Remove SSH Key(s)** page enables you to view or remove the user's SSH public keys.

Table 5-11. View/Remove SSH Key(s)

Option	Description
Remove	The uploaded key is displayed in the box. Select the Remove option and click Apply to delete the existing key.

- 1 If you select **Configure User** and click **Next**, the **User Configuration** page is displayed.
- 2 On the **User Configuration** screen, configure the user's properties and privileges.

Table 5-12 describes the **General** settings for configuring an iDRAC6 user name and password.

Table 5-13 describes the **IPMI LAN Privileges** for configuring the user's LAN privileges.

Table 5-14 describes the **User Group** permissions for the **IPMI LAN Privileges** and **iDRAC6 User Privileges** settings.

Table 5-15 describes **iDRAC6 Group** permissions. If you add an **iDRAC6 User Privilege** to the **Administrator**, **Power User**, or **Guest User**, **iDRAC6 Group** will change to the **Custom** group.

- 3 When completed, click **Apply**.
- 4 Click the appropriate button to continue. See Table 5-16.

Table 5-12. General Properties

Property	Description
User ID	Contains one of 16 preset User ID numbers. This field cannot be edited.
Enable User	When Checked , indicates that the user's access to iDRAC6 is enabled. When Unchecked , user access is disabled.

Table 5-12. General Properties (continued)

Property	Description
User Name	Specifies an iDRAC6 user name with up to 16 characters. Each user must have a unique user name. NOTE: User names on iDRAC6 cannot include the @, #, \$, %, /, . characters and are case-sensitive. NOTE: If the user name is changed, the new name will not appear in the user interface until the next user login.
Change Password	Enables the New Password and Confirm New Password fields. When deselected, the user's Password cannot be changed.
New Password	Enables editing iDRAC6 user's password. Enter a Password with up to 20 characters. The characters will not display. NOTE: Special characters like <, >, and \ are not allowed and are blocked while creating user passwords.
Confirm New Password	Re-enter iDRAC6 user's password to confirm.

Table 5-13. IPMI LAN Privilege

Property	Description
Maximum LAN User Privilege Granted	Specifies the user's maximum privilege on the IPMI LAN channel to one of the following user groups: None , Administrator , Operator , or User .
Enable Serial Over LAN	Allows the user to use IPMI Serial Over LAN. When Checked , this privilege is enabled.

Table 5-14. Other Privilege

Property	Description
iDRAC6 Group	Specifies the user's maximum iDRAC6 user privilege as one of the following: Administrator , Power User , Guest User , Custom , or None . See Table 5-15 for iDRAC6 Group permissions.
Login to iDRAC6	Enables the user to log in to iDRAC6.

Table 5-14. Other Privilege (continued)

Property	Description
Configure iDRAC6	Enables the user to configure iDRAC6.
Configure Users	Enables the user to allow specific users to access the system. CAUTION: The capability to upload, view, and/ or delete SSH keys is based on the "Configure Users" user privilege. This privilege allows user(s) to configure any other user's SSH key. Given the importance of SSH Keys, grant this privilege very carefully.
Clear Logs	Enables the user to clear iDRAC6 logs.
Execute Server Control Commands	Enables the user to execute RACADM commands.
Access Console Redirection	Enables the user to run Console Redirection.
Access Virtual Media	Enables the user to run and use Virtual Media.
Test Alerts	Enables the user to send test alerts (e-mail and PET) to all currently configured alert recipients.
Execute Diagnostic Commands	Enables the user to run diagnostic commands.

Table 5-15. iDRAC6 Group Permissions

User Group	Permissions Granted
Administrator	Login to iDRAC6, Configure iDRAC6, Configure Users, Clear Logs, Execute Server Control Commands, Access Console Redirection, Access Virtual Media, Test Alerts, Execute Diagnostic Commands
Power User	Login to iDRAC6, Clear Logs, Execute Server Control Commands, Access Console Redirection, Access Virtual Media, Test Alerts
Guest User	Login to iDRAC6

Table 5-15. iDRAC6 Group Permissions (continued)

User Group	Permissions Granted
Custom	Selects any combination of the following permissions: Login to iDRAC6, Configure iDRAC6, Configure Users, Clear Logs, Execute Server Control Commands, Access Console Redirection, Access Virtual Media, Test Alerts, Execute Diagnostic Commands
None	No assigned permissions

Table 5-16. User Configuration Buttons

Button	Action
Print	Prints the User Configuration values that appear on the screen.
Refresh	Reloads the User Configuration screen.
Apply	Saves any new settings made to the user configuration.
Go Back To Users Page	Returns to the Users screen.

Securing iDRAC6 Communications Using SSL and Digital Certificates

This section provides information about the following data security features that are incorporated in iDRAC6:

- Secure Sockets Layer (SSL)
- Certificate Signing Request (CSR)
- Accessing the SSL main menu
- Generating a new CSR
- Uploading a server certificate
- Viewing a server certificate

Secure Sockets Layer (SSL)

iDRAC6 includes a Web server that is configured to use the industry-standard SSL security protocol to transfer encrypted data over a network. Built upon public-key and private-key encryption technology, SSL is a widely accepted technology for providing authenticated and encrypted communication between clients and servers to prevent eavesdropping across a network.

An SSL-enabled system can perform the following tasks:

- Authenticate itself to an SSL-enabled client
- Allow the client to authenticate itself to the server
- Allow both systems to establish an encrypted connection

The encryption process provides a high level of data protection. iDRAC6 employs the 128-bit SSL encryption standard, the most secure form of encryption generally available for Internet browsers in North America.

iDRAC6 Web server has a Dell self-signed SSL digital certificate (Server ID) by default. To ensure high security over the Internet, replace the Web server SSL certificate with a certificate signed by a well-known Certificate Authority (CA). A Certificate Authority is a business entity that is recognized in the IT industry for meeting high standards of reliable screening, identification, and other important security criteria. Examples of CAs include Thawte® and VeriSign®. To initiate the process of obtaining a signed certificate, you can use iDRAC6 Web interface to generate a Certificate Signing Request (CSR) with your company's information. You can then submit the generated CSR to a CA such as VeriSign or Thawte.

Certificate Signing Request (CSR)

A CSR is a digital request to a Certificate Authority (CA) for a secure server certificate. Secure server certificates allow clients of the server to trust the identity of the server and to negotiate an encrypted session with the server.

After the CA receives a CSR, they review and verify the information the CSR contains. If the applicant meets the CA's security standards, the CA issues a digitally-signed certificate that uniquely identifies that applicant for transactions over networks and on the Internet.

After the CA approves the CSR and sends the certificate, upload the certificate to iDRAC6 firmware. The CSR information stored on iDRAC6 firmware must match the information contained in the certificate, that is, the certificate must have been generated in response to the CSR created by iDRAC6.

Accessing the SSL Main Menu

- 1 Click **System**→**Remote Access**→**iDRAC6**→**Network/Security** tab.
- 2 Click **SSL** to open the **SSL** screen.

Table 5-17 describes the options available when generating a CSR.

Table 5-18 describes the available buttons on the **SSL Main Menu** screen.

Table 5-17. SSL Main Menu Options

Field	Description
Generate a New Certificate Signing Request (CSR)	Select the option and click Next to open the Generate Certificate Signing Request (CSR) screen. NOTE: Each new CSR overwrites the previous CSR on the firmware. For a CA to accept your CSR, the CSR in the firmware must match the certificate returned from the CA.
Upload Server Certificate	Select the option and click Next to open the Certificate Upload screen and upload the certificate sent to you by the CA. NOTE: Only X509, Base 64-encoded certificates are accepted by iDRAC6. DER-encoded certificates are not accepted.
View Server Certificate	Select the option and click Next to open the View Server Certificate screen and view the existing server certificate.

Table 5-18. SSL Main Menu Buttons

Button	Description
Print	Prints the SSL values that appear on the screen.
Refresh	Reloads the SSL screen.
Next	Processes the information on the SSL screen and continues to the next step.

Generating a New Certificate Signing Request



NOTE: Each new CSR overwrites any previous CSR data stored in the firmware. The CSR in the firmware must match the certificate returned from the CA. Otherwise, iDRAC6 will not accept the certificate.

- 1 On the **SSL** screen, select **Generate a New Certificate Signing Request (CSR)** and click **Next**.
- 2 On the **Generate Certificate Signing Request (CSR)** screen, enter a value for each CSR attribute.
Table 5-19 describes the **Generate Certificate Signing Request (CSR)** screen options.
- 3 Click **Generate** to create the CSR.
- 4 Click **Download** to save the CSR file to your remote management station.
- 5 Click the appropriate button to continue. See Table 5-20.

Table 5-19. Generate Certificate Signing Request (CSR) Options

Field	Description
Common Name	The exact name being certified (usually the Web server's domain name, for example, www.xyzcompany.com). Only alphanumeric characters, spaces, hyphens, underscores, and periods are valid.
Organization Name	The name associated with this organization (for example, XYZ Corporation). Only alphanumeric characters, hyphens, underscores, periods, and spaces are valid.
Organization Unit	The name associated with an organizational unit, such as a department (for example, Information Technology). Only alphanumeric characters, hyphens, underscores, periods, and spaces are valid.
Locality	The city or other location of the entity being certified (for example, Round Rock). Only alphanumeric characters and spaces are valid. Do not separate words using an underscore or other character.
State Name	The state or province where the entity who is applying for a certification is located (for example, Texas). Only alphanumeric characters and spaces are valid. Do not use abbreviations.

Table 5-19. Generate Certificate Signing Request (CSR) Options (continued)

Field	Description
Country Code	The name of the country where the entity applying for certification is located.
Email	The e-mail address associated with the CSR. Enter the company's e-mail address, or any e-mail address associated with the CSR. This field is optional.
Key Size	The size of the Certificate Signing Request (CSR) Key to be generated. The size may be 1024 KB or 2048 KB.

Table 5-20. Generate Certificate Signing Request (CSR) Buttons

Button	Description
Print	Prints the Generate Certificate Signing Request (CSR) values that appear on the screen.
Refresh	Reloads the Generate Certificate Signing Request (CSR) screen.
Generate	Generates a CSR and then prompts the user to save it to a specified directory.
Download	Downloads the certificate to the local computer.
Go Back to SSL Main Menu	Returns the user to the SSL screen.

Uploading a Server Certificate

- 1 In the SSL screen, select **Upload Server Certificate** and click **Next**.

The **Certificate Upload** screen appears.

- 2 In the **File Path** field, enter the path to the certificate or click **Browse** to navigate to the certificate file on the management station.



NOTE: The **File Path** value displays the file path of the certificate you are uploading. You must enter the file path, which includes the full path and the complete file name and file extension.

- 3 Click **Apply**.
- 4 Click the appropriate button to continue. See Table 5-21.

Table 5-21. Certificate Upload Buttons

Button	Description
Print	Prints the values that appear on the Certificate Upload screen
Refresh	Reloads the Certificate Upload screen
Apply	Applies the certificate to iDRAC6 firmware
Go Back to SSL Main Menu	Returns the user to the SSL Main Menu screen

Viewing a Server Certificate

- 1 On the **SSL** screen, select **View Server Certificate** and click **Next**.
Table 5-22 describes the fields and associated descriptions listed in the **View Server Certificate** window.
- 2 Click the appropriate button to continue. See Table 5-23.

Table 5-22. View Server Certificate Information


Field	Description
Serial Number	Certificate serial number
Subject Information	Certificate attributes entered by the subject
Issuer Information	Certificate attributes returned by the issuer
Valid From	Issue date of the certificate
Valid To	Expiration date of the certificate

Table 5-23. View Server Certificate Buttons

Button	Description
Print	Prints the View Server Certificate values that appear on the screen.
Refresh	Reloads the View Server Certificate screen.
Go Back to SSL Main Menu	Return to the SSL Main Menu screen.

Configuring and Managing Microsoft Active Directory Certificates

 **NOTE:** You must have **Configure iDRAC** permission to configure Active Directory and upload, download, and view an Active Directory certificate.

 **NOTE:** For more information about Active Directory configuration and how to configure Active Directory with the standard schema or an extended schema, see "Using iDRAC6 Directory Service."

To access the **Microsoft Active Directory** summary screen, click **System**→**Remote Access**→**iDRAC6**→**Network/Security** tab→**Directory Service**→**Microsoft Active Directory**.

Table 5-24 lists the **Active Directory** summary options. Click the appropriate button to continue.

Table 5-24. Active Directory Options

Field	Description
Common Settings	Displays commonly configured Active Directory settings.
Active Directory CA Certificate	Displays the certificate of the CA that signs all the domain controller's SSL server certificates.
Standard Schema Settings/Extended Schema Settings	Depending on the current Active Directory configuration, Extended Schema Settings or Standard Schema Settings are displayed.
Configure Active Directory	Click this option to configure Step 1 of 4 in Active Directory Settings. The Step 1 of 4 Active Directory page allows you to upload an Active Directory CA certificate to iDRAC6, view the current Active Directory CA Certificate that has been uploaded to iDRAC6, or enable certificate validation.
Test Settings	Click this option to test the Active Directory configuration using the settings you specified.
Kerberos Keytab Upload	Click this option to upload the Kerberos Keytab to iDRAC6. For information on how to create a keytab file, see "Enabling Kerberos Authentication".

Table 5-25. Active Directory Buttons

Button	Definition
Print	Prints the Active Directory values that appear on the screen.
Refresh	Reloads the Active Directory screen.

Configuring Active Directory (Standard Schema and Extended Schema)

- 1 On the Active Directory summary screen, click **Configure Active Directory**.
- 2 On the **Step 1 of 4 Active Directory** screen, you can either enable certificate validation, upload the Active Directory CA certificate in iDRAC6, or view the current Active Directory CA certificate.

Table 5-26 describes the settings and selections for each step in the **Active Directory Configuration and Management** process. Click the appropriate button to continue.

Table 5-26. Active Directory Configuration Settings

Setting	Description
Step 1 of 4 Active Directory Configuration and Management	
Certificate Validation Enabled	Specifies whether Certificate validation is enabled or disabled. If Checked , Certificate Validation is enabled. iDRAC6 uses LDAP over Secure Socket Layer (SSL) while connecting to Active Directory. By default, iDRAC6 provides strong security by using the CA certificate loaded in iDRAC6 to validate the SSL server certificate of the domain controllers during SSL handshake. Certificate validation can be disabled for testing purposes.
Upload Active Directory CA Certificate	To upload an Active Directory CA certificate, click Browse , select the file, and click Upload . Ensure that the domain controller's SSL certificates have been signed by the same CA and that this Certificate is available on the management station accessing iDRAC6. The File Path value displays the file path of the certificate you are uploading. If you choose not to browse to the certificate, enter the file path which includes the full path and the complete file name and file extension.

Table 5-26. Active Directory Configuration Settings (continued)

Setting	Description
Current Active Directory CA Certificate	Displays the Active Directory CA Certificate that was uploaded to iDRAC6.
Step 2 of 4 Active Directory Configuration and Management	
Active Directory Enabled	Select this option if you want to enable Active Directory.
Enable Smart-Card Login	Select this option to enable Smart Card login. You are prompted for a Smart Card logon during any subsequent logon attempts using the GUI. NOTE: The Smart Card based Two Factor Authentication (TFA) and Single Sign-on are supported only in Microsoft Windows operating systems with Internet Explorer. Also, Terminal Services (Remote Desktop) under Windows XP® does not support Smart Card operation. However, Windows Vista® supports such usage.
Enable Single Sign-on	Select this option if you want to log into iDRAC6 without entering your domain user authentication credentials, such as user name and password. If you enable Single Sign-on (SSO) and then logout, you can log back in using SSO. If you are already logged in using SSO and then logout or if SSO fails, the normal login webpage is displayed. NOTE: Enabling Smart-Card logon or Single Sign-on does not disable any command line out-of-band interfaces including SSH, Telnet, remote RACADM, and IPMI over LAN. NOTE: The Smart Card based Two Factor Authentication (TFA) and the single sign-on (SSO) features are not supported if the Active directory is configured for Extended schema.
User Domain Name	Enter the User Domain Name entries. If configured, a list of user domain names appears on the login page as a drop-down menu. If not configured, Active Directory users can still log in by entering the user name in the format user_name@domain_name or domain_name/user_name. Add: Adds a new User Domain Name entry to the list. Edit: Modifies an existing User Domain Name entry. Delete: Deletes a User Domain Name entry from the list.

Table 5-26. Active Directory Configuration Settings (continued)

Setting	Description
Timeout	Enter the maximum time (in seconds) to wait for Active Directory queries to complete.
Look Up Domain Controllers with DNS	<p>Select the Look Up Domain Controllers with DNS option to obtain the Active Directory domain controllers from a DNS lookup. When this option is selected, Domain Controller Server Addresses 1-3 are ignored. Select User Domain from Login to perform the DNS lookup with the domain name of the login user. Otherwise, select Specify a Domain and enter the domain name to use on the DNS lookup. iDRAC6 attempts to connect to each of the addresses (first 4 addresses returned by the DNS look up) one by one until it makes a successful connection.</p> <p>If Extended Schema is selected, the domain controllers are where iDRAC6 device object and the Association objects are located. If Standard Schema is selected, the domain controllers are where the user accounts and the role groups are located.</p>
Specify Domain Controller Addresses	<p>Select the Specify Domain Controller Addresses option to allow iDRAC6 to use the Active Directory Domain Controller server addresses that are specified. When this option is selected, DNS lookup is not performed. Specify the IP address or the Fully Qualified Domain Name (FQDN) of the domain controllers. When the Specify Domain Controller Addresses option is selected, at least one of the three addresses is required to be configured. iDRAC6 attempts to connect to each of the configured addresses one by one until it makes a successful connection.</p> <p>If Standard Schema is selected, these are the addresses of the domain controllers where the user accounts and the role groups are located. If Extended Schema is selected, these are the addresses of the domain controllers where iDRAC6 device object and the Association objects are located.</p>

Step 3 of 4 Active Directory Configuration and Management

Table 5-26. Active Directory Configuration Settings (continued)

Setting	Description
Extended Schema Selection	<p>Select this option if you want to use Extended Schema with Active Directory.</p> <p>Click Next to display the Step 4 of 4 Active Directory Configuration and Management page.</p> <p>iDRAC6 Name: Specifies the name that uniquely identifies iDRAC6 in Active Directory. This value is NULL by default.</p> <p>iDRAC6 Domain Name: The DNS name (string) of the domain where the Active Directory iDRAC object resides. This value is NULL by default.</p> <p>These settings are displayed only if iDRAC6 has been configured for use with an Extended Active Directory Schema.</p>

Table 5-26. Active Directory Configuration Settings (continued)

Setting	Description
Standard Schema Selection	<p>Select this option if you want to use Standard Schema with Active Directory.</p> <p>Click Next to display the Step 4a of 4 Active Directory page.</p> <p>Select the Look Up Global Catalog Servers with DNS option and enter the Root Domain Name to use on a DNS lookup to obtain the Active Directory Global Catalog Servers. When this option is selected, Global Catalog Server Addresses 1-3 are ignored. iDRAC6 attempts to connect to each of the addresses (first 4 addresses returned by the DNS lookup) one by one until it makes a successful connection. A Global Catalog server is required only for Standard Schema in the case that the user accounts and the role groups are in different domains.</p> <p>Select the Specify Global Catalog Server Addresses option and enter the IP address or the FQDN of the Global Catalog server(s). When this option is selected, DNS lookup is not performed. At least one of the three addresses must be configured. iDRAC6 attempts to connect to each of the configured addresses one by one until it makes a successful connection. Global Catalog server is required only for Standard Schema in the case that the user accounts and the role groups are in different domains.</p> <p>Role Groups: Specifies the list of role groups associated with iDRAC6.</p> <p>Group Name: Specifies the name that identifies the role group in the Active Directory associated with iDRAC6.</p> <p>Group Domain: Specifies the group domain type where the Role Group resides.</p> <p>Role Group Privileges: Specifies the group privilege level. (see Table 5-27)</p> <p>These settings are displayed only if iDRAC6 has been configured for use with a Standard Active Directory Schema.</p>

Table 5-27. Role Group Privileges

Setting	Description
Role Group Privilege Level	Specifies the user's maximum iDRAC6 user privilege as one of the following: Administrator, Power User, Guest User, None, or Custom . See Table 5-28 for Role Group permissions.
Login to iDRAC6	Allows the group login access to iDRAC6.
Configure iDRAC6	Allows the group permission to configure iDRAC6.
Configure Users	Allows the group permission to configure users.
Clear Logs	Allows the group permission to clear logs.
Execute Server Control Commands	Allows the group permission to execute server control commands.
Access Console Redirection	Allows the group access to Console Redirection.
Access Virtual Media	Allows the group access to Virtual Media.
Test Alerts	Allows the group to send test alerts (e-mail and PET) to a specific user.
Execute Diagnostic Commands	Allows the group permission to execute diagnostic commands.

Table 5-28. Role Group Permissions

Property	Description
Administrator	Login to iDRAC6, Configure iDRAC6, Configure Users, Clear Logs, Execute Server Control Commands, Access Console Redirection, Access Virtual Media, Test Alerts, Execute Diagnostic Commands
Power User	Login to iDRAC6, Clear Logs, Execute Server Control Commands, Access Console Redirection, Access Virtual Media, Test Alerts

Table 5-28. Role Group Permissions (continued)

Property	Description
Guest User	Login to iDRAC6
Custom	Selects any combination of the following permissions: Login to iDRAC6, Configure iDRAC6, Configure Users, Clear Logs, Execute Server Control Commands, Access Console Redirection, Access Virtual Media, Test Alerts, Execute Diagnostic Commands
None	No assigned permissions

Viewing an Active Directory CA Certificate

On the **Active Directory** summary page, click **Configure Active Directory** and then click **Next**. The **Current Active Directory CA Certificate** section is displayed. See Table 5-29.

Table 5-29. Active Directory CA Certificate Information

Field	Description
Serial Number	Certificate serial number.
Subject Information	Certificate attributes entered by the subject.
Issuer Information	Certificate attributes returned by the issuer.
Valid From	Certificate issue date.
Valid To	Certificate expiration date.

Enabling or Disabling Local Configuration Access



NOTE: The default setting for local configuration access is **Enabled**.

Enabling Local Configuration Access

- 1 Click **System**→**Remote Access**→**iDRAC6**→**Network/Security**→**Services**.
- 2 Under **Local Configuration**, click to **Uncheck** the **Disable iDRAC6 local USER Configuration Updates** to enable access.
- 3 Click **Apply**.

Disabling Local Configuration Access

- 1 Click **System**→**Remote Access**→**iDRAC6**→**Network/Security**→**Services**.
- 2 Under **Local Configuration**, click to select **Disable iDRAC6 local USER Configuration Updates** to disable access.
- 3 Click **Apply**.

Configuring iDRAC6 Services



NOTE: To modify these settings, you must have **Configure iDRAC6** permission.



NOTE: When you apply changes to services, the changes take effect immediately. Existing connections may be terminated without warning.



NOTE: There is a known issue with the Telnet client supplied with Microsoft Windows. Use another Telnet client such as HyperTerminal or PuTTY.

- 1 Click **System**→**Remote Access**→**iDRAC6**, and then click the **Network/Security** tab.
- 2 Click **Services** to open the **Services** configuration screen.
- 3 Configure the following services, as required:
 - **Web server** — see Table 5-30 for Web server settings
 - **SSH** — see Table 5-31 for SSH settings
 - **Telnet** — see Table 5-32 for Telnet settings
 - **Automated System Recovery Agent** — see Table 5-33 for Automated System Recovery Agent settings
- 4 Click **Apply**.

Table 5-30. Web Server Settings

Setting	Description
Enabled	Enables or disables iDRAC6 Web server. When Checked , indicates that the Web server is enabled. The default value is Checked .
Max Sessions	The maximum number of simultaneous web server sessions allowed for this system. This field is not editable. There can be 4 simultaneous web server sessions.

Table 5-30. Web Server Settings (continued)

Setting	Description
Active Sessions	The number of current sessions on the system, less than or equal to the Max Sessions . This field is not editable.
Timeout	The time, in seconds, that a connection is allowed to remain idle. The session is cancelled when the timeout is reached. Changes to the timeout setting take affect immediately and will reset the Web server. Timeout range is 60 to 10800 seconds. The default is 1800 seconds.
HTTP Port Number	The port on which iDRAC6 listens for a browser connection. The default is 80.
HTTPS Port Number	The port on which iDRAC6 listens for a secure browser connection. The default is 443 .

Table 5-31. SSH Settings

Setting	Description
Enabled	Enables or disables SSH. When Checked , the check box indicates that SSH is enabled.
Max Sessions	The maximum number of simultaneous SSH sessions allowed for this system. 4 simultaneous SSH sessions are supported. You can not edit this field.
Active Sessions	The number of current sessions on the system. You can not edit this field.
Timeout	The secure shell idle timeout, in seconds. Timeout range is 60 to 10800 seconds. Enter 0 seconds to disable the Timeout feature. The default is 1800 .
Port Number	The port on which iDRAC6 listens for an SSH connection. The default is 22 .

Table 5-32. Telnet Settings

Setting	Description
Enabled	Enables or disables Telnet. When Checked , Telnet is enabled. The default value is Unchecked .


Table 5-32. Telnet Settings (continued)


Setting	Description
Max Sessions	The maximum number of simultaneous Telnet sessions allowed for this system. 4 simultaneous Telnet sessions are supported. You can not edit this field.
Active Sessions	The number of current Telnet sessions on the system. You can not edit this field.
Timeout	The Telnet idle timeout, in seconds. Timeout range is 60 to 10800 seconds. Enter 0 seconds to disable the Timeout feature. The default is 1800.
Port Number	The port on which iDRAC6 listens for a Telnet connection. The default is 23.

Table 5-33. Automated System Recovery Agent


Setting	Description
Enabled	Enables the Automated System Recovery Agent.

Updating iDRAC6 Firmware

 **NOTE:** If iDRAC6 firmware becomes corrupted, as could occur if iDRAC6 firmware update is interrupted before it completes, you can recover iDRAC6 using CMC. See your *CMC Firmware User Guide* for instructions.

 **NOTE:** The firmware update, by default, retains the current iDRAC6 settings. During the update process, you have the option to reset iDRAC6 configuration to the factory defaults. If you set the configuration to the factory defaults, external network access will be disabled when the update completes. You must enable and configure the network using iDRAC6 Configuration Utility or CMC Web interface.

- 1 Start iDRAC6 Web interface.
- 2 Click **System**→**Remote Access**→**iDRAC6**, and then click the **Update** tab.

 **NOTE:** To update the firmware, iDRAC6 must be placed in an update mode. Once in this mode, iDRAC6 will automatically reset, even if you cancel the update process.

- 3 In the **Firmware Update - Upload** (page 1 of 4) window, click **Browse** and select the firmware image.

For example:

C:\Updates\V2.2*<image_name>*.

The default firmware image name is **firmimg.imc**.

- 4 Click **Upload**. The file will be uploaded to iDRAC6. This may take several minutes to complete.
- 5 In the **Upload (Step 2 of 4)** page, you will see the results of the validation performed on the image file you uploaded.
 - If the image file is uploaded successfully and passed all verification checks, a message will appear indicating that the firmware image has been verified.
 - If the image did not upload successfully, or it did not pass the verification checks, reset iDRAC6, close the current session, and then try updating again.




NOTE: If you uncheck the **Preserve Configuration** check box, iDRAC6 resets to its default settings. In the default settings, the LAN is disabled. You will not be able to log in to iDRAC6 Web interface. You will have to reconfigure the LAN settings using CMC Web interface or iKVM using iDRAC6 Configuration Utility during BIOS POST.

- 6 By default the **Preserve Configuration** check box is **Checked** to preserve the current settings on iDRAC6 after an upgrade. If you do not want the settings to be preserved, uncheck the **Preserve Configuration** check box.
- 7 In the **Updating (step 3 of 4)** window, you will see the status of the upgrade. The progress of the firmware upgrade operation, measured in percent, will appear in the **Progress** column.
- 8 Once the firmware update is complete, the **Firmware Update - Update Results (page 4 of 4)** window will appear and iDRAC6 will reset automatically. To continue accessing iDRAC6 through the web interface, close the current browser window and reconnect to iDRAC6 using a new browser window.

Updating iDRAC6 Firmware Using CMC

Typically, iDRAC6 firmware is updated using iDRAC6 utilities, such as iDRAC6 Web interface or operating system specific update packages downloaded from support.dell.com.

You can use CMC Web interface or RACADM to update iDRAC6 firmware. This feature is available both when iDRAC6 firmware is in Normal mode, as well as when it is corrupted.

 **NOTE:** See the *Chassis Management Controller Firmware User Guide* for instructions for using CMC Web interface.

To update iDRAC6 firmware, perform the following steps:

- 1 Download the latest iDRAC6 firmware to your management station from support.dell.com.
- 2 Log in to CMC Web interface.
- 3 Click **Chassis** in the system tree.
- 4 Click the **Update** tab. The **Firmware Update** screen appears.
- 5 Select iDRAC6 or multiple iDRAC6s of the same model to update by selecting the **Update Targets** check box.
- 6 Click the **Apply iDRAC6 Enterprise Update** button below iDRAC6 component list.
- 7 Click **Browse**, browse to iDRAC6 firmware image you downloaded, and click **Open**.
- 8 Click **Begin Firmware Update**.

After the firmware image file has been uploaded to CMC, iDRAC6 updates itself with the image.

iDRAC6 Firmware Rollback

iDRAC6 has the provision to maintain two simultaneous firmware images. You can choose to boot from (or rollback to) the firmware image of your choice.

- 1 Open iDRAC6 Web interface and log in to the remote system.
Click **System**→**Remote Access**→**iDRAC6**, and then click the **Update** tab.
- 2 Click **Rollback**. The current and the rollback firmware versions are displayed on the **Rollback (Step 2 of 3)** page.
- 3 Click **Next** to start the firmware rollback process.
On the **Rollback (Step 3 of 3)** page, you see the status of the rollback operation. On successful completion, it shows that the process completed successfully.

If the firmware rollback is successful, iDRAC6 will reset automatically. To continue working with iDRAC6 through the web interface, close the current browser and reconnect to iDRAC6 using a new browser window. An appropriate error message is displayed if an error occurs.



NOTE: The **Preserve Configuration** feature does not work if you want to rollback iDRAC6 firmware from version 2.2 to version 2.1.

Using iDRAC6 Directory Service

A directory service maintains a common database for storing information about users, computers, printers, etc. on a network. If your company uses either the Microsoft® Active Directory® or the LDAP Directory Service software, you can configure the software to provide access to iDRAC6, allowing you to add and control iDRAC6 user privileges to your existing users in your directory service.

Using iDRAC6 With Microsoft Active Directory



NOTE: Using Active Directory to recognize iDRAC6 users is supported on the Microsoft Windows 2000, Windows Server® 2003, and Windows Server 2008 operating systems.

Table 6-1 shows iDRAC6 Active Directory user privileges.

Table 6-1. iDRAC6 User Privileges

Privilege	Description
Login to iDRAC6	Enables the user to log in to iDRAC6
Configure iDRAC6	Enables the user to configure iDRAC6
Configure Users	Enables the user to allow specific users to access the system
Clear Logs	Enables the user to clear iDRAC6 logs
Execute Server Control Commands	Enables the user to execute RACADM commands
Access Console Redirection	Enables the user to run Console Redirection
Access Virtual Media	Enables the user to run and use Virtual Media
Test Alerts	Enables the user to send test alerts (e-mail and PET) to a specific user
Execute Diagnostic Commands	Enables the user to run diagnostic commands

Prerequisites for Enabling Active Directory Authentication for iDRAC6

To use the Active Directory authentication feature of iDRAC6, you must have already deployed an Active Directory infrastructure. See the Microsoft website for information on how to set up an Active Directory infrastructure, if you don't already have one.

iDRAC6 uses the standard Public Key Infrastructure (PKI) mechanism to authenticate securely into the Active Directory; therefore, you would also require an integrated PKI into the Active Directory infrastructure.

See the Microsoft website for more information on the PKI setup.

To correctly authenticate to all the domain controllers, you also need to enable the Secure Socket Layer (SSL) on all domain controllers that iDRAC6 connects to. See "Enabling SSL on a Domain Controller" for more specific information.

Supported Active Directory Authentication Mechanisms

You can use Active Directory to define user access on iDRAC6 through two methods: you can use the *extended schema* solution, which Dell has customized to add Dell-defined Active Directory objects. Or, you can use the *standard schema* solution, which uses Active Directory group objects only. See the sections that follow for more information about these solutions.

When using Active Directory to configure access to iDRAC6, you must choose either the extended schema or the standard schema solution.

The advantages of using the extended schema solution are:

- All of the access control objects are maintained in Active Directory.
- Maximum flexibility is provided in configuring user access on different iDRAC6 cards with varying privilege levels.

The advantage of using the standard schema solution is that no schema extension is required because all of the necessary object classes are provided by Microsoft's default configuration of the Active Directory schema.

Extended Schema Active Directory Overview

Using the extended schema solution requires the Active Directory schema extension, as described in the following section.

Extending the Active Directory Schema

Important: The schema extension for this product is different from the previous generations of Dell Remote Management products. You must extend the new schema and install the new **Active Directory Users and Computers Microsoft Management Console (MMC) Snap-in** on your directory. The old schema does not work with this product.



NOTE: Extending the new schema or installing the new extension to Active Directory User and Computer Snap-in has no impact on previous versions of the product.

The schema extender and Active Directory Users and Computers MMC Snap-in extension are available on the *Dell Systems Management Tools and Documentation* DVD. For more information, see "Extending the Active Directory Schema" and "Installing the Dell Extension to the Active Directory Users and Computers Snap-In." For further details on extending the schema for iDRAC6 and installing the Active Directory Users and Computers MMC Snap-in, see the *Dell OpenManage Installation and Security User's Guide* available on support.dell.com/manuals.



NOTE: When you create iDRAC6 Association Objects or iDRAC6 Device Objects, select **Dell Remote Management Object Advanced**.

Active Directory Schema Extensions

The Active Directory data is a distributed database of Attributes and Classes. The Active Directory schema includes the rules that determine the type of data that can be added or included in the database. The user class is one example of a Class that is stored in the database. Some example user class attributes can include the user's first name, last name, phone number, and so on. Companies can extend the Active Directory database by adding their own unique Attributes and Classes to solve environment-specific needs. Dell has extended the schema to include the necessary changes to support remote management Authentication and Authorization.

Each Attribute or Class that is added to an existing Active Directory Schema must be defined with a unique ID. To maintain unique IDs across the industry, Microsoft maintains a database of Active Directory Object

Identifiers (OIDs) so that when companies add extensions to the schema, they can be guaranteed to be unique and not to conflict with each other. To extend the schema in Microsoft's Active Directory, Dell received unique OIDs, unique name extensions, and uniquely linked attribute IDs for our attributes and classes that are added into the directory service.

- Dell extension is: `dell`
- Dell base OID is: `1.2.840.113556.1.8000.1280`
- RAC LinkID range is: `12070 to 12079`

Overview of iDRAC6 Schema Extensions

To provide the greatest flexibility in the multitude of customer environments, Dell provides a group of properties that can be configured by the user depending on the desired results. Dell has extended the schema to include an Association, Device, and Privilege property. The Association property is used to link together the users or groups with a specific set of privileges to one or more iDRAC6 devices. This model provides an Administrator maximum flexibility over the different combinations of users, iDRAC6 privileges, and iDRAC6 devices on the network without adding too much complexity.

Active Directory Object Overview

For each physical iDRAC6 device on the network that you want to integrate with Active Directory for Authentication and Authorization, create at least one Association Object and one iDRAC6 Device Object. You can create multiple Association Objects, and each Association Object can be linked to as many users, groups of users, or iDRAC6 Device Objects as required. The users and iDRAC6 user groups can be members of any domain in the enterprise.

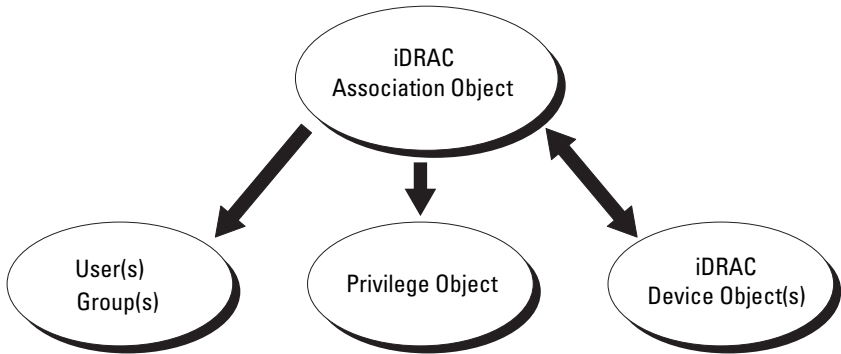
However, each Association Object can be linked (or, may link users, groups of users, or iDRAC6 Device Objects) to only one Privilege Object.

This example allows an Administrator to control each user's privileges on specific iDRAC6 devices.

iDRAC6 Device object is the link to iDRAC6 firmware for querying Active Directory for authentication and authorization. When iDRAC6 is added to the network, the Administrator must configure iDRAC6 and its device object with its Active Directory name so users can perform authentication and authorization with Active Directory. Additionally, the Administrator must add iDRAC6 to at least one Association Object in order for users to authenticate.

Figure 6-1 illustrates that the Association Object provides the connection that is needed for all of the Authentication and Authorization.

Figure 6-1. Typical Setup for Active Directory Objects



You can create as many or as few association objects as required. However, you must create at least one Association Object, and you must have one iDRAC6 Device Object for each iDRAC6 device on the network that you want to integrate with Active Directory for Authentication and Authorization with iDRAC6.

The Association Object allows for as many or as few users and/or groups as well as iDRAC6 Device Objects. However, the Association Object only includes one Privilege Object per Association Object. The Association Object connects the *Users* who have *Privileges* on iDRAC6 devices.

The Dell extension to the ADUC MMC Snap-in only allows associating the Privilege Object and iDRAC6 Objects from the same domain with the Association Object. The Dell extension does not allow a group or an iDRAC6 object from other domains to be added as a product member of the Association Object.

When adding Universal Groups from separate domains, create an Association Object with Universal Scope. The Default Association objects created by the Dell Schema Extender Utility are Domain Local Groups and will not work with Universal Groups from other domains.

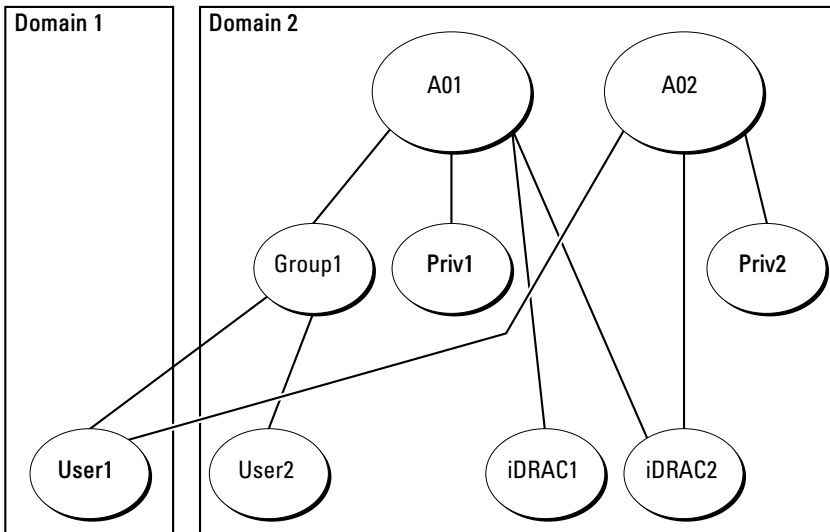
Users, user groups, or nested user groups from any domain can be added into the Association Object. Extended Schema solutions support any user group type and any user group nesting across multiple domains allowed by Microsoft Active Directory.

Accumulating Privileges Using Extended Schema

The Extended Schema Authentication mechanism supports Privilege Accumulation from different privilege objects associated with the same user through different Association Objects. In other words, Extended Schema Authentication accumulates privileges to allow the user the super set of all assigned privileges corresponding to the different privilege objects associated with the same user.

Figure 6-2 provides an example of accumulating privileges using Extended Schema.

Figure 6-2. Privilege Accumulation for a User



The figure shows two Association Objects—A01 and A02. User1 is associated to iDRAC2 through both association objects. Therefore, User1 has accumulated privileges that are the result of combining the privileges set for objects Priv1 and Priv2 on iDRAC2.

For example, Priv1 has these privileges: Login, Virtual Media, and Clear Logs and Priv2 has these privileges: Login to iDRAC, Configure iDRAC, and Test Alerts. As a result, User1 now has the privilege set: Login to iDRAC, Virtual Media, Clear Logs, Configure iDRAC, and Test Alerts, which is the combined privilege set of Priv1 and Priv2.

Extended Schema Authentication accumulates privileges to allow the user the maximum set of privileges possible considering the assigned privileges of the different privilege objects associated to the same user.

In this configuration, User1 has both Priv1 and Priv2 privileges on iDRAC2. User1 has Priv1 privileges on iDRAC1 only. User2 has Priv1 privileges on both iDRAC1 and iDRAC2. In addition, this figure shows that User1 can be in a different domain and can be a member of a group.

Configuring Extended Schema Active Directory to Access iDRAC6

Before using Active Directory to access iDRAC6, configure the Active Directory software and iDRAC6 by performing the following steps in order:

- 1** Extend the Active Directory schema (see "Extending the Active Directory Schema").
- 2** Extend the Active Directory Users and Computers Snap-in (see "Installing the Dell Extension to the Active Directory Users and Computers Snap-In").
- 3** Add iDRAC6 users and their privileges to Active Directory (see "Adding iDRAC6 Users and Privileges to Active Directory").
- 4** Enable SSL on each of your domain controllers (see "Enabling SSL on a Domain Controller").
- 5** Configure iDRAC6 Active Directory properties using either iDRAC6 Web interface or the RACADM (see "Configuring Microsoft Active Directory With Extended Schema Using iDRAC6 Web Interface" or "Configuring Active Directory With Extended Schema Using RACADM").

Extending your Active Directory schema adds a Dell organizational unit, schema classes and attributes, and example privileges and association objects to the Active Directory schema. Before you extend the schema, ensure that you have Schema Admin privileges on the Schema Master Flexible Single Master Operation (FSMO) Role Owner of the domain forest.

You can extend your schema using one of the following methods:

- Dell Schema Extender utility

- LDIF script file

If you use the LDIF script file, the Dell organizational unit will not be added to the schema.

The LDIF files and Dell Schema Extender are located on your *Dell Systems Management Tools and Documentation* DVD in the following respective directories:

- *DVD drive*:\SYSMGMT\ManagementStation\support\OMActiveDirectory_Tools\Remote_Management_Advanced\LDIF_Files
- *<DVD drive>*:\SYSMGMT\ManagementStation\support\OMActiveDirectory_Tools\Remote_Management_Advanced\Schema Extender

To use the LDIF files, see the instructions in the readme included in the **LDIF_Files** directory. To use the Dell Schema Extender to extend the Active Directory Schema, see "Using the Dell Schema Extender."

You can copy and run the Schema Extender or LDIF files from any location.

Using the Dell Schema Extender



CAUTION: The Dell Schema Extender uses the SchemaExtenderOem.ini file. To ensure that the Dell Schema Extender utility functions properly, do not modify the name of this file.

- 1 In the **Welcome** screen, click **Next**.
- 2 Read and understand the warning and click **Next**.
- 3 Select **Use Current Log In Credentials** or enter a user name and password with schema administrator rights.
- 4 Click **Next** to run the Dell Schema Extender.
- 5 Click **Finish**.

The schema is extended. To verify the schema extension, use the MMC and the Active Directory Schema Snap-in to verify that the following exist:

- Classes (see Table 6-2 through Table 6-7)
- Attributes (Table 6-8)

See your Microsoft documentation for details about using the MMC and the Active Directory Schema Snap-in.

Table 6-2. Class Definitions for Classes Added to the Active Directory Schema

Class Name	Assigned Object Identification Number (OID)
delliDRACDevice	1.2.840.113556.1.8000.1280.1.7.1.1
delliDRACAssociation	1.2.840.113556.1.8000.1280.1.7.1.2
dellRAC4Privileges	1.2.840.113556.1.8000.1280.1.1.1.3
dellPrivileges	1.2.840.113556.1.8000.1280.1.1.1.4
dellProduct	1.2.840.113556.1.8000.1280.1.1.1.5

Table 6-3. dellRacDevice Class

OID	1.2.840.113556.1.8000.1280.1.7.1.1
Description	Represents the Dell iDRAC6 device. iDRAC6 must be configured as delliDRACDevice in Active Directory. This configuration enables iDRAC6 to send Lightweight Directory Access Protocol (LDAP) queries to Active Directory.
Class Type	Structural Class
SuperClasses	dellProduct
Attributes	dellSchemaVersion dellRacType

Table 6-4. delliDRACAssociationObject Class

OID	1.2.840.113556.1.8000.1280.1.7.1.2
Description	Represents the Dell Association Object. The Association Object provides the connection between the users and the devices.
Class Type	Structural Class
SuperClasses	Group
Attributes	dellProductMembers dellPrivilegeMember

Table 6-5. dellRAC4Privileges Class

OID	1.2.840.113556.1.8000.1280.1.1.1.3
Description	Defines the privileges (Authorization Rights) for iDRAC6
Class Type	Auxiliary Class
SuperClasses	None
Attributes	dellIsLoginUser dellIsCardConfigAdmin dellIsUserConfigAdmin dellIsLogClearAdmin dellIsServerResetUser dellIsConsoleRedirectUser dellIsVirtualMediaUser dellIsTestAlertUser dellIsDebugCommandAdmin

Table 6-6. dellPrivileges Class

OID	1.2.840.113556.1.8000.1280.1.1.1.4
Description	Used as a container Class for the Dell Privileges (Authorization Rights).
Class Type	Structural Class
SuperClasses	User
Attributes	dellRAC4Privileges

Table 6-7. dellProduct Class

OID	1.2.840.113556.1.8000.1280.1.1.1.5
Description	The main class from which all Dell products are derived.
Class Type	Structural Class
SuperClasses	Computer
Attributes	dellAssociationMembers

Table 6-8. List of Attributes Added to the Active Directory Schema

Attribute Name/Description	Assigned OID/Syntax Object Identifier	Single Valued
dellPrivilegeMember List of dellPrivilege Objects that belong to this Attribute.	1.2.840.113556.1.8000.1280.1.1.2.1 Distinguished Name (LDAPTYPE_DN 1.3.6.1.4.1.1466.115.121.1.12)	FALSE
dellProductMembers List of dellRacDevice and DelliDRACDevice Objects that belong to this role. This attribute is the forward link to the dellAssociationMembers backward link. Link ID: 12070	1.2.840.113556.1.8000.1280.1.1.2.2 Distinguished Name (LDAPTYPE_DN 1.3.6.1.4.1.1466.115.121.1.12)	FALSE
dellIsLoginUser TRUE if the user has Login rights on the device.	1.2.840.113556.1.8000.1280.1.1.2.3 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellIsCardConfigAdmin TRUE if the user has Card Configuration rights on the device.	1.2.840.113556.1.8000.1280.1.1.2.4 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellIsUserConfigAdmin TRUE if the user has User Configuration rights on the device.	1.2.840.113556.1.8000.1280.1.1.2.5 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellIsLogClearAdmin TRUE if the user has Log Clearing rights on the device.	1.2.840.113556.1.8000.1280.1.1.2.6 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellIsServerResetUser TRUE if the user has Server Reset rights on the device.	1.2.840.113556.1.8000.1280.1.1.2.7 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellIsConsoleRedirectUser TRUE if the user has Console Redirection rights on the device.	1.2.840.113556.1.8000.1280.1.1.2.8 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE

Table 6-8. List of Attributes Added to the Active Directory Schema (continued)

Attribute Name/Description	Assigned OID/Syntax Object Identifier	Single Valued
dellIsVirtualMediaUser TRUE if the user has Virtual Media rights on the device.	1.2.840.113556.1.8000.1280.1.1.2.9 Boolean (LDAPATYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellIsTestAlertUser TRUE if the user has Test Alert User rights on the device.	1.2.840.113556.1.8000.1280.1.1.2.10 Boolean (LDAPATYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellIsDebugCommandAdmin TRUE if the user has Debug Command Admin rights on the vdevice.	1.2.840.113556.1.8000.1280.1.1.2.11 Boolean (LDAPATYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellSchemaVersion The Current Schema Version is used to update the schema.	1.2.840.113556.1.8000.1280.1.1.2.12 Case Ignore String (LDAPATYPE_CASEIGNORESTRING 1.2.840.113556.1.4.905)	TRUE
dellRacType This attribute is the Current RAC Type for the dellIDRACDevice object and the backward link to the dellAssociationObjectMembers forward link.	1.2.840.113556.1.8000.1280.1.1.2.13 Case Ignore String (LDAPATYPE_CASEIGNORESTRING 1.2.840.113556.1.4.905)	TRUE
dellAssociationMembers List of dellAssociationObjectMembers that belong to this Product. This attribute is the backward link to the dellProductMembers linked attribute. Link ID: 12071	1.2.840.113556.1.8000.1280.1.1.2.14 Distinguished Name (LDAPATYPE_DN 1.3.6.1.4.1.1466.115.121.1.12)	FALSE

Installing the Dell Extension to the Active Directory Users and Computers Snap-In

When you extend the schema in Active Directory, you must also extend the Active Directory Users and Computers Snap-in so the administrator can manage iDRAC6 devices, Users and User Groups, iDRAC6 Associations, and iDRAC6 Privileges.

When you install your systems management software using the *Dell Systems Management Tools and Documentation* DVD, you can extend the Snap-in by selecting the **Active Directory Users and Computers Snap-in** option during the installation procedure. See the *Dell OpenManage Software Quick Installation Guide* for additional instructions about installing systems management software. For 64-bit Windows Operating Systems, the Snap-in installer is located under:

```
<DVD drive>:\SYSMGMT\ManagementStation\support\OMActiveDirectory_SnapIn64
```

For more information about the Active Directory Users and Computers Snap-in, see your Microsoft documentation.

Installing the Administrator Pack

You must install the Administrator Pack on each system that is managing the Active Directory iDRAC6 Objects. If you do not install the Administrator Pack, you cannot view the Dell iDRAC6 Object in the container.

See "Opening the Active Directory Users and Computers Snap-In" for more information.

Opening the Active Directory Users and Computers Snap-In

To open the Active Directory Users and Computers Snap-in:

- 1 If you are logged in to the domain controller, click **Start Admin Tools** → **Active Directory Users and Computers**.

If you are not logged in to the domain controller, you must have the appropriate Microsoft Administrator Pack installed on your local system. To install this Administrator Pack, click **Start** → **Run**, enter MMC, and press **Enter**.

The MMC appears.

- 2 In the **Console 1** window, click **File** (or **Console** on systems running Windows 2000).

- 3 Click **Add/Remove Snap-in**.
- 4 Select the **Active Directory Users and Computers Snap-in** and click **Add**.
- 5 Click **Close** and click **OK**.

Adding iDRAC6 Users and Privileges to Active Directory

Using the Dell-extended Active Directory Users and Computers Snap-in, you can add iDRAC6 users and privileges by creating iDRAC6, Association, and Privilege objects. To add each object type, perform the following procedures:

- Create an iDRAC6 device Object
- Create a Privilege Object
- Create an Association Object
- Add objects to an Association Object

Creating an iDRAC6 Device Object

- 1 In the MMC **Console Root** window, right-click a container.
- 2 Select **New→Dell Remote Management Object Advanced**.
The **New Object** window appears.
- 3 Enter a name for the new object. The name must be identical to iDRAC6 name that you will enter in Step A of "Configuring Microsoft Active Directory With Extended Schema Using iDRAC6 Web Interface."
- 4 Select **iDRAC Device Object**.
- 5 Click **OK**.

Creating a Privilege Object



NOTE: A Privilege Object must be created in the same domain as the related Association Object.

- 1 In the **Console Root** (MMC) window, right-click a container.
- 2 Select **New→Dell Remote Management Object Advanced**.
The **New Object** window appears.
- 3 Enter a name for the new object.
- 4 Select **Privilege Object**.
- 5 Click **OK**.

- 6 Right-click the privilege object that you created, and select **Properties**.
- 7 Click the **Remote Management Privileges** tab and select the privileges that you want the user or group to have (see Table 5-14).

Creating an Association Object



NOTE: iDRAC6 Association Object is derived from Group and its scope is set to Domain Local.

- 1 In the **Console Root** (MMC) window, right-click a container.
- 2 Select **New→Dell Remote Management Object Advanced**.
This opens the **New Object** window.
- 3 Enter a name for the new object.
- 4 Select **Association Object**.
- 5 Select the scope for the **Association Object**.
- 6 Click **OK**.

Adding Objects to an Association Object

Using the **Association Object Properties** window, you can associate users or user groups, privilege objects, and iDRAC6 devices or iDRAC6 device groups. You can add groups of Users and iDRAC6 devices. The procedure for creating Dell-related groups and non-Dell-related groups is identical.

Adding Users or User Groups

- 1 Right-click the **Association Object** and select **Properties**.
- 2 Select the **Users** tab and click **Add**.
- 3 Enter the user or User Group name and click **OK**.

Adding Privileges

- 1 Select the **Privileges Object** tab and click **Add**.
- 2 Enter the Privilege Object name and click **OK**.

Click the **Privilege Object** tab to add the privilege object to the association that defines the user's or user group's privileges when authenticating to an iDRAC6 device. Only one privilege object can be added to an Association Object.


Adding iDRAC6 Devices or iDRAC6 Device Groups

To add iDRAC6 devices or iDRAC6 device groups:

- 1 Select the **Products** tab and click **Add**.
- 2 Enter iDRAC6 devices or iDRAC6 device group name and click **OK**.
- 3 In the **Properties** window, click **Apply** and click **OK**.

Click the **Products** tab to add one iDRAC6 device connected to the network that is available for the defined users or user groups. You can add multiple iDRAC6 devices to an Association Object.

Configuring Microsoft Active Directory With Extended Schema Using iDRAC6 Web Interface

- 1 Open a supported Web browser window.
- 2 Log in to iDRAC6 Web interface.
- 3 In the system tree, select **System**→**Remote Access**→**iDRAC6**→**Network/Security** tab→**Directory Service**→**Microsoft Active Directory**.
The **Active Directory** summary screen is displayed.
- 4 Scroll to the bottom of the screen and click **Configure Active Directory**.
The **Step 1 of 4 Active Directory** screen is displayed.
- 5 To validate the SSL certificate of your Active Directory servers, select the **Certificate Validation Enabled** check box under **Certificate Settings**.
If you do not want to validate the SSL certificate of your Active Directory servers, skip to step 7.
- 6 Under **Upload Active Directory CA Certificate**, enter the file path of the certificate or browse to find the certificate file, and then click **Upload**.
 **NOTE:** You must enter the absolute file path which includes the full path, complete file name, and file extension.
The certificate information for the Active Directory CA certificate that you uploaded appears in the **Current Active Directory CA Certificate** section.
- 7 Click **Next**.
The **Step 2 of 4 Active Directory Configuration and Management** screen is displayed.

- 8 Select the **Active Directory Enabled** check box.



NOTE: In this release, the Smart Card based Two Factor Authentication (TFA) and the single sign-on (SSO) features are not supported if the Active directory is configured for **Extended Schema**.

- 9 Click **Add** to enter the **User Domain Name**. Enter the domain name in the text field, and then click **OK**. Note that this step is optional. If you configure a list of user domains, the list will be available in the Web interface login screen. You can choose from the list, and then you only need to enter the user name.
- 10 In the **Timeout** field, enter the number of seconds you want iDRAC6 to wait for Active Directory responses.
- 11 Select the **Look Up Domain Controllers with DNS** option to obtain the Active Directory domain controllers from a DNS lookup. If already configured, the **Domain Controller Server Addresses 1-3** are ignored. Select **User Domain from Login** to perform the DNS lookup with the domain name of the login user. Otherwise, select **Specify a Domain** and enter the domain name to use for the DNS lookup. iDRAC6 attempts to connect to each of the addresses (first 4 addresses returned by the DNS look up) one by one until it makes a successful connection. If **Extended Schema** is selected, the domain controllers are where iDRAC6 device object and the Association objects are located. If **Standard Schema** is selected, the domain controllers are where the user accounts and the role groups are located.



NOTE: iDRAC6 does not failover to the specified domain controllers when DNS lookup fails, or none of the servers returned by the DNS lookup works.

- 12 Select the **Specify Domain Controller Addresses** option to allow iDRAC6 to use the Active Directory Domain Controller server addresses that are specified. DNS lookup is not performed. Specify the IP address or the FQDN of the domain controllers. When the **Specify Domain Controller Addresses** option is selected, at least one of the three addresses is required to be configured. iDRAC6 attempts to connect to each of the configured addresses one by one until it makes a successful connection. If **Extended Schema** is selected, these are the addresses of the domain controllers where iDRAC6 device object and the Association objects are located.



NOTE: The FQDN or IP address that you specify in this field should match the **Subject** or **Subject Alternative Name** field of your domain controller certificate if you have certificate validation enabled.

- 13 Click **Next**.

The **Step 3 of 4 Active Directory Configuration and Management** screen is displayed.

- 14 Under **Schema Selection**, select the **Extended Schema Selection** check box.

- 15 Click **Next**.

The **Step 4 of 4 Active Directory** screen is displayed.

- 16 Under **Extended Schema Settings**, enter **iDRAC6 Name** and **iDRAC6 Domain Name** to configure iDRAC6 device object and its location in Active Directory.

- 17 Click **Finish** to save your changes, and then **Done**.

The main **Active Directory Configuration and Management** summary page appears. Next, test the Active Directory settings you just configured.

- 18 Scroll to the bottom of the screen and click **Test Settings**.

The **Test Active Directory Settings** screen is displayed.

- 19 Enter your iDRAC6 user name and password, and then click **Start Test**.

The test results and the test log displays. For additional information, see "Testing Your Configurations."



NOTE: You must have a DNS server configured properly on iDRAC6 to support Active Directory log in. Navigate to the **Network** screen (click **System**→**Remote Access**→**iDRAC6**, and then click the **Network/Security**→**Network** tab) to configure DNS server(s) manually or use DHCP to get DNS server(s).

You have completed the Active Directory configuration with Extended Schema.

Configuring Active Directory With Extended Schema Using RACADM

Use the following commands to configure iDRAC6 Active Directory feature with Extended Schema using the RACADM command line interface (CLI) tool instead of the Web interface.

- 1 Open a command prompt and enter the following RACADM commands:

```
racadm config -g cfgActiveDirectory -o cfgADEnable 1
```



```
racadm config -g cfgActiveDirectory -o cfgADType 1
```

```
racadm config -g cfgActiveDirectory -o  
cfgADRacName <RAC common name>
```

```
racadm config -g cfgActiveDirectory -o  
cfgADRacDomain <fully qualified rac domain name>
```

```
racadm config -g cfgActiveDirectory -o  
cfgADDomainController1 <fully qualified domain name  
or IP Address of the domain controller>
```

```
racadm config -g cfgActiveDirectory -o  
cfgADDomainController2 <fully qualified domain name  
or IP Address of the domain controller>
```

```
racadm config -g cfgActiveDirectory -o  
cfgADDomainController3 <fully qualified domain name  
or IP Address of the domain controller>
```



NOTE: You must configure at least one of the three addresses. iDRAC6 attempts to connect to each of the configured addresses one-by-one until it makes a successful connection. With Extended Schema, these are the FQDN or IP addresses of the domain controllers where this iDRAC6 device is located. Global catalog servers are not used in extended schema mode at all.

If you want to disable the certificate validation during SSL handshake, enter the following RACADM command:

```
racadm config -g cfgActiveDirectory -o  
cfgADCertValidationEnable 0
```

In this case, you do not have to upload a CA certificate.

If you want to enforce the certificate validation during SSL handshake, enter the following RACADM command:

```
racadm config -g cfgActiveDirectory -o  
cfgADCertValidationEnable 1
```

In this case, you must upload a CA certificate using the following RACADM command:

```
racadm sslcertupload -t 0x2 -f <ADS root CA  
certificate>
```

Using the following RACADM command may be optional. See "Importing iDRAC6 Firmware SSL Certificate" for additional information.

```
racadm sslcertdownload -t 0x1 -f <RAC SSL certificate>
```

- 2 If DHCP is enabled on iDRAC6 and you want to use the DNS provided by the DHCP server, enter the following RACADM command:

```
racadm config -g cfgLanNetworking -o cfgDNSServersFromDHCP 1
```

- 3 If DHCP is disabled in iDRAC6 or you want to manually input your DNS IP address, enter the following RACADM commands:

```
racadm config -g cfgLanNetworking -o cfgDNSServersFromDHCP 0
```

```
racadm config -g cfgLanNetworking -o cfgDNSServer1 <primary DNS IP address>
```

```
racadm config -g cfgLanNetworking -o cfgDNSServer2 <secondary DNS IP address>
```

- 4 If you want to configure a list of user domains so that you only need to enter the user name during log in to iDRAC6 Web interface, enter the following command:

```
racadm config -g cfgUserDomain -o cfgUserDomainName <fully qualified domain name or IP Address of the domain controller> -i <index>
```

You can configure up to 40 user domains with index numbers between 1 and 40.

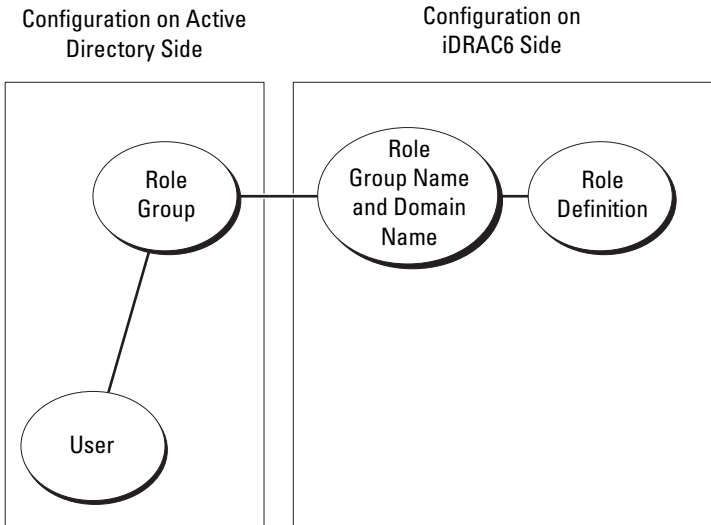
See "Using Active Directory to Log In to iDRAC6" for details about user domains.

- 5 Press **Enter** to complete the Active Directory configuration with Extended Schema.

Standard Schema Active Directory Overview

As shown in Figure 6-3, using standard schema for Active Directory integration requires configuration on both Active Directory and iDRAC6.


Figure 6-3. Configuration of iDRAC6 with Microsoft Active Directory and Standard Schema



On the Active Directory side, a standard group object is used as a role group. A user who has iDRAC6 access will be a member of the role group. To give this user access to a specific iDRAC6 card, the role group name and its domain name need to be configured on the specific iDRAC6 card. Unlike the extended schema solution, the role and the privilege level is defined on each iDRAC6 card, not in the Active Directory. Up to five role groups can be configured and defined in each iDRAC6. Table 6-9 shows the default role group privileges.

Table 6-9. Default Role Group Privileges

Role Groups	Default Privilege Level	Permissions Granted	Bit Mask
Role Group 1	None	Login to iDRAC, Configure iDRAC, Configure Users, Clear Logs, Execute Server Control Commands, Access Console Redirection, Access Virtual Media, Test Alerts, Execute Diagnostic Commands	0x000001ff
Role Group 2	None	Login to iDRAC, Configure iDRAC, Execute Server Control Commands, Access Console Redirection, Access Virtual Media, Test Alerts, Execute Diagnostic Commands	0x000000f9
Role Group 3	None	Login to iDRAC	0x00000001
Role Group 4	None	No assigned permissions	0x00000000
Role Group 5	None	No assigned permissions	0x00000000

 **NOTE:** The Bit Mask values are used only when setting Standard Schema with the RACADM.

Single Domain Versus Multiple Domain Scenarios

If all of the login users and role groups, as well as the nested groups, are in the same domain, then only the domain controllers' addresses must be configured on iDRAC6. In this single domain scenario, any group type is supported.

If all of the login users and role groups, or any of the nested groups, are from multiple domains, then Global Catalog server addresses are required to be configured on iDRAC6. In this multiple domain scenario, all of the role groups and nested groups, if any, must be Universal Group type.

Configuring Standard Schema Active Directory to Access iDRAC6

You must perform the following steps to configure Active Directory before an Active Directory user can access iDRAC6:

- 1 On an Active Directory server (domain controller), open the **Active Directory Users and Computers Snap-in**.
- 2 Create a group or select an existing group. The name of the group and the name of this domain must be configured on iDRAC6 by using either the Web interface or RACADM (see "Configuring Active Directory With Standard Schema Using iDRAC6 Web Interface" or "Configuring Active Directory With Standard Schema Using RACADM").
- 3 Add the Active Directory user as a member of the Active Directory group to access iDRAC6.

Configuring Active Directory With Standard Schema Using iDRAC6 Web Interface

- 1 Open a supported Web browser window.
- 2 Log in to iDRAC6 Web interface.
- 3 In the system tree, select **System**→**Remote Access**→**iDRAC6**→**Network/Security** tab→**Directory Service**→**Microsoft Active Directory**. The **Active Directory** summary page is displayed.
- 4 Scroll to the bottom of the screen and click **Configure Active Directory**. The **Step 1 of 4 Active Directory** screen is displayed.
- 5 Under **Certificate Settings**, select **Certificate Validation Enabled**.
- 6 Under **Upload Active Directory CA Certificate**, enter the file path of the certificate or browse to find the certificate file, and then click **Upload**.




NOTE: You must enter the absolute file path, which includes the full path and the complete file name and file extension.

The certificate information for the Active Directory CA certificate that you uploaded appears in the **Current Active Directory CA Certificate** section.

- 7 Click **Next**.

The **Step 2 of 4 Active Directory Configuration and Management** screen is displayed.

- 8 Select the **Active Directory Enabled** check box.
- 9 Select **Enable smart card Login** to enable Smart–Card login. You are prompted for a Smart–Card logon during any subsequent logon attempts using the GUI.
- 10 Select **Enable Single Sign-on** if you want to log into iDRAC6 without entering your domain user authentication credentials, such as user name and password.
- 11 Click **Add** to enter the **User Domain Name**. Enter the domain name in the text field, and then click **OK**. Note that this step is optional. If you configure a list of user domains, the list will be available in the Web interface login screen. You can choose from the list, and then you only need to enter the user name.
- 12 In the **Timeout** field, enter the number of seconds you want iDRAC6 to wait for Active Directory responses.
- 13 Select the **Look Up Domain Controllers with DNS** option to obtain the Active Directory domain controllers from a DNS lookup. If already configured, the **Domain Controller Server Addresses 1-3** are ignored. Select **User Domain from Login** to perform the DNS lookup with the domain name of the login user. Otherwise, select **Specify a Domain** and enter the domain name to use for the DNS lookup. iDRAC6 attempts to connect to each of the addresses (first 4 addresses returned by the DNS look up) one by one until it makes a successful connection. If **Standard Schema** is selected, the domain controllers are where the user accounts and the role groups are located.
- 14 Select the **Specify Domain Controller Addresses** option to allow iDRAC6 to use the Active Directory Domain Controller server addresses that are specified. DNS lookup is not performed. Specify the IP address or the FQDN of the domain controllers. When the **Specify Domain Controller Addresses** option is selected, at least one of the three addresses is required to be configured. iDRAC6 attempts to connect to each of the configured addresses one by one until it makes a successful connection. If **Standard Schema** is selected, these are the addresses of the domain controllers where the user accounts and the role groups are located.
 **NOTE:** iDRAC6 does not failover to the specified domain controllers when DNS lookup fails, or none of the servers returned by the DNS lookup works.
- 15 Click **Next**.


The **Step 3 of 4 Active Directory Configuration and Management** screen is displayed.

- 16** Under **Schema Selection**, select the **Standard Schema Selection** check box.


- 17** Click **Next**.

The **Step 4a of 4 Active Directory** screen is displayed.

- 18** Under **Standard Schema Settings**, select the **Look Up Global Catalog Servers with DNS** option and enter the **Root Domain Name** to use on a DNS lookup to obtain the Active Directory Global Catalog Servers. If already configured, the Global Catalog Server Addresses 1-3 are ignored. iDRAC6 attempts to connect to each of the addresses (first 4 addresses returned by the DNS lookup) one by one until it makes a successful connection. A Global Catalog server is required only for Standard Schema in the case that the user accounts and the role groups are in different domains.

 **NOTE:** iDRAC6 does not failover to the specified Global Catalog servers when DNS lookup fails, or none of the servers returned by the DNS lookup work.

- 19** Select the **Specify Global Catalog Server Addresses** option and enter the IP address or the Fully Qualified Domain Name (FQDN) of the Global Catalog server(s). DNS lookup is not performed. At least one of the three addresses is required to be configured. iDRAC6 attempts to connect to each of the configured addresses one by one until it makes a successful connection.



 **NOTE:** The Global Catalog server is required only for Standard Schema when the user accounts and role groups are in different domains. And, in this multiple domain case, only the Universal Group can be used. If you use iDRAC6 Web GUI to configure Active Directory, you need to enter a Global Address even though the user and group are in the same domain.

- 20** Click a **Role Group** button to add a role group.

The **Step 4b of 4 Configure Role Group** screen appears.

- 21** Enter the **Group Name**. The group name identifies the role group in the Active Directory associated with iDRAC6.

- 22** Enter the **Group Domain**. The **Group Domain** is the fully qualified root domain name for the forest.

- 23** In the **Role Group Privileges** section, set the group privileges. See Table 5-14 for information on role group privileges.
-  **NOTE:** If you modify any of the permissions, the existing role group privilege (Administrator, Power User, or Guest User) will change to either the Custom Group or the appropriate role group privilege based on the permissions you modified.
- 24** Click **OK** to save the role group settings.
An alert dialog appears, indicating that your settings are changed. Click **OK** to return to the **Step 4a of 4 Active Directory Configuration and Management** screen.
- 25** To add an additional role group, repeat step 20 through step 24.
- 26** Click **Finish**, and then click **Done**.
The main **Active Directory Configuration and Management** summary screen appears. Test the Active Directory settings you just configured.
- 27** Scroll to the bottom of the screen and click **Test Settings**.
The **Test Active Directory Settings** screen appears.
- 28** Enter your iDRAC6 user name and password, and then click **Start Test**.
The test results and the test log displays. For additional information, see "Testing Your Configurations."
-  **NOTE:** You must have a DNS server configured properly on iDRAC6 to support Active Directory log in. Navigate to the **Network** screen (click **System**→**Remote Access**→**iDRAC6**, and then click the **Network/Security**→**Network** tab) to configure DNS server(s) manually or use DHCP to get DNS server(s).

You have completed the Active Directory configuration with Standard Schema.

Configuring Active Directory With Standard Schema Using RACADM

Use the following commands to configure iDRAC6 Active Directory Feature with Standard Schema using the RACADM CLI instead of the Web-based interface.

- Open a command prompt and enter the following RACADM commands:



```
racadm config -g cfgActiveDirectory -o
cfgADEnable 1
racadm config -g cfgActiveDirectory -o cfgADType 2
```



```
racadm config -g cfgStandardSchema -i <index> -o
cfgSSADRoleGroupName <common name of the role
group>
```

```
racadm config -g cfgStandardSchema -i <index> -o
cfgSSADRoleGroupDomain <fully qualified domain
name>
```


```
racadm config -g cfgStandardSchema -i <index> -o
cfgSSADRoleGroupPrivilege <Bit Mask Value for
specific RoleGroup permissions>
```


 **NOTE:** For Bit Mask values for specific Role Group permissions, see Table 6-9.

```
racadm config -g cfgActiveDirectory -o
cfgADDomainController1 <fully qualified domain name
or IP address of the domain controller>
```

```
racadm config -g cfgActiveDirectory -o
cfgADDomainController2 <fully qualified domain name
or IP address of the domain controller>
```

```
racadm config -g cfgActiveDirectory -o
cfgADDomainController3 <fully qualified domain name
or IP address of the domain controller>
```


 **NOTE:** Enter the FQDN of the domain controller, *not* the FQDN of the domain. For example, enter `servername.dell.com` instead of `dell.com`.


 **NOTE:** At least one of the 3 addresses is required to be configured. iDRAC6 attempts to connect to each of the configured addresses one-by-one until it makes a successful connection. With Standard Schema, these are the addresses of the domain controllers where the user accounts and the role groups are located.

```
racadm config -g cfgActiveDirectory -o cfgGlobal
Catalog1 <fully qualified domain name or IP
address of the domain controller>
```

```
racadm config -g cfgActiveDirectory -o cfgGlobal
Catalog2 <fully qualified domain name or IP
address of the domain controller>
```

```
racadm config -g cfgActiveDirectory -o cfgGlobal
Catalog3 <fully qualified domain name or IP
address of the domain controller>
```

 **NOTE:** The Global Catalog server is only required for standard schema when the user accounts and role groups are in different domains. And, in this multiple domain case, only the Universal Group can be used.

 **NOTE:** The FQDN or IP address that you specify in this field should match the **Subject** or **Subject Alternative Name** field of your domain controller certificate if you have certificate validation enabled.

If you want to disable the certificate validation during SSL handshake, enter the following RACADM command:

```
racadm config -g cfgActiveDirectory -o  
cfgADCertValidationEnable 0
```

In this case, no Certificate Authority (CA) certificate needs to be uploaded.

If you want to enforce the certificate validation during SSL handshake, enter the following RACADM command:

```
racadm config -g cfgActiveDirectory -o  
cfgADCertValidationEnable 1
```

In this case, you must also upload the CA certificate using the following RACADM command:

```
racadm sslcertupload -t 0x2 -f <ADS root CA  
certificate>
```

Using the following RACADM command may be optional. See "Importing iDRAC6 Firmware SSL Certificate" for additional information.

```
racadm sslcertdownload -t 0x1 -f <RAC SSL  
certificate>
```

- 2 If DHCP is enabled on iDRAC6 and you want to use the DNS provided by the DHCP server, enter the following RACADM commands:

```
racadm config -g cfgLanNetworking -o  
cfgDNSServersFromDHCP 1
```

- 3 If DHCP is disabled on iDRAC6 or you want manually to input your DNS IP address, enter the following RACADM commands:

```
racadm config -g cfgLanNetworking -o  
cfgDNSServersFromDHCP 0  
racadm config -g cfgLanNetworking -o cfgDNSServer1  
<primary DNS IP address>
```

```
racadm config -g cfgLanNetworking -o cfgDNSServer2  
<secondary DNS IP address>
```

- 4 If you want to configure a list of user domains so that you only need to enter the user name when logging in to the Web interface, enter the following command:

```
racadm config -g cfgUserDomain -o  
cfgUserDomainName <fully qualified domain name or  
IP Address of the domain controller> -i <index>
```

Up to 40 user domains can be configured with index numbers between 1 and 40.

See "Using Active Directory to Log In to iDRAC6" for details about user domains.

Testing Your Configurations

If you want to verify whether your configuration works, or if you need to diagnose the problem with your failed Active Directory log in, you can test your settings from iDRAC6 Web interface.

After you finish configuring settings in iDRAC6 Web interface, click **Test Settings** at the bottom of the screen. You will be required to enter a test user's name (for example, **username@domain.com**) and password to run the test. Depending on your configuration, it may take some time for all of the test steps to complete and display the results of each step. A detailed test log will display at the bottom of the results screen.

If there is a failure in any step, examine the details in the test log to identify the problem and a possible solution. For most common errors, see "Frequently Asked Questions."

If you need to make changes to your settings, click the **Active Directory** tab and change the configuration step-by-step.

Enabling SSL on a Domain Controller

When iDRAC6 authenticates users against an Active Directory domain controller, it starts an SSL session with the domain controller. At this time, the domain controller should publish a certificate signed by the Certificate Authority (CA)—the root certificate of which is also uploaded into iDRAC6.

In other words, for iDRAC6 to authenticate to *any* domain controller—whether it is the root or the child domain controller—that domain controller should have an SSL-enabled certificate signed by the domain’s CA.

If you are using Microsoft Enterprise Root CA to *automatically* assign all your domain controllers to an SSL certificate, perform the following steps to enable SSL on each domain controller:

- 1 Enable SSL on each of your domain controllers by installing the SSL certificate for each controller.
 - a Click **Start**→**Administrative Tools**→**Domain Security Policy**.
 - b Expand the **Public Key Policies** folder, right-click **Automatic Certificate Request Settings** and click **Automatic Certificate Request**.
 - c In the **Automatic Certificate Request Setup Wizard**, click **Next** and select **Domain Controller**.
 - d Click **Next** and click **Finish**.

Exporting the Domain Controller Root CA Certificate to iDRAC6



NOTE: If your system is running Windows 2000, the following steps may vary.



NOTE: If you are using a standalone CA, the following steps may vary.

- 1 Locate the domain controller that is running the Microsoft Enterprise CA service.
- 2 Click **Start**→**Run**.
- 3 In the **Run** field, enter **mmc** and click **OK**.
- 4 In the **Console 1** (MMC) window, click **File** (or **Console** on Windows 2000 systems) and select **Add/Remove Snap-in**.
- 5 In the **Add/Remove Snap-In** window, click **Add**.
- 6 In the **Standalone Snap-In** window, select **Certificates** and click **Add**.
- 7 Select **Computer** account and click **Next**.
- 8 Select **Local Computer** and click **Finish**.
- 9 Click **OK**.
- 10 In the **Console 1** window, expand the **Certificates** folder, expand the **Personal** folder, and click the **Certificates** folder.
- 11 Locate and right-click the root CA certificate, select **All Tasks**, and click **Export...**

- 12** In the **Certificate Export Wizard**, click **Next**, and select **No do not export the private key**.
- 13** Click **Next** and select **Base-64 encoded X.509 (.cer)** as the format.
- 14** Click **Next** and save the certificate to a directory on your system.
- 15** Upload the certificate you saved in step 14 to iDRAC6.

To upload the certificate using RACADM, see "Configuring Active Directory With Standard Schema Using RACADM."

To upload the certificate using the Web interface, see "Configuring Active Directory With Standard Schema Using iDRAC6 Web Interface."

Importing iDRAC6 Firmware SSL Certificate



NOTE: If the Active Directory Server is set to authenticate the client during an SSL session initialization phase, you need to upload iDRAC6 Server certificate to the Active Directory Domain controller as well. This additional step is not required if the Active Directory does not perform a client authentication during an SSL session's initialization phase.

Use the following procedure to import iDRAC6 firmware SSL certificate to all domain controller trusted certificate lists.



NOTE: If your system is running Windows 2000, the following steps may vary.



NOTE: If iDRAC6 firmware SSL certificate is signed by a well-known CA and the certificate of that CA is already in the domain controller's Trusted Root Certificate Authority list, you are not required to perform the steps in this section.

iDRAC6 SSL certificate is the identical certificate used for iDRAC6 Web server. All iDRAC6 controllers are shipped with a default self-signed certificate.

To download iDRAC6 SSL certificate, run the following RACADM command:

```
racadm sslcertdownload -t 0x1 -f <RAC SSL certificate>
```

- 1** On the domain controller, open an **MMC Console** window and select **Certificates**→**Trusted Root Certification Authorities**.
- 2** Right-click **Certificates**, select **All Tasks** and click **Import**.
- 3** Click **Next** and browse to the SSL certificate file.
- 4** Install iDRAC6 SSL Certificate in each domain controller's **Trusted Root Certification Authority**.

If you have installed your own certificate, ensure that the CA signing your certificate is in the **Trusted Root Certification Authority** list. If the Authority is not in the list, you must install it on all your domain controllers.

- 5 Click **Next** and select whether you would like Windows to automatically select the certificate store based on the type of certificate, or browse to a store of your choice.
- 6 Click **Finish** and click **OK**.

Using Active Directory to Log In to iDRAC6

You can use Active Directory to log in to iDRAC6 using one of the following methods:

- Web interface
- Local RACADM
- SSH or Telnet console for SM-CLP CLI

The login syntax is the same for all three methods:

```
<username@domain>
```

or

```
<domain>\<username> or <domain>/<username>
```

where *username* is an ASCII string of 1–256 bytes.

White space and special characters (such as \, /, or @) cannot be used in the user name or the domain name.




NOTE: You cannot specify NetBIOS domain names, such as *Americas*, because these names cannot be resolved.

If you log in from the Web interface and you have configured user domains, the Web interface log in screen will list all the user domains in the pull-down menu for you to choose. If you select a user domain from the pull-down menu, you should only enter the user name. If you select **This iDRAC**, you can still log in as an Active Directory user if you use the login syntax described above in "Using Active Directory to Log In to iDRAC6."

Using Active Directory Single Sign-On

You can enable iDRAC6 to use Kerberos—a network authentication protocol—to enable single sign-on. For more information on setting up iDRAC6 to use the Active Directory single sign-on feature, see "Enabling Kerberos Authentication."

Configuring iDRAC6 to Use Single Sign-On

- 1 Open a supported Web browser window.
- 2 Log in to iDRAC6 Web interface.
- 3 In the system tree, select **System**→**Remote Access**→**iDRAC6**→**Network/Security** tab→**Network**. In the **Network** page, verify whether the **DNS iDRAC6 Name** is correct and matches with the name used for iDRAC6 fully qualified domain name.
- 4 In the system tree, select **System**→**Remote Access**→**iDRAC6**→**Network/Security** tab→**Directory Service**→**Microsoft Active Directory**.
The **Active Directory** summary screen is displayed.
- 5 Scroll to the bottom of the screen and click **Configure Active Directory**.
The **Step 1 of 4 Active Directory** screen is displayed.
- 6 To validate the SSL certificate of your Active Directory servers, select the **Certificate Validation Enabled** check box under **Certificate Settings**.
If you don't want to validate the SSL certificate of your Active Directory servers, take no action, and skip to step 7.
- 7 Under **Upload Active Directory CA Certificate**, enter the file path of the certificate or browse to find the certificate file, and then click **Upload**.
 **NOTE:** You must enter the absolute file path, which includes the full path and the complete file name and file extension.
The certificate information for the Active Directory CA certificate that you uploaded appears in the **Current Active Directory CA Certificate** section.
- 8 Click **Next**.
The **Step 2 of 4 Active Directory Configuration and Management** screen is displayed.
- 9 Select the **Active Directory Enabled** check box.

- 10 Select **Enable Single Sign-on** if you want to log into iDRAC6 directly after logging into your workstation without entering your domain user authentication credentials, such as user name and password.

To log into iDRAC6 using this feature, you should have already logged into your system using a valid Active Directory user account. Also you should have already configured the user account to log into iDRAC6 using the Active Directory credentials. iDRAC6 uses the cached Active Directory credentials to log you in.

To enable single sign-on using the CLI, run the RACADM command:

```
racadm -g cfgActiveDirectory -o cfgADSSOEnable 1
```

- 11 Add **User Domain Name**, and enter the IP address of the Domain Controller Server Address. Select either the **Look Up Domain Controllers with DNS** or **Specify Domain Controller Addresses**. Select **Next**.
- 12 Select **Standard Schema Settings on Step 3 of 4 Active Directory Configuration and Management** page. Select **Next**.
- 13 On **4a of 4 Active Directory** page, enter the IP Address of the **Global Catalog Server** or select the **Look Up Global Catalog Servers with DNS** option and enter the **Root Domain Name** to use for a DNS lookup to obtain the Active Directory Global Catalog Servers. Add the Role Group information that your valid Active Directory user is a member of by selecting one of the Role Groups (*Step 4B of 4*). Enter the Role Group name, the Group Domain, and the Role Group Privileges level. Select **OK** and then **Finish**. Select **Done** to display the **Active Directory** summary page.

Logging Into iDRAC6 Using Single Sign-On

- 1 Log into your management station using your valid Active Directory network account.
- 2 Log into iDRAC6 Web page using iDRAC6 fully qualified domain name:
http://idracname.domain.com.

iDRAC6 logs you in, using your credentials that were cached in the operating system when you logged in using your valid Active Directory network account.

Using iDRAC6 with LDAP Directory Service

iDRAC6 provides a generic solution to support Lightweight Directory Access Protocol (LDAP)-based authentication. This feature does not require any schema extension on your directory services.

To make iDRAC6 LDAP implementation generic, the commonality between different directory services is utilized to group users and then map the user-group relationship. The directory service specific action is the schema. For example, they may have different attribute names for the group, user, and the link between the user and the group. These actions can be configured in iDRAC6.

Login Syntax (Directory User versus Local User)

Unlike Active Directory, special characters ("@", "\", and "/") are not used to differentiate an LDAP user from a local user. The login user must enter the user name, excluding the domain name. iDRAC6 takes the user name as is and does not break it down to the user name and user domain. When generic LDAP is enabled, iDRAC6 first tries to login the user as a directory user. If it fails, local user lookup is enabled.



NOTE: There is no behavior change on the Active Directory login syntax. When generic LDAP is enabled, the GUI login page displays only **This iDRAC** in the drop-down menu.



NOTE: In this release, only openLDAP and openDS based directory services are supported. "<" and ">" characters are not allowed in the user name for openLDAP and OpenDS.

Configuring Generic LDAP Directory Service Using iDRAC6 Web-Based Interface

- 1 Open a supported Web browser window.
- 2 Log in to iDRAC6 Web-based interface.
- 3 Expand the **System** tree and click **Remote Access**→**iDRAC6**→**Network/Security** tab→**Directory Service**→**Generic LDAP Directory Service**.

- 4 The **Generic LDAP Configuration and Management** page displays the current iDRAC6 generic LDAP settings. Scroll to the bottom of the **Generic LDAP Configuration and Management** page, and click **Configure Generic LDAP**.



NOTE: In this release, only Standard Schema Active Directory (SSAD) without extensions is supported.

The **Step 1 of 3 Generic LDAP Configuration and Management** page is displayed. Use this page to configure the digital certificate used during initiation of SSL connections when communicating with a generic LDAP server. These communications use LDAP over SSL (LDAPS). If you enable certificate validation, upload the certificate of the Certificate Authority (CA) that issued the certificate used by the LDAP server during initiation of SSL connections. The CA's certificate is used to validate the authenticity of the certificate provided by the LDAP server during SSL initiation.



NOTE: In this release, non-SSL port based LDAP bind is not supported. Only LDAP over SSL is supported.

- 5 Under **Certificate Settings**, check **Enable Certificate Validation** to enable certificate validation. If enabled, iDRAC6 uses the CA certificate to validate the LDAP server certificate during Secure Socket Layer (SSL) handshake; if disabled, iDRAC6 skips the certificate validation step of the SSL handshake. You can disable certificate validation during testing or if your system administrator chooses to trust the domain controllers in the security boundary without validating their SSL certificates.



CAUTION: Ensure that **CN = open LDAP FQDN** is set (for example, **CN= openldap.lab**) in the **subject** field of the LDAP server certificate during certificate generation. The **CN** field in the server certificate should be set to match the LDAP server address field in iDRAC6 for certificate validation to work.

- 6 Under **Upload Directory Service CA Certificate**, type the file path of the certificate or browse to find the certificate file.




NOTE: You must type the absolute file path, which includes the full path and the complete file name and file extension.


- 7 Click **Upload**.

The certificate of the root CA that signs all the domain controllers' Security Socket Layer (SSL) server certificates will be uploaded.

- 8 Click **Next** to go to the **Step 2 of 3 Generic LDAP Configuration and Management** page. Use this page to configure location information about generic LDAP servers and user accounts.

 **NOTE:** In this release, the Smart Card based Two Factor Authentication (TFA) and the single sign-on (SSO) features are not supported for Generic LDAP Directory Service.

- 9 Select **Enable Generic LDAP**.

 **NOTE:** In this release, nested group is not supported. The firmware searches for the direct member of the group to match the user DN. Also, only single domain is supported. Cross domain is not supported.

- 10 Select the **Use Distinguished Name to Search Group Membership** option to use the Distinguished Name (DN) as group members. iDRAC6 compares the User DN retrieved from the directory to compare with the members of the group. If unchecked, user name provided by the login user is used to compare with the members of the group.
- 11 In the **LDAP Server Address** field, enter the FQDN or the IP address of the LDAP server. To specify multiple redundant LDAP servers that serve the same domain, provide the list of all servers separated by commas. iDRAC6 tries to connect to each server in turn, until it makes a successful connection.
- 12 Enter the port used for LDAP over SSL in the **LDAP Server Port** field. The default is 636.
- 13 In the **Bind DN** field, enter the DN of a user used to bind to the server when searching for the login user's DN. If not specified, an anonymous bind is used.
- 14 Enter the **Bind Password** to use in conjunction with the **Bind DN**. This is required if anonymous bind is not allowed.
- 15 In the **Base DN to Search** field, enter the DN of the branch of the directory where all searches should start.
- 16 In the **Attribute of User Login** field, enter the user attribute to search for. Default is UID. It is recommended that this be unique within the chosen Base DN, else a search filter must be configured to ensure the uniqueness of the login user. If the user DN cannot be uniquely identified by the search combination of attribute and search filter, the login will fail.

- 17** In the **Attribute of Group Membership** field, specify which LDAP attribute should be used to check for group membership. This should be an attribute of the group class. If not specified, iDRAC6 uses the *member* and *uniquemember* attributes.
- 18** In the **Search Filter** field, enter a valid LDAP search filter. Use the filter if the user attribute cannot uniquely identify the login user within the chosen Base DN. If not specified, the value defaults to *objectClass=**, which searches for all objects in the tree. This additional search filter configured by the user applies only to userDN search and not the group membership search.
- 19** Click **Next** to go to the **Step 3a of 3 Generic LDAP Configuration and Management** page. Use this page to configure the privilege groups used to authorize users. When generic LDAP is enabled, Role Group(s) are used to specify authorization policy for iDRAC6 users.
- 20** Under **Role Groups**, click a **Role Group**.
The **Step 3b of 3 Generic LDAP Configuration and Management** page is displayed. Use this page to configure each Role Group used to control authorization policy for users.
- 21** Enter the **Group Distinguished Name (DN)** that identifies the role group in the generic LDAP Directory Service associated with iDRAC6.
- 22** In the **Role Group Privileges** section, specify the privileges associated with the group by selecting the **Role Group Privilege Level**. For example, if you select **Administrator**, all of the privileges are selected for that level of permission.
- 23** Click **Apply** to save Role Group settings.
iDRAC6 Web server automatically returns you to the **Step 3a of 3 Generic LDAP Configuration and Management** page where your Role Group settings are displayed.
- 24** Configure additional Role Groups if required.
- 25** Click **Finish** to return to the **Generic LDAP Configuration and Management** summary page.
- 26** Click **Test Settings** to check the generic LDAP settings.

- 27** Enter the user name and password of a directory user that is chosen to test the LDAP settings. The format depends on what *Attribute of User Login* is used and the user name entered must match the value of the chosen attribute.



NOTE: When testing LDAP settings with "Enable Certificate Validation" checked, iDRAC6 requires that the LDAP server be identified by the FQDN and not an IP address. If the LDAP server is identified by an IP address, certificate validation fails because iDRAC6 is not able to communicate with the LDAP server.

The test results and the test log are displayed. You have completed the **Generic LDAP Directory Service** configuration.

Frequently Asked Questions

Active Directory Log In Issues

It takes nearly 4 minutes to log into iDRAC6 using Active Directory Single Sign-On.

The normal Active Directory Single Sign-On login usually takes less than 10 seconds but it may take nearly 4 minutes to log into iDRAC6 using Active Directory Single Sign-On if you have specified the **Preferred DNS Server** and the **Alternate DNS Server** in iDRAC6 **Network** page, and the preferred DNS server has failed. DNS timeouts are expected when a DNS server is down. iDRAC6 logs you in using the alternate DNS server.

I have configured Active Directory for a domain present in Windows Server 2008 Active Directory and have made these configurations. A child or sub domain is present for the domain, the User and Group is present in the same child domain, and the User is a member of that Group. Now if I try to log in to iDRAC6 using the User present in the child domain, Active Directory Single Sign-On login fails.

This may be because of the wrong Group type. There are two kinds of Group types in the Active Directory server:

- **Security**—Security groups allow you to manage user and computer access to shared resources and to filter Group Policy settings
- **Distribution**—Distribution groups are intended to be used only as e-mail distribution lists.

Always ensure that the Group Type is **Security**. You cannot use distribution groups to assign permission on any objects and use them to filter Group Policy settings.

My Active Directory log in failed. What do I do?

iDRAC6 provides a diagnostic tool in the Web interface.

- 1** Log in as a local user with administrator privilege from the Web interface.
- 2** In the system tree, select **System**→**Remote Access**→**iDRAC6**→**Network/Security** tab→**Directory Service**→**Microsoft Active Directory**. The **Active Directory** summary screen is displayed.
- 3** Scroll to the bottom of the screen and click **Test Settings**. The **Test Active Directory Settings** screen is displayed.
- 4** Enter a test user name and password, and then click **Start Test**.

iDRAC6 runs the tests step-by-step and displays the result for each step. iDRAC6 also logs a detailed test result to help you resolve any problems.

If problems persist, configure your Active Directory settings, change your user configuration, and run the test again until the test user passes the authorization step.

I enabled certificate validation but my Active Directory log in failed. I ran the diagnostics from the GUI and the test results show the following error message. What could the problem be and how do I fix it?

```
ERROR: Can't contact LDAP server,  
error:14090086:SSL  
routines:SSL3_GET_SERVER_CERTIFICATE:certificate  
verify failed: Please check the correct  
Certificate Authority (CA) certificate has been  
uploaded to iDRAC. Please also check if the iDRAC  
date is within the valid period of the  
certificates and if the Domain Controller Address  
configured in iDRAC matches the subject of the  
Directory Server Certificate.
```

If certificate validation is enabled, iDRAC6 uses the uploaded CA certificate to verify the directory server certificate when iDRAC6 establishes the SSL connection with the directory server. The most common reasons for failing certification validation are:

- iDRAC6 date is not within the valid period of the server certificate or CA certificate. Check iDRAC6 time and the valid period of your certificate.
- The Domain Controller Addresses configured in iDRAC6 do not match the Subject or Subject Alternative Name of the directory server certificate.
 - If you are using an IP address, see "I am using an IP address for a Domain Controller Address, and I failed certificate validation. What is the problem?".
 - If you are using FQDN, ensure you are using the FQDN of the domain controller, and not the domain itself. For example, use `servername.example.com` and *not* `example.com`.

What should I check if I cannot log in to iDRAC6 using Active Directory?

First, diagnose the problem using the Test Settings feature. For directions, see "My Active Directory log in failed. What do I do?"

Then, fix the specific problem indicated by the test results. For additional information, see "Testing Your Configurations."

Most common issues are explained in this section. However, in general, you should check the following:

- 1** Ensure that you use the correct user domain name during a log in and not the NetBIOS name.
- 2** If you have a local iDRAC6 user account, log in to iDRAC6 using your local credentials.
 - a** Ensure that the **Active Directory Enabled** check box is selected in the **Step 2 of 4 Active Directory Configuration and Management** page.
 - b** If you have enabled certificate validation, ensure that you have uploaded the correct Active Directory root CA certificate to iDRAC6. The certificate appears in the **Current Active Directory CA Certificate** area. Ensure that iDRAC6 time is within the valid period of the CA certificate.

- c If you are using the Extended Schema, ensure that **iDRAC6 Name** and **iDRAC6 Domain Name** match your Active Directory environment configuration.
If you are using the Standard Schema, ensure that the **Group Name** and **Group Domain** match your Active Directory configuration.
- d Navigate to the **Network** screen. Select **System**→**Remote Access**→**iDRAC6**→**Network/Security**→**Network**.
Ensure that the DNS settings are correct.
- e Check the Domain Controller SSL certificates to ensure that iDRAC6 time is within the valid period of the certificate.

Active Directory Certificate Validation

I am using an IP address for a Domain Controller Address, and I failed certificate validation. What is the problem?

Check the Subject or Subject Alternative Name field of your domain controller certificate. Usually Active Directory uses the hostname, not the IP address, of the domain controller in the Subject or Subject Alternative Name field of the domain controller certificate. You can fix the problem by taking any of the following actions:

- Configure the hostname (FQDN) of the domain controller as the *domain controller address(es)* on iDRAC6 to match the Subject or Subject Alternative Name of the server certificate.
- Re-issue the server certificate to use an IP address in the Subject or Subject Alternative Name field so it matches the IP address configured in iDRAC6.
- Disable certificate validation if you choose to trust this domain controller without certificate validation during the SSL handshake.

Why does iDRAC6 enable certificate validation by default?

iDRAC6 enforces strong security to ensure the identity of the domain controller that iDRAC6 connects to. Without certificate validation, a hacker could spoof a domain controller and hijack the SSL connection. If you choose to trust all the domain controllers in your security boundary without certificate validation, you can disable it through the GUI or the CLI.

Extended and Standard Schema

I'm using extended schema in a multiple domain environment. How do I configure the domain controller address(es)?

Use the host name (FQDN) or the IP address of the domain controller(s) that serves the domain in which iDRAC6 object resides.

Do I need to configure Global Catalog Address(es)?

If you are using extended schema, you cannot configure global catalog addresses, because they are not used with extended schema.

If you are using standard schema, and users and role groups are from different domains, you must configure global catalog address(es). In this case, you can use only Universal Group.

If you are using standard schema, and all the users and all the role groups are in the same domain, you are not required to configure global catalog address(es).

How does standard schema query work?

iDRAC6 connects to the configured domain controller address(es) first. If the user and role groups reside in that domain, the privileges are saved.

If global controller address(es) is configured, iDRAC6 continues to query the Global Catalog. If additional privileges are retrieved from the Global Catalog, these privileges are accumulated.

Miscellaneous

Does iDRAC6 always use LDAP over SSL?

Yes. All the transportation is over secure port 636 and/or 3269.

During *test settings*, iDRAC6 does a LDAP CONNECT only to help isolate the problem, but it does not do an LDAP BIND on an insecure connection.

Does iDRAC6 support the NetBIOS name?

Not in this release.

Configuring Smart Card Authentication

iDRAC6 supports the two factor authentication (TFA) feature by enabling **Smart Card Logon**.

The traditional authentication schemes use user name and password to authenticate users. This provides minimal security.

TFA, on the other hand, provides a higher-level of security by making the users provide two factors of authentication - what you have and what you know—what you have is the Smart Card, a physical device, and what you know—a secret code like a password or PIN.

The two-factor authentication requires users to verify their identities by providing *both* factors.

Configuring Smart Card Login in iDRAC6


To enable iDRAC6 Smart Card login feature from the Web interface:

- 1 Open a supported Web browser window.
- 2 Log in to iDRAC6 Web interface.
- 3 Go to the **Step 1 of 4 Active Directory Configuration and Management** screen.
- 4 To validate the SSL certificate of your Active Directory servers, select the **Certificate Validation Enabled** check box under **Certificate Settings**. If you do not want to validate the SSL certificate of your Active Directory servers, skip to step 6.
- 5 Under **Upload Active Directory CA Certificate**, enter the file path of the certificate or browse to find the certificate file, and then click **Upload**. You must enter the absolute file path, which includes the full path and the complete file name and file extension. The certificate information for the Active Directory CA certificate that you uploaded appears in the **Current Active Directory CA Certificate** section.

- 6 Click **Next**. The **Step 2 of 4 Active Directory Configuration and Management** screen appears.
- 7 Select the **Active Directory Enabled** check box.
- 8 Select **Enable Smart–Card Login** to enable Smart Card login. You are prompted for a Smart Card logon during any subsequent logon attempts using the GUI.
- 9 Add **User Domain Name**, and enter the IP address of the Domain Controller Server Address. Select **Next**.
- 10 Select **Standard Schema Settings** on **Step 3 of 4 Active Directory Configuration and Management** page. Select **Next**.
- 11 On **Step 4a of 4 Active Directory** page, enter the IP Address of the **Global Catalog Server**. Add the Role Group information that your valid Active Directory user is a member of, by selecting one of the Role Groups (**Step 4B of 4 Configure Role Group** page). Enter the **Group Name**, the **Group Domain**, and the **Role Group Privileges**. Select **OK** and then **Finish**. After selecting **Done**, scroll back to the bottom of the **Active Directory** summary page and select **Kerberos Keytab Upload**.
- 12 Upload a valid Kerberos Keytab file. Ensure that the Active Directory Server and iDRAC6 times are synchronized. Verify that both time and time zones are correct before uploading the keytab file. For more information on creating a keytab file, see "Enabling Kerberos Authentication".

Clear the **Enable Smart–Card Login** option to disable the TFA Smart Card logon feature. The next time you login to iDRAC6 GUI, you are prompted for a Microsoft® Active Directory® or local logon username and password, which occurs as the default login prompt from the Web interface.

Logging Into iDRAC6 Using Active Directory Smart Card Authentication

 **NOTE:** Depending on your browser settings, you may be prompted to download and install the Smart Card reader ActiveX plug-in when using this feature for the first time.

- 1 Log into iDRAC6 using https.
`https://<IP address>`

If the default HTTPS port number (port 443) has been changed, type:


```
https://<IP address>:<port number>
```

where *IP address* is the IP address for iDRAC6 and *port number* is the HTTPS port number.

iDRAC6 Login page is displayed prompting you to insert the Smart Card.

- 2 Insert the Smart Card.
- 3 Enter the PIN and click **Log in**.

You are logged into iDRAC6 with your credentials as set in Active Directory.

 **NOTE:** You need not keep your Smart Card in the reader to stay logged in.

Troubleshooting the Smart Card Logon in iDRAC6

Use the following tips to help you debug an inaccessible Smart Card:

It takes nearly 4 minutes to log into iDRAC6 using Active Directory Smart Card login.

The normal Active Directory Smart Card login usually takes less than 10 seconds but it may take nearly 4 minutes to log into iDRAC6 using Active Directory Smart Card login if you have specified the **Preferred DNS Server** and the **Alternate DNS Server** in iDRAC6 **Network** page, and the preferred DNS server has failed. DNS timeouts are expected when a DNS server is down. iDRAC6 logs you in using the alternate DNS server.

ActiveX plug-in unable to detect the Smart Card reader

Ensure that the Smart Card is supported on the Microsoft Windows® operating system. Windows supports a limited number of Smart Card cryptographic service providers (CSPs).

Tip: As a general check to see if the Smart Card CSPs are present on a particular client, insert the Smart Card in the reader at the Windows logon (Ctrl-Alt-Del) screen and check to see if Windows detects the Smart Card and displays the PIN dialog-box.

Incorrect Smart Card PIN

Check to see if the Smart Card has been locked out due to too many attempts with an incorrect PIN. In such cases, the issuer of the Smart Card in the organization will be able to help you get a new Smart Card.

Unable to Log into iDRAC6 as an Active Directory User

- If you cannot log into iDRAC6 as an Active Directory user, try to log into iDRAC6 without enabling the Smart Card logon. You can disable the Smart Card logon through RACADM using the following command:

```
racadm config -g cfgSmartCard -o  
cfgSmartCardLogonEnable 0
```

- For 64-bit Windows platforms, iDRAC6 authentication plug-in is not installed properly if a 64-bit version of "Microsoft Visual C++ 2005 Redistributable Package" is deployed. You need to deploy the 32-bit version of "Microsoft Visual C++ 2005 Redistributable Package" for the plug-in to install and run properly.
- If you receive the following error message "Not able to load the Smart Card Plug-in. Please check your IE settings or you may have insufficient privileges to use the Smart Card Plug-in", then install the "Microsoft Visual C++ 2005 Redistributable Package". This file is available on the Microsoft Website at www.microsoft.com. Two distributed versions of the C++ Redistributable Package have been tested and they allow the Dell Smart Card plug-in to load:

Table 7-1. Distributed Versions of the C++ Redistributable Package

Redistributable Package File Name	Version	Release Date	Size	Description
vcredist_x86.exe	6.0.2900.2180	March 21, 2006	2.56 MB	MS Redistributable 2005
vcredist_x86.exe	9.0.21022.8	November 7, 2007	1.73 MB	MS Redistributable 2008

- Ensure that iDRAC6 time and the domain controller time at the domain controller server are within 5 minutes of each other for Kerberos authentication to work. See **iDRAC6 time** on the **System→Remote Access→iDRAC6→Properties→Remote Access Information** page, and the domain controller time by right clicking on the time in the bottom right hand corner of the screen. The timezone offset is displayed in the pop up display. For US Central Standard Time (CST), this is -6). Use the following RACADM timezone offset command to synchronize iDRAC6 time (through Remote or Telnet/SSH RACADM): `racadm config -g cfgRacTuning -o cfgRacTuneTimeZoneOffset <offset value in minutes>`. For example, if the system time is GMT -6 (US CST) and time is 2PM, set iDRAC6 time to GMT time of 18:00 which would require you to enter "360" in the above command for the offset. You can also use `cfgRacTuneDaylightoffset` to allow for daylight savings variation. This saves you from having to change the time on those two occasions every year when the daylight savings adjustments are made, or just allow for it in the above offset using "300" in the above example.

Enabling Kerberos Authentication

Kerberos is a network authentication protocol that allows systems to communicate securely over a non-secure network. It achieves this by allowing the systems to prove their authenticity. To keep with the higher authentication enforcement standards, iDRAC6 now supports Kerberos based Active Directory® authentication to support Active Directory Smart Card and single sign-on (SSO) logins.

Microsoft® Windows® 2000, Windows XP, Windows Server® 2003, Windows Vista®, and Windows Server 2008 use Kerberos as their default authentication method.

iDRAC6 uses Kerberos to support two types of authentication mechanisms—Active Directory single sign-on and Active Directory Smart Card logins. For single-sign on login, iDRAC6 uses the user credentials cached in the operating system after the user has logged in using a valid Active Directory account.

For Active Directory smart card login, iDRAC6 uses smart card-based two factor authentication (TFA) as credentials to enable an Active Directory login.

Kerberos authentication on iDRAC6 fails if iDRAC6 time differs from the Domain Controller time. A maximum offset of 5 minutes is allowed. To enable successful authentication, synchronize the server time with the Domain Controller time and then **reset** iDRAC6.

You can also use the following RACADM time zone offset command to synchronize the time:

```
racadm config -g cfgRacTuning -o  
cfgRacTuneTimeZoneOffset <offset value>
```

Prerequisites for single sign-on and Active Directory Authentication Using Smart Card

- Configure iDRAC6 for Active Directory login.
- Register iDRAC6 as a computer in the Active Directory root domain.
 - a Click **System**→**Remote Access**→**iDRAC6**→**Network/Security**→**Network** subtab.
 - b Provide a valid **Preferred/Alternate DNS Server IP** address. This value is the IP address of the DNS that is part of the root domain, which authenticates the Active Directory accounts of the users.
 - c Select **Register iDRAC6 on DNS**.
 - d Provide a valid **DNS Domain Name**.
 - e Verify that network DNS configuration matches with the Active Directory DNS information.

See iDRAC6 Online Help for more information.

To support the two new types of authentication mechanisms, iDRAC6 supports the configuration to enable itself as a kerberized service on a Windows Kerberos network. The Kerberos configuration on iDRAC6 entails the same steps as configuring a non-Windows Server Kerberos service as a security principal in Windows Server Active Directory.

The Microsoft tool **ktpass** (supplied by Microsoft as part of the server installation CD/DVD) is used to create the Service Principal Name (SPN) bindings to a user account and export the trust information into a MIT-style Kerberos *keytab* file, which enables a trust relation between an external user or system and the Key Distribution Centre (KDC). The keytab file contains a cryptographic key, which is used to encrypt the information between the server and the KDC. The ktpass tool allows UNIX-based services that support Kerberos authentication to use the interoperability features provided by a Windows Server Kerberos KDC service.


The keytab obtained from the ktpass utility is made available to iDRAC6 as a file upload and is enabled to be a kerberized service on the network.

Since iDRAC6 is a device with a non-Windows operating system, run the ktpass utility—part of Microsoft Windows—on the Domain Controller

(Active Directory server) where you want to map iDRAC6 to a user account in Active Directory.

For example, use the following **ktpass** command to create the Kerberos keytab file:

```
C:\> ktpass.exe -princ
HTTP/idracname.domainname.com@DOMAINNAME.COM -
mapuser DOMAINNAME\username -mapOp set -crypto
DES-CBC-MD5 -ptype KRB5_NT_PRINCIPAL -pass
<password> +DesOnly -out c:\krbkeytab
```


 **NOTE:** If you find any issues with iDRAC6 user the keytab file is created for, create a new user and a new keytab file. If the same keytab file which was initially created is again executed, it will not configure correctly.


After the above command executes successfully, run the following command:

```
C:\>setspn -a HTTP/idracname.domainname.com
username
```

The encryption type that iDRAC6 uses for Kerberos authentication is DES-CBC-MD5. The principal type is KRB5_NT_PRINCIPAL. The properties of the user account that the Service Principal Name is mapped to should have the following account property **enabled**:

- Use DES encryption types for this account

 **NOTE:** You must create an Active Directory user account for use with the **-mapuser** option of the **ktpass** command. Also, you should have the same name as iDRAC6 DNS name to which you will upload the generated keytab file.

 **NOTE:** It is recommended that you use the latest **ktpass** utility to create the keytab file. Also, while generating the keytab file, use *lowercase* letters for the **idracname** and the **Service Principal Name**.

This procedure will produce a keytab file that you should upload to iDRAC6.

 **NOTE:** The keytab contains an encryption key and should be kept secure.

For more information on the **ktpass** utility, see the Microsoft website at: [http://technet.microsoft.com/en-us/library/cc779157\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc779157(WS.10).aspx)

- iDRAC6 time should be synchronized with the Active Directory domain controller.

Configuring iDRAC6 for single sign-on and Active Directory Authentication Using Smart Card

Upload the keytab obtained from the Active Directory root domain, to iDRAC6:

- 1 Click **System**→**Remote Access**→**iDRAC6**→**Network/Security**→**Directory Service**→**Microsoft Active Directory**
- 2 At the bottom of the **Active Directory** summary page, click **Kerberos Keytab Upload**.
- 3 On the **Kerberos Keytab Upload** page, select the keytab file to upload and click **Apply**.

You can also upload the file to iDRAC6 by using CLI `racadm` commands. The following command uploads the keytab file to iDRAC6:

```
racadm krbkeytabupload -f <filename>
```


where *<filename>* is the name of the keytab file.

Configuring Active Directory Users for single sign-on Logon


Before using the Active Directory single sign-on logon feature, ensure that you have already configured iDRAC6 for Active Directory login and the domain user account that you will use to login into the system has been enabled for iDRAC6 Active Directory login.


Also ensure that you have enabled the Active Directory logon setting. You must also enable iDRAC6 to be a kerberized service by uploading a valid *keytab* file obtained from the Active Directory root domain, to iDRAC6.

Logging Into iDRAC6 Using single sign-on for Active Directory Users

 **NOTE:** To log into iDRAC6, ensure that you have the latest runtime components of Microsoft Visual C++ 2005 Libraries. For more information, see the Microsoft website.

- 1 Log into your system using a valid Active Directory account.
- 2 Provide iDRAC6 name in the address bar of your browser in the following format: `https://idracname.domainname.com` (for example, `https://idrac-test.domain.com`).

 **NOTE:** Depending on your browser settings, you may be prompted to download and install single sign-on plug-in when using this feature for the first time.

 **NOTE:** For SSO, if you are using Internet Explorer, go to **Tools**→**Internet Options**→**Security tab**→**Local Intranet**→click **Sites**→click **Advanced** and then add an entry `*.domain.com` to the zone. If you are using Firefox, type `about:config`, and then add `domain.com` for the properties `network.negotiate-auth.delegation-uris` and `network.negotiate-auth.trusted-uris`.

You are logged into iDRAC6 with appropriate Microsoft Active Directory privileges if:

- You are a Microsoft Active Directory user
- You are configured in iDRAC6 for Active Directory login
- iDRAC6 is enabled for Kerberos Active Directory authentication

Configuring Active Directory Users for Smart Card Logon

Before using the Active Directory Smart Card logon feature, ensure that you have already configured iDRAC6 for Active Directory login and the user account that has been issued the Smart Card has been enabled for iDRAC6 Active Directory login.

Also ensure that you have enabled the Active Directory logon setting. You must also enable iDRAC6 to be a kerberized service by uploading a valid *keytab* file obtained from the Active Directory root domain, to iDRAC6.



NOTE: The Smart Card based Two Factor Authentication (TFA) and the single sign-on (SSO) features are not supported if the Active directory is configured for Extended schema. Further, both the Smart Card based TFA and Single Sign-on are supported on Microsoft Windows operating systems with Internet Explorer®. Smart Card based TFA is not supported on Firefox browsers whereas Single Sign-on to iDRAC6 is supported on Firefox browsers.



CAUTION: To log into iDRAC6, ensure that you have the latest runtime components of Microsoft Visual C++ 2005 libraries installed (32-bit C++ library). Else, the Smart Card plug-in will not load and you will not be able to login to iDRAC6. For more information, see the Microsoft website at www.microsoft.com.

You are logged into iDRAC6 with appropriate Microsoft Active Directory privileges if:

- You are a Microsoft Active Directory user
- You are configured in iDRAC6 for Active Directory login
- iDRAC6 is enabled for Kerberos Active Directory authentication
- You have entered the correct PIN for the Smart Card associated with the Active Directory user attempting to log in

iDRAC6 Login Scenarios with TFA and SSO

When you login to iDRAC6 from CMC Web GUI, iDRAC6 displays the following login screens options for various TFA and SSO enablement combinations, with different versions of iDRAC/iDRAC6 and CMC:

- CMC v2.1 or later with TFA enabled and iDRAC6 v2.1 or later with TFA enabled: iDRAC6 Login prompt with PIN entry.
- CMC v2.1 or later with TFA enabled, and iDRAC6 v2.1 or later with TFA disabled and SSO disabled: iDRAC6 Login prompt with user name, domain, and password.
- CMC v2.1 or later with TFA enabled, and iDRAC6 v2.1 or later with TFA disabled and with SSO enabled: iDRAC6 logins automatically with SSO.
- CMC v2.1 or later with TFA enabled and with iDRAC6 v2.0: iDRAC6 Login prompt with user name, domain, and password.
- CMC v2.1 or later with TFA enabled and iDRAC 1.x: iDRAC6 Login prompt with user name, domain, and password.

- **CMC v2.0 or earlier and iDRAC6 v2.1 or later with TFA enabled:** iDRAC6 Login prompt with PIN entry.
- **CMC v2.1 or later with TFA disabled, and iDRAC6 v2.1 or later with TFA enabled and SSO disabled:** iDRAC6 prompts for PIN entry.
- **CMC v2.1 or later with TFA disabled, and iDRAC6 v2.1 or later with TFA disabled and SSO enabled:** iDRAC6 logins with SSO.

Viewing the Configuration and Health of the Managed Server

System Summary

The **System Summary** page allows you to view your system's health and other basic iDRAC6 information at a glance and provides you with links to access the system health and information pages. Also, you can quickly launch common tasks from this page and view recent events logged in the System Event Log (SEL).

To access the **System Summary** page, click **System**→**Properties** tab→**System Summary**. See iDRAC6 Online Help for detailed information on each section in the **System Summary** page.

System Details

The **System Details** page displays information about the following system components:

- Main System Enclosure
- Integrated Dell Remote Access Controller 6 - Enterprise

Main System Enclosure

System Information

This section of iDRAC6's Web interface provides the following basic information about the managed server:

- Description — The model number or name of the managed server
- BIOS Version — The version number of the managed server's BIOS
- Service Tag — The Service Tag number of the server

- Host Name — The DNS hostname associated with the managed server
- OS Name — The name of the operating system installed on the managed server



NOTE: The **OS Name** field is populated only if Dell OpenManage™ Server Administrator is installed on the managed system. An exception to this are VMware® operating system names which are displayed even if Server Administrator is not installed on the managed system.

I/O Mezzanine Card

This section of iDRAC6 Web interface provides the following information about the I/O Mezzanine cards installed on the managed server:

- Connection — Lists the I/O Mezzanine card(s) installed on the managed server
- Card Type — The physical type of the installed Mezzanine card/connection
- Model Name — The model number, type, or description of the installed Mezzanine card(s)

Integrated Storage Card

This section of iDRAC6 Web interface provides information about the integrated Storage Controller Card installed on the managed server:

- Card Type — Displays the model name of the installed storage card, for example, SAS6/iR

Auto Recovery

This section of iDRAC6 Web interface details the current mode of operation of the Auto Recovery feature of the managed server as set by Open Manage Server Administrator:

- Recovery Action — Action to be performed when a system fault or *hang* is detected. Available actions are **No Action**, **Hard Reset**, **Power Down**, or **Power Cycle**.
- Initial Countdown — The amount of time (in seconds) after a system hang is detected at which time iDRAC6 performs a recovery action.
- Present Countdown — The current value (in seconds) of the countdown timer.


Integrated Dell Remote Access Controller 6 - Enterprise

iDRAC6 Information

This section of iDRAC6 Web interface provides the following information about iDRAC6 itself:

- Date/Time — Displays the current date and time (as of last page refresh) of iDRAC6
- Firmware Version — Displays the current version of iDRAC6 firmware installed on the managed system
- CPLD Version — Displays the board complex programmable logic device (CPLD) version.
- Firmware Updated — Displays the date and time of the last successful iDRAC6 firmware update
- MAC Address — Displays the MAC address associated with the LOM (LAN on Motherboard) Network Interface Controller of iDRAC6

IPv4 Settings

- Enabled — Displays whether IPv4 protocol support is enabled or disabled
-  **NOTE:** The IPv4 protocol option is enabled by default.
- DHCP Enabled — Enabled if iDRAC6 is set to fetch its IP address and associated info from a DHCP server
 - IP Address — Displays the IP address associated with iDRAC6 (not the managed server)
 - Subnet Mask — Displays the TCP/IP Subnet Mask configured for iDRAC6
 - Gateway — Displays the IP address of the network gateway configured for iDRAC6
 - Use DHCP to obtain DNS server addresses — Displays whether DHCP is used to obtain DNS Server Addresses
 - Preferred DNS Server — Displays the currently active primary DNS server
 - Alternate DNS Server — Displays the alternate DNS server address

IPv6 Settings

- Enabled — Displays whether IPv6 protocol support is enabled or disabled
- Autoconfiguration Enabled — Displays whether Autoconfiguration is enabled or disabled
- Link Local Address — Displays the IPv6 address for iDRAC6 NIC
- IPv6 Address 1-16 — Displays up to 16 IPv6 addresses (IPv6 Address 1 to IPv6 Address 16) for iDRAC6 NIC.
- Gateway — Displays the IP address of the network gateway configured for iDRAC6
- Use DHCPv6 to obtain DNS server addresses — Displays whether DHCP is used to obtain DNS Server Addresses
- Preferred DNS Server — Displays the currently active primary DNS server
- Alternate DNS Server — Displays the alternate DNS server address



NOTE: This information is also available at **iDRAC6→Properties→Remote Access Information**.

Embedded NIC MAC Addresses

- NIC 1 — Displays the Media Access Control (MAC) address(es) of the embedded Network Interface Controller (NIC) 1. MAC addresses uniquely identify each node in a network at the Media Access Control layer. Internet Small Computer System Interface (iSCSI) NIC is a network interface controller with the iSCSI stack running on the host computer. Ethernet NICs support the wired Ethernet standard and plug into the system bus of the server.
- NIC 2 — Displays the MAC address(es) of the embedded NIC 2 that uniquely identifies it in the network.
- NIC 3 — Displays the MAC address(es) of the embedded NIC 3 that uniquely identifies it in the network. Embedded NIC 3 MAC addresses may not be displayed on all systems.
- NIC 4 — Displays the MAC address(es) of the embedded NIC 4 that uniquely identifies it in the network. Embedded NIC 4 MAC addresses may not be displayed on all systems.

WWN/MAC

Click **System**→**Properties** tab→**WWN/MAC** to view the current configuration of installed I/O Mezzanine cards and their associated network fabrics. If the FlexAddress feature is enabled in CMC, the globally assigned (Chassis-Assigned) persistent MAC addresses supersede the hardwired values of each LOM.

Server Health

Click **System**→**Properties** tab→**System Summary**→**Server Health** section to view important information about the health of iDRAC6 and components monitored by iDRAC6. The **Status** column shows the status for each component. For a list of status icons and their meaning, see Table 20-3. Click the component name in the **Component** column for more detailed information about the component.



NOTE: Component information can also be obtained by clicking the component name in the left pane of the window. Components remain visible in the left pane independent of the tab/screen that is selected.

iDRAC6

The **Remote Access Information** screen lists a number of important details about iDRAC6, such as name, firmware revision, firmware updated, iDRAC6 time, IPMI version, CPLD version, server type, and network parameters. Additional details are available by clicking the appropriate tab at the top of the screen.

CMC

CMC screen displays the health status, firmware revision, and IP addresses of the Chassis Management Controller. You can also launch CMC Web interface by clicking the **Launch the CMC Web Interface** button. See the *Chassis Management Controller Firmware User Guide* for more information.



NOTE: Launching CMC Web GUI from iDRAC6 directs your search with the same IP address format. For example, if you open iDRAC6 Web GUI with an IPv6 address format, CMC Web page will also open with a valid IPv6 address.

Batteries

The **Batteries** screen displays the status of the system board coin-cell battery that maintains the Real-Time Clock (RTC) and CMOS configuration data storage of the managed system.

Temperatures

The **Temperatures** screen displays the status and readings of the on-board ambient temperature probe. Minimum and maximum temperature thresholds for *warning* and *failure* states are shown, along with the current health status of the probe.



NOTE: Depending on the model of your server, temperature thresholds for *warning* and *failure* states and/or the health status of the probe may not be displayed.

Voltages

The **Voltage Probes** screen displays the status and reading of the Voltage probes, providing such information as the status of the on-board voltage rail and CPU core sensors.

Power Monitoring

The **Power Monitoring** screen enables you to view the following monitoring and power statistics information:

- **Power Monitoring** — Displays the amount of power being used (one minute average power value measured in AC watts) by the server as reported by the System Board Current Monitor.
- **Amperage** — Displays the current consumption (AC in Amperes) in the active Power Supply unit.
- **Power Tracking Statistics** — Displays information about the amount of power used by the system since the reading was last reset.
- **Peak Statistics** — Displays information about the peak amount of power used by the system since the reading was last reset.
- **Power Consumption** — Displays the average, minimum, and maximum power consumption, and the maximum and minimum power times in the system for the last minute, hour, day, and week.
- **Show Graph** — Displays a graphical representation of power consumption for 1 Hour, 24 Hours, 3 Days, and 1 Week.

 **NOTE:** Power and Amperage are measured in AC.

CPU

The **CPU** screen reports the health of each CPU on the managed server. This health status is a roll-up of a number of individual thermal, power, and functional tests.


POST

The **Post Code** screen displays the last system post code (in hexadecimal) prior to booting the operating system of the managed server.

Misc Health

The **Misc Health** screen provides access to the following system logs:

- System Event Log — Displays system-critical events that occur on the managed system.
- Post Code — Displays the last system post code (in hexadecimal) prior to booting the operating system of the managed server.
- Last Crash Screen — Displays the most recent crash screen and time.
- Boot Capture — Provides playback of the last three boot screens.

 **NOTE:** This information is also available at **System**→**Logs** tab→**System Event Log**.

Configuring and Using Serial Over LAN

Serial Over LAN (SOL) is an IPMI feature that allows a managed server's text based console data that would traditionally be sent to the serial I/O port to be redirected over iDRAC6's dedicated Out of Band Ethernet management network. The SOL out-of-band console enables system administrators to remotely manage the blade server's text-based console from any location with network access. Benefits of SOL are as follows:

- Remotely access operating systems with no timeout.
- Diagnose host systems on Emergency Management Services (EMS) or Special Administrator Console (SAC) for Windows or in a Linux shell.
- View the progress of a blade server during POST and reconfigure the BIOS setup program (while redirected to a serial port).

Enabling Serial Over LAN in the BIOS

To configure the server for Serial Over LAN, the following configuration steps are required and will be explained in detail.

- 1 Configure Serial Over LAN in BIOS (disabled by default)
- 2 Configure iDRAC6 for Serial over LAN
- 3 Select a method to initialize Serial Over LAN (SSH, Telnet, SOL Proxy, or IPMI Tool)
- 4 Configure the operating system for SOL

Serial communication is **off** by default in BIOS. In order to redirect the host text console data to Serial over LAN, you must enable console redirection via COM1. To change the BIOS setting, perform the following steps:

- 1 Boot the managed server.
- 2 Press <F2> to enter the BIOS setup utility during POST.
- 3 Scroll down to Serial Communication and press <Enter>.

In the pop-up window, the serial communication list is presented with the following options:

- Off
- On without console redirection
- On with console redirection

Use the arrow keys to navigate between options.

- 4 Ensure that **On with console redirection** is enabled. Ensure that **Serial Port Address** is COM1.
- 5 Ensure that the **Failsafe Baud Rate** is identical to SOL baud rate that is configured on iDRAC6. The default value for both the failsafe baud rate and iDRAC6's SOL baud rate setting is 115.2 kbps.
- 6 Ensure that **Redirection After Boot** is enabled. This option enables BIOS SOL redirection across subsequent reboots. BIOS has the **Remote Terminal Type** values VT100/VT220 and ANSI.
- 7 Save the changes and exit.
The managed server reboots.

Configuring Serial Over LAN in iDRAC6 Web GUI

- 1 Open the **Serial Over LAN Configuration** screen by selecting **System**→**Remote Access**→**iDRAC6**→**Network/Security**→**Serial Over LAN**.
- 2 Ensure the **Enable Serial Over LAN** option is selected (enabled). By default it is enabled.
- 3 Update the IPMI SOL baud rate by selecting a data speed from the **Baud Rate** drop-down menu. The options are 9600 bps, 19.2 kbps, 57.6 kbps, and 115.2 kbps. The default value is 115.2 kbps.
- 4 Select a privilege level limit for Serial Over LAN.



NOTE: Ensure that the SOL baud rate is identical to the Failsafe Baud Rate that was set in BIOS.

- 5 Click **Apply** if you have made any changes.

Table 10-1. Serial Over LAN Configuration Settings

Setting	Description
Enable Serial Over LAN	When selected, the check box indicates that Serial Over LAN is enabled.
Baud Rate	Indicates the data speed. Select a data speed of 9600 bps, 19.2 kbps, 57.6 kbps, or 115.2 kbps.
Channel Privilege Level Limit	Select a privilege level limit for Serial Over LAN.

Table 10-2. Serial Over LAN Configuration Buttons

Button	Description
Print	Prints the Serial Over LAN configuration values that appear on the screen.
Refresh	Reloads the Serial Over LAN screen.
Advanced Settings	Opens the Serial Over LAN Configuration Advanced Settings screen.
Apply	Applies any new settings that you make while viewing the Serial Over LAN screen.

- 6 Change the configuration on the **Serial Over LAN Configuration Advanced Settings** screen, if necessary. It is recommended that you use the default values. **Advanced Settings** allows you to adjust SOL performance by changing the **Character Accumulate Interval** and **Character Send Threshold** values. For optimal performance, use the default settings of 10 milliseconds and 255 characters respectively.

Table 10-3. Serial Over LAN Configuration Advanced Settings

Setting	Description
Character Accumulate Interval	The typical amount of time iDRAC6 waits before sending a partial SOL data packet. This parameter is specified in milliseconds.
Character Send Threshold	Specifies the number of characters per SOL data packet. As soon as the number of characters accepted by iDRAC6 is equal to or greater than the Character Send Threshold value, iDRAC6 starts transmitting SOL data packets that contain numbers of characters equal to or less than the Character Send Threshold value. If a packet contains fewer characters than this value, it is defined to be a partial SOL data packet.



 **NOTE:** If you change these values to lower values, the console redirection feature of SOL may experience a reduction in performance. Furthermore, the SOL session must wait to receive an acknowledgement for each packet before sending the next packet. As a result, the performance is significantly reduced.

Table 10-4. Serial Over LAN Configuration Advanced Settings Buttons

Button	Description
Print	Prints the Serial Over LAN Configuration Advanced Settings values that appear on the screen.
Refresh	Reloads the Serial Over LAN Configuration Advanced Settings screen.
Apply	Saves any new settings that you make while viewing the Serial Over LAN Configuration Advanced Settings screen.
Go Back To Serial Over LAN Configuration Page	Returns the user to the Serial Over LAN screen.

- 7 Configure SSH and Telnet for SOL at **System**→**Remote Access**→**iDRAC6**→**Network/Security** tab→**Services**.

 **NOTE:** Each blade server supports only one active SOL session.

 **NOTE:** SSH protocol is enabled by default. Telnet protocol is disabled by default.

8 Click **Services** to open the **Services** screen.



NOTE: SSH and Telnet programs both provide access on a remote machine.

9 Click **Enabled** on either **SSH** or **Telnet** as required.

10 Click **Apply**.



NOTE: SSH is a recommended method due to better security and encryption mechanisms.



NOTE: SSH/Telnet session duration can be infinite as long as the timeout value is set to 0. The default timeout value is **1800 seconds**.

11 Enable iDRAC6 Out-of-Band interface (IPMI over LAN) by selecting **System**→**Remote Access**→**iDRAC6**→**Network/Security**→**Network**.

12 Select the **Enable IPMI Over LAN** option under **IPMI Settings**.

13 Click **Apply**.

Using Serial Over LAN (SOL)

This section provides several methods to initialize a Serial-Over-LAN session including a Telnet program, an SSH client, IPMITool, and SOL Proxy. The purpose of Serial Over LAN feature is to redirect the serial port of the managed server through iDRAC6 into the console of your management station.

Model for Redirecting SOL Over Telnet or SSH

Telnet (port 23)/ SSH (port 22) client ↔ WAN connection ↔ iDRAC6 server

The IPMI-based SOL over SSH/Telnet implementation eliminates the need for an additional utility because the serial to network translation happens within iDRAC6. The SSH or Telnet console that you use should be able to interpret and respond to the data arriving from the managed server's serial port. The serial port usually attaches to a shell that emulates an ANSI- or VT100/VT220-terminal. The serial console is automatically redirected to your SSH or Telnet console.

To initiate a SOL session, attach to iDRAC6 through SSH/Telnet which takes you to iDRAC6 command line console. Then enter "**connect**" at the dollar prompt.

See "Installing Telnet or SSH Clients" for more information about using Telnet and SSH clients with iDRAC6.

Model for the SOL Proxy

Telnet Client (port 623) ↔ WAN connection ↔ SOL Proxy ↔ iDRAC6 server

When the SOL Proxy communicates with the Telnet client on a management station, it uses the TCP/IP protocol. However, SOL proxy communicates with the managed server's iDRAC6 over the RMCP/IPMI/SOL protocol, which is a UDP-based protocol. Therefore if you communicate with your managed system's iDRAC6 from SOL Proxy over a WAN connection, you may experience network performance issues. The recommended usage model is to have the SOL Proxy and iDRAC6 server on the same LAN. The management station with the Telnet client can then connect to the SOL Proxy over a WAN connection. In this usage model, SOL Proxy will function as desired.

Model for Redirecting SOL Over IPMITool

IPMITool ↔ WAN connection ↔ iDRAC6 server


The IPMI-based SOL utility, IPMITool, uses RMCP+ protocol delivered using UDP datagrams to port 623. iDRAC6 requires this RMCP+ connection to be encrypted. The encryption key (KG key) must contain characters of zero or NULL that can be configured in iDRAC6 Web GUI or in iDRAC6 Configuration Utility. You can also wipe out the encryption key by pressing the backspace key so that iDRAC6 will provide NULL characters as the encryption key by default. The advantage of using RMCP+ is improved authentication, data integrity checks, encryption, and the ability to carry multiple types of payloads. See "Using SOL over IPMITool" or the IPMITool website for more information:

<http://ipmitool.sourceforge.net/manpage.html>.

Disconnecting SOL session in iDRAC6 Command Line Console


Commands to disconnect a SOL session are utility oriented. You can exit the utility only when a SOL session is fully terminated. To disconnect a SOL session, terminate the SOL session from iDRAC6 command line console.

When you are ready to quit SOL redirection, press <Enter>, <Esc>, and then <t> (press the keys in sequence, one after the other). The SOL session will close accordingly. The escape sequence is also printed on screen as soon as a SOL session is connected. When the managed server is **off**, it takes a bit longer to establish the SOL session.

 **NOTE:** If a SOL session is not closed successfully in the utility, more SOL sessions may not be available. The way to resolve this situation is to terminate the command line console in the Web GUI under **System**→**Remote Access**→**iDRAC6**→**Network/Security**→**Sessions**.


Using SOL over PuTTY

To start SOL from PuTTY on a Windows management station, follow these steps:


 **NOTE:** If required, you can change the default SSH/Telnet timeout at **System**→**Remote Access**→**iDRAC6**→**Network/Security**→**Services**.

- 1 Connect to iDRAC6 with the following command at the command prompt:

```
putty.exe [-ssh | -telnet] <login name>@<iDRAC6-ip-address> <port number>
```


 **NOTE:** The port number is optional. It is required only when the port number is reassigned.

- 2 Enter the following command at the command prompt to start SOL:
connect

 **NOTE:** This connects you to the managed server's serial port. Once a SOL session is established successfully, iDRAC6 command line console is no longer available to you. Follow the escape sequence properly to reach iDRAC6 command line console. Quit the SOL session using the command sequence detailed in "Disconnecting SOL session in iDRAC6 Command Line Console," and start a new one.


Using SOL over Telnet with Linux

To start SOL from Telnet on a Linux management station, follow these steps:

 **NOTE:** If required, you can change the default Telnet timeout at **System**→**Remote Access**→**iDRAC6**→**Network/Security**→**Services**.

- 1 Start a shell.
- 2 Connect to iDRAC6 with the following command:


```
telnet <iDRAC6-ip-address>
```

 **NOTE:** If you have changed the port number for the Telnet service from the default (port 23), add the port number to the end of the Telnet command.

- 3 Enter the following command at the command prompt to start SOL:
`connect`
- 4 To quit a SOL session from Telnet on Linux, press <Ctrl>+] (hold down the control key, press the right-square-bracket key, and then release). A Telnet prompt displays. Enter `quit` to exit Telnet.


Using SOL over OpenSSH with Linux

OpenSSH is an open source utility for using the SSH protocol. To start SOL from OpenSSH on a Linux management station, follow these steps:

 **NOTE:** If required, you can change the default SSH session timeout at **System**→**Remote Access**→**iDRAC6**→**Network/Security**→**Services**.


- 1 Start a shell.
- 2 Connect to iDRAC6 with the following command:
`ssh <iDRAC-ip-address> -l <login name>`
- 3 Enter the following command at the command prompt to start SOL:

`connect`

 **NOTE:** This connects you to the managed server's serial port. Once a SOL session is established successfully, iDRAC6 command line console is no longer available to you. Follow the escape sequence properly to reach iDRAC6 command line console. Quit the SOL session (refer to "Disconnecting SOL session in iDRAC6 Command Line Console" to close an active SOL session).

Using SOL over IPMItool

The *Dell Systems Management Tools and Documentation* DVD provides the IPMItool which can be installed on various operating systems. See the *Software Quick Installation Guide* for installation details. To start SOL with IPMItool on a management station, follow these steps:

 **NOTE:** If required, you can change the default SOL timeout at **System**→**Remote Access**→**iDRAC6**→**Network/Security**→**Services**.

- 1 Locate **IPMItool.exe** under the proper directory.
The default path in Windows 32-bit operating system is **C:\Program Files\Dell\SysMgt\bmc** and in Windows 64-bit operating system is **C:\Program Files (x86)\Dell\SysMgt\bmc**.

- 2 Ensure the Encryption Key is all zeroes at System→Remote Access→iDRAC6→Network/Security→Network→IPMI Settings.
- 3 Enter the following command in the Windows command prompt or in the Linux shell prompt to start SOL from iDRAC:

```
ipmitool -H <iDRAC-ip-address> -I lanplus -U  
<login name> -P <login password> sol activate
```

This connects you to the managed server's serial port.

- 4 To quit a SOL session from IPMITool, press <~> and <. > (press the tilde and period keys in sequence, one after the other). Try more than once since iDRAC6 may be busy to accept the keys. The SOL session will close.



NOTE: If a user does not terminate the SOL session correctly, enter the following command to reboot iDRAC. Allow iDRAC6 upto two minutes to complete booting. See "RACADM Subcommand Overview" for more details.

```
racadm racreset
```

Opening SOL with SOL proxy


Serial-Over-LAN Proxy (SOL Proxy) is a Telnet daemon that allows LAN-based administration of remote systems using the Serial over LAN (SOL) and IPMI protocols. Any standard Telnet client application, such as HyperTerminal on Microsoft Windows or Telnet on Linux, can be used to access the daemon's features. SOL can be used either in the menu mode or command mode. The SOL protocol coupled with the remote system's BIOS console redirection allows administrators to remotely view and change a managed system's BIOS settings over a LAN. The Linux serial console and Microsoft's EMS/SAC interfaces can also be accessed over a LAN using SOL.




NOTE: All versions of the Windows operating system include HyperTerminal terminal emulation software. However, the included version does not provide many functions required during console redirection. Instead, you can use any terminal emulation software that supports VT100/VT220 or ANSI emulation mode. One example of a full VT100/VT220 or ANSI terminal emulator that supports console redirection on your system is Hilgraeve's HyperTerminal Private Edition 6.1 or later. Also, use of the command line window to perform Telnet serial console redirection may display garbage characters.



NOTE: See your system's User's Guide for more information about console redirection, including hardware and software requirements and instructions for configuring host and client systems to use console redirection.

 **NOTE:** HyperTerminal and Telnet settings must be consistent with the settings on the managed system. For example, the baud rates and terminal modes should match.

 **NOTE:** The Windows `telnet` command that is run from a MS-DOS[®] prompt supports ANSI terminal emulation, and the BIOS needs to be set for ANSI emulation to display all the screens correctly.

Before Using SOL proxy

Before using SOL proxy, see the *Baseboard Management Controller Utilities User's Guide* to learn how to configure your management stations. By default, BMC Management Utilities are installed in the following directory on Windows operating systems:

`C:\Program Files\Dell\SysMgt\bmc` — (32-bit operating system)

`C:\Program Files (x86)\Dell\SysMgt\bmc` — (64-bit operating system)

The installation program copies the files to the following locations on Linux Enterprise Operating Systems:

`/etc/init.d/SOLPROXY.cfg`

`/etc/SOLPROXY.cfg`

`/usr/sbin/dsm_bmu_solproxy32d`

`/usr/sbin/solconfig`

`/usr/sbin/ipmish`

Initiating the SOL Proxy session

For Windows 2003

To start the SOL Proxy service on Windows system after installation, you can reboot the system (SOL Proxy automatically starts on a reboot). Or, you can start the SOL Proxy service manually by completing the following steps:

- 1** Right-click **My Computer** and click **Manage**.
The **Computer Management** window is displayed.
- 2** Click **Services and Applications** and then click **Services**.
Available services are displayed to the right.

- 3 Locate `DSM_BMU_SOLProxy` in the list of services and right-click to start the service.

Depending on the console you use, there are different steps for accessing SOL Proxy. Throughout this section, the management station where the SOL Proxy is running is referred as the SOL Proxy Server.

For Linux

The SOL Proxy will start automatically during system startup. Alternatively, you can go to directory `/etc/init.d` and use the following commands to manage the SOL Proxy service:

```
solproxy status  
  
dsm_bmu_solproxy32d start  
  
dsm_bmu_solproxy32d stop  
  
solproxy restart
```

Using Telnet with SOL Proxy

This assumes that the SOL Proxy service is already up and running on the management station.

For Windows 2003:


- 1 Open a command prompt window on your management station.
- 2 Enter the `telnet` command in the command-line and provide `localhost` as the IP address if the SOL Proxy server is running in the same machine and the port number that you specified in the SOL Proxy installation (the default value is 623). For example:

```
telnet localhost 623
```

For Linux:

- 1 Open a Linux shell on your management station.
- 2 Enter the `telnet` command and provide `localhost` as the IP address of the SOL Proxy server and the port number that you specified in the SOL Proxy installation (the default value is 623). For example:

```
telnet localhost 623
```

 **NOTE:** Whether your host operating system is Windows or Linux, if the SOL Proxy server is running on a different machine than your management station, input SOL Proxy server IP address instead of localhost.

```
telnet <SOL Proxy server IP address> 623
```


Using HyperTerminal with SOL Proxy


- 1 From the remote station, open **HyperTerminal.exe**.
- 2 Choose **TCPIP(Winsock)**.
- 3 Enter host address **localhost** and port number **623**.

Connecting to the Remote Managed System's BMC


After a SOL Proxy session is established successfully, you are presented with the following choices:

1. Connect to the Remote Server's BMC
2. Configure the Serial-Over-LAN for the Remote Server
3. Activate Console Redirection
4. Reboot and Activate Console Redirection
5. Help
6. Exit

 **NOTE:** While multiple SOL sessions can be active at the same time, only one console redirection session can be active at any given time for a managed system.

 **NOTE:** To exit an active SOL session, use the <~><.> character sequence. This sequence terminates SOL and returns you to the top-level menu.


- 1 Select option **1** in the main menu.
- 2 Enter **iDRAC6 IP Address** of the remote managed system.
- 3 Provide **iDRAC6 Username** and **Password** for iDRAC6 on the managed system. iDRAC6 username and password must be assigned and stored in iDRAC6 non-volatile storage.

 **NOTE:** Only one SOL console redirection session with iDRAC6 is permitted at one time.

 **NOTE:** If required, extend SOL session duration to infinite by changing the **Telnet Timeout** value to zero in iDRAC6 Web GUI under **System**→**Remote Access**→**iDRAC6**→**Network/Security**→**Services**.

- 4 Provide the IPMI encryption key if it was configured in iDRAC6.

 **NOTE:** You can locate the IPMI encryption key in iDRAC6 GUI on **System**→**Remote Access**→**iDRAC6**→**Network/Security**→**Network**→**IPMI Settings**→**Encryption Key**.

 **NOTE:** The default IPMI encryption key is all zeros. If you press <Enter> for the encryption option, iDRAC6 will use this default encryption key.

- 5 Select **Configure the Serial-Over-LAN for the Remote Server** (option 2) in the main menu.

The SOL configuration menu appears. According to the current SOL status, the content of the SOL configuration menu varies:

- If SOL is already enabled, the current settings are displayed and you are presented with three choices:
 1. `Disable Serial-Over-LAN`
 2. `Change Serial-Over-LAN settings`
 3. `Cancel`
- If SOL is enabled, ensure that the SOL baud rate is consistent with iDRAC6's and that the user has the administrator privilege.
- If SOL is currently disabled, enter `Y` to enable SOL or `N` to keep SOL disabled.

- 6 Select **Activate Console Redirection** (option 3) in the main menu

The remote managed system's text console is redirected to your management station.

- 7 Select **Reboot and Activate Console Redirection** (option 4) in the main menu (optional).

The power state of the remote managed system is confirmed. If power is on, you are asked to decide between a graceful or forceful shutdown.

The power state is monitored until the state changes to **On**. Console redirection begins, and the remote managed system text console is redirected to your management station.

While the managed system reboots, you can enter BIOS system setup program to view or configure BIOS settings.

- 8 Select **Help** (option 5) in the main menu to display a detailed description for each option.
- 9 Select **Exit** (option 6) in the main menu to end your Telnet session and disconnect from SOL Proxy.



NOTE: If a user does not terminate the SOL session correctly, issue the following command to reboot iDRAC. Allow iDRAC6 1-2 minutes to complete booting. Refer to "RACADM Subcommand Overview" for more details.

```
racadm racreset
```

Operating System Configuration

Complete the steps below to configure generic Unix-like operating systems. This configuration is based on default installations of Red Hat Enterprise Linux 5.0, SUSE Linux Enterprise Server 10 SP1, and Windows 2003 Enterprise.

Linux Enterprise Operating System

- 1 Edit the `/etc/inittab` file to enable hardware flow control and to allow users to log in through the SOL console. Add the line below to the end of `#Run gettys in standard runlevels` section.

```
7:2345:respawn:/sbin/agetty -h 115200 ttyS0 vt220
```

Example of original `/etc/inittab`:

```
#
# inittab      This file describes how the INIT process should set up
#              the system in a certain run-level.
#

SKIP this part of file

# Run gettys in standard runlevels
1:2345:respawn:/sbin/miagetty tty1
2:2345:respawn:/sbin/miagetty tty1
3:2345:respawn:/sbin/miagetty tty1
4:2345:respawn:/sbin/miagetty tty1
5:2345:respawn:/sbin/miagetty tty1
```

```
6:2345:respawn:/sbin/miagetty tty1

# Run xdm in runlevel 5
x:5:respawn:/etc/X11/prefdm -nodaemon
```

Example of modified `/etc/inittab`:

```
#
# inittab    This file describes how the INIT process should set up
#           the system in a certain run-level.
#

SKIP this part of file

# Run gettys in standard runlevels
1:2345:respawn:/sbin/miagetty tty1
2:2345:respawn:/sbin/miagetty tty1
3:2345:respawn:/sbin/miagetty tty1
4:2345:respawn:/sbin/miagetty tty1
5:2345:respawn:/sbin/miagetty tty1
6:2345:respawn:/sbin/miagetty tty1
7:2345:respawn:/sbin/agetty -h ttyS0 115200 vt220

# Run xdm in runlevel 5
x:5:respawn:/etc/X11/prefdm -nodaemon
```

- 2** Edit the `/etc/securetty` file to allow users to log in as root user through the SOL console. Add the following line after `console`:

```
ttyS0
```

Example of original `/etc/securetty`:

```
console
vc/1
vc/2
```

```
vc/3
```

```
vc/4
```

```
SKIP the rest of file
```

Example of modified `/etc/securetty`:

```
Console
```

```
ttyS0
```

```
vc/1
```

```
vc/2
```

```
vc/3
```

```
vc/4
```

```
SKIP the rest of file
```

-
- 3** Edit the `/boot/grub/grub.conf` or `/boot/grub/menu.list` file to add boot options for SOL:
- a** Comment out the graphical display lines in the various Unix-like operating systems:
 - `splashimage=(hda0,0)/grub/splash.xpm.gz` in RHEL 5
 - `gfxmenu (hda0,5)/boot/message` in SLES 10
 - b** Add the following line before the first `title= ...` line:
`# Redirect OS boot via SOL`
 - c** Append the following entry to the first `title= ...` line:
`SOL redirection`
 - d** Append the following text to the `kernel/...` line of the first `title= ...`:
`console=tty1 console=ttyS0,115200`



NOTE: `/boot/grub/grub.conf` in Red Hat Enterprise Linux 5 is a symbolic link to `/boot/grub/menu.list`. You can change the settings in either one of them.

Example of original `/boot/grub/grub.conf` in RHEL 5:

```
# grub.conf generated by anaconda
#
# Note that you do not have to return grub after making changes
to this
# file
# NOTICE: You have a /boot partition. This means that
#         all kernel and initrd paths are relative to /boot/,
eg.
#         root (hd0,0)
#         kernel /vmlinuz-version ro root=
/dev/VolGroup00/LogVol100
#         initrd /initrd-version.img
#boot=/dev/sda
default=0
timeout=5
splashimage=(hd0,0)/grub/splash.xpm/gz
hiddenmenu

title Red Hat Enterprise Linux 5
    root (hd0,0)
    kernel /vmlinuz-2.6.18-8.el5 ro root=
/dev/VolGroup00/LogVol100 rhgb quiet
    initrd /initrd-2.6.18-8.el5.img
```

Example of modified `/boot/grub/grub.conf`:

```
# grub.conf generated by anaconda
#
# Note that you do not have to return grub after making changes
to this
# file
# NOTICE: You have a /boot partition. This means that
```

```

#           all kernel and initrd paths are relative to /boot/,
eg.
#           root (hd0,0)
#           kernel /vmlinuz-version ro root=
/dev/VolGroup00/LogVol100
#           initrd /initrd-version.img
#boot=/dev/sda
default=0
timeout=5
#splashimage=(hd0,0)/grub/splash.xpm/gz
hiddenmenu

# Redirect the OS boot via SOL
title Red Hat Enterprise Linux 5 SOL redirection
    root (hd0,0)
    kernel /vmlinuz-2.6.18-8.el5 ro root=
/dev/VolGroup00/LogVol100 rhgb quiet console=tty1 console=
ttyS0,115200
    initrd /initrd-2.6.18-8.el5.img

```

Example of original `/boot/grub/menu.list` in SLES 10:

```

#Modified by YaST2. Last modification on Sat Oct 11 21:52:09
UTC 2008
Default 0
Timeout 8
gfxmenu (hd0.5)/boot/message

###Don't change this comment - YaST2 identifier: Original name:
linux###
title SUSE Linux Enterprise Server 10 SP1
    root (hd0,5)
    kernel /boot/vmlinuz-2.6.16-46-0.12-bigsmpt root=
/dev/disk/by-id/scsi-35000c5000155c resume=/dev/sda5
    splash=silent showopts
    initrd /boot/initrd-2.6.16.46-0.12-bigsmpt

```

Example of modified `/boot/grub/menu.list` in SLES 10:

```
#Modified by YaST2. Last modification on Sat Oct 11 21:52:09
UTC 2008

Default 0

Timeout 8


#gfxmenu (hd0.5)/boot/message

###Don't change this comment - YaST2 identifier: Original name:
linux###

title SUSE Linux Enterprise Server 10 SP1 SOL redirection
    root (hd0,5)

    kernel /boot/vmlinuz-2.6.16-46-0.12-bigsmpt root=
    /dev/disk/by-id/scsi-35000c5000155c resume=/dev/sda5
    splash=silent showopts console=tty1 console=ttyS0,115200
    initrd /boot/initrd-2.6.16.46-0.12-bigsmpt
```

Windows 2003 Enterprise

- 1 Find out the boot entry ID by entering `bootcfg` in the Windows command prompt. Locate the boot entry ID for the section with the OS-friendly name **Windows Server 2003 Enterprise**. Press `<Enter>` to display the boot options on the management station.
 - 2 Enable EMS at a Windows command prompt by entering:
`bootcfg /EMS ON /PORT COM1 /BAUD 115200 /ID <boot id>`
-  **NOTE:** `<boot id>` is the boot entry ID from step 1.
- 3 Press `<Enter>` to verify that the EMS console setting takes effect.

Example of original bootcfg setting:

```
Boot Loader Settings
-----
timeout:30
default:multi(0)disk(0)rdisk(0)partition(1)\WINDOWS

Boot Entries
-----
Boot entry ID:    1
Os Friendly Name: Winodws Server 2003, Enterprise
Path:             multi(0)disk(0)rdisk(0)partition(1)\WINDOWS
OS Load Options: /nonexecute=optout /fastdetect /usepmtimer
                 /redirect
```

Example of modified bootcfg setting:

```
Boot Loader Settings
-----
timeout:          30
default:          multi(0)disk(0)rdisk(0)partition(1)\WINDOWS
redirect:        COM1
redirectbaudrate:115200

Boot Entries
-----
Boot entry ID:    1
Os Friendly Name: Windows Server 2003, Enterprise
Path:             multi(0)disk(0)rdisk(0)partition(1)\WINDOWS
OS Load Options: /nonexecute=optout /fastdetect /usepmtimer
                 /redirect
```

Using GUI Console Redirection

This section provides information about using iDRAC6 console redirection feature.

Overview

iDRAC6 console redirection feature enables you to remotely access local consoles in graphic or text mode, allowing you to control one or more iDRAC6-enabled systems from a single location.

Using Console Redirection

The **Console Redirection** screen enables you to manage the remote system by using the keyboard, video, and mouse on your local management station to control the corresponding devices on a remote managed server. This feature can be used in conjunction with the Virtual Media feature to perform remote software installations.

The following rules apply to a console redirection session:

- A maximum of two simultaneous console redirection sessions are supported on each blade. Both sessions view the same managed server console simultaneously.
- A console redirection session should not be launched from a Web browser on the managed system.
- A minimum available network bandwidth of 1 MB/sec is required.

If a second user requests a console redirection session, the first user is notified and is given the option to refuse access, allow only video, or allow full shared access. The second user is notified that another user has control. The first user must respond within thirty seconds, or else access is not granted to the

second user. During the time that two sessions are concurrently active, the first user sees a message in the upper-right corner of the screen that identifies that the second user has an active session.

If the neither the first or second user has administrator privileges, termination of the first user's active session automatically results in termination of the second user's session.

Clear Your Browser's Cache

If you encounter issues when operating the vKVM, (out of range errors, synchronization issues, and so on) clear the browser's cache to remove/delete any old versions of the viewer that may be stored on the system and try again.

To clear older versions of Active-X viewer for IE6, do the following:

- 1 Open the command prompt and change directory to **Windows\Downloaded program files**.
- 2 Run **regsvr32 /u VideoViewer.ocx**.
- 3 Delete the following files: **AvctKeyboard.dll, AvctVirtualMediaDE.dll, AvctVirtualMediaES.dll, AvctVirtualMediaFR.dll, AvctVirtualMediaJA.dll, AvctVirtualMediaZH.dll, VideoViewerDE.dll, VideoViewerES.dll, VideoViewerFR.dll, VideoViewerJA.dll, VideoViewerZH.dll, and VirtualMediaDLL.dll**.
- 4 Delete the *Session Viewer* and/or *Video Viewer* add-ons that have been used by Internet Explorer.

To clear older versions of Active-X viewer for IE7, do the following:

- 1 Close the Video Viewer and Internet Explorer browser.
- 2 Open the Internet Explorer browser again and go to **Internet Explorer**→**Tools**→**Manage Add-ons** and click **Enable or Disable Add-ons**. The **Manage Add-ons** window is displayed.
- 3 Select **Add-ons that have been used by Internet Explorer** from the Show drop-down menu.
- 4 Delete the *Video Viewer* add-on.

To clear older versions of Active-X viewer for IE8, do the following:

- 1 Close the Video Viewer and Internet Explorer browser.

- 2 Open the Internet Explorer browser again and go to **Internet Explorer**→**Tools**→**Manage Add-ons** and click **Enable or Disable Add-ons**. The **Manage Add-ons** window is displayed.
- 3 Select **All Add-ons** from the **Show** drop-down menu.
- 4 Select the *Video Viewer* add-on and click the **More Information** link.
- 5 Select **Remove** from the **More Information** window.
- 6 Close the **More Information** and the **Manage Add-ons** windows.

To clear older versions of Java[®] viewer in Windows or Linux, do the following:

- 1 At the command prompt, run `javaws -viewer`
- 2 The **Java Cache Viewer** is displayed.
- 3 Delete the item titled *iDRAC6 Console Redirection Client* and *JViewer*.

You can also run `javaws -uninstall` at the command prompt to remove all applications from the cache.

Supported Screen Resolutions and Refresh Rates

Table 11-1 lists the supported screen resolutions and corresponding refresh rates for a console redirection session that is running on the managed server.

Table 11-1. Supported Screen Resolutions and Refresh Rates

Screen Resolution	Refresh Rate (Hz)
720x400	70
640x480	60, 72, 75, 85
800x600	60, 70, 72, 75, 85
1024x768	60, 70, 72, 75, 85
1280x1024	60

Configuring the Management Station

To use Console Redirection on the management station, perform the following procedures:

- 1 Install and configure a supported Web browser. See "Supported Web Browsers" and "Configuring a Supported Web Browser."

- 2 If you are using Firefox or want to use the Java Viewer with Internet Explorer, install a Java Runtime Environment (JRE). See "Installing a Java Runtime Environment (JRE)."
- 3 It is recommended that you configure your monitor display resolution to 1280x1024 pixels.



NOTE: If you have an active console redirection session and a lower resolution monitor is connected to the iKVM, the server console resolution may reset if the server is selected on the local console. If the server is running a Linux operating system, an X11 console may not be viewable on the local monitor. Pressing <Ctrl><Alt><F1> at the iKVM will switch Linux to a text console.

Configuring Console Redirection and Virtual Media in iDRAC6 Web Interface

To configure console redirection in iDRAC6 Web interface, perform the following steps:

- 1 Click **System** and then click the **Console/Media** tab.
- 2 Click **Configuration** to open the **Configuration** screen.
- 3 Configure the console redirection properties. Table 11-2 describes the settings for console redirection.
- 4 When completed, click **Apply**.
- 5 Click the appropriate button to continue. See Table 11-3.

Table 11-2. Console Redirection Configuration Properties

Property	Description
Enabled	Select to enable or disable Console Redirection. Selected indicates that Console Redirection is enabled. Deselected indicates that Console Redirection is disabled. The default is enabled .
Max Sessions	Displays the maximum number of Console Redirection sessions that are possible, 1 or 2. Use the drop-down menu to change the maximum number of Console Redirection sessions allowed. The default is 2.

Table 11-2. Console Redirection Configuration Properties (continued)

Property	Description
Active Sessions	Displays the number of Active Console sessions. This field is read-only.
Keyboard and Mouse Port Number	The network port number used for connecting to the Console Redirection Keyboard/Mouse option. This traffic is always encrypted. You may need to change this number if another program is using the default port. The default is 5900.
Video Port Number	The network port number used for connecting to the Console Redirection Screen service. You may need to change this setting if another program is using the default port. The default is 5901.
Video Encryption Enabled	Selected indicates that video encryption is enabled. All traffic going to the video port is encrypted. Deselected indicates that video encryption is disabled. Traffic going to the video port is not encrypted. The default is Encrypted . Disabling encryption can improve performance on slower networks.
Mouse Mode	Choose Windows if the managed server is running on a Windows® operating system. Choose Linux if the managed server is running on Linux. Choose USC/Diags if your server is not running on a Windows or Linux operating system. NOTE: You must select USC/Diags in HyperV, Dell Diagnostics, or USC (System Services). The default is Windows .

Table 11-2. Console Redirection Configuration Properties (continued)

Property	Description
Console Plug-In Type for IE	When using Internet Explorer on a Windows operating system, you can choose from the following viewers: <i>ActiveX</i> - The <i>ActiveX Console Redirection</i> viewer <i>Java</i> - <i>Java Console Redirection</i> viewer NOTE: Depending on your version of Internet Explorer, additional security restrictions may need to be turned off (see "Configuring and Using Virtual Media"). NOTE: You must have the Java runtime environment installed on your client system to use the Java viewer.
Local Server Video Enabled	Selected indicates that output to the iKVM monitor is enabled during console redirection. Deselected indicates that the tasks you perform using Console Redirection will not be visible on the managed server's local monitor.



NOTE: For information about using Virtual Media with Console Redirection, see "Configuring and Using Virtual Media."

The buttons in Table 11-5 are available on the **Console Redirection Configuration** screen.

Table 11-3. Console Redirection Configuration Buttons

Button	Definition
Print	Prints the Configuration screen
Refresh	Reloads the Configuration screen
Apply	Saves any new settings made to the console redirection

Opening a Console Redirection Session

When you open a console redirection session, the Dell Virtual KVM (vKVM) Viewer Application (iDRACView) starts and the remote system's desktop appears in the viewer. Using iDRACView, you can control the remote system's mouse and keyboard functions from your local management station.



NOTE: vKVM launch from a Windows Vista® management station may lead to vKVM restart messages. To avoid this, set the appropriate timeout values in the following locations: **Control Panel→Power Options→Power Saver→Advanced Settings→Hard Disk→Turnoff Hard Disk After <time_out>** and in the **Control Panel→Power Options→High-Performance→Advanced Settings→Hard Disk→Turnoff Hard Disk After <time_out>**.

To open a console redirection session in the Web interface, perform the following steps:

- 1 Click **System→Console/Media tab→Console Redirection and Virtual Media**.
- 2 In the **Console Redirection and Virtual Media** screen, use the information in Table 11-4 to ensure that a console redirection session is available.

If you wish to reconfigure any of the property values displayed, see "Configuring Console Redirection and Virtual Media in iDRAC6 Web Interface."

Table 11-4. Console Redirection Information

Property	Description
Console Redirection Enabled	Yes/No
Video Encryption Enabled	Yes/No
Max Sessions	Displays the maximum number of supported Console Redirection sessions.
Active Sessions	Displays the current number of active console redirection sessions.
Mouse Mode	Displays the mouse acceleration currently in effect. Mouse Mode should be chosen based on the type of operating system installed on the managed server.

Table 11-4. Console Redirection Information (continued)

Property	Description
Console Plug-in Type	Shows the plug-in type currently configured. ActiveX — An Active-X viewer will be launched. Active-X viewer will only work on Internet Explorer while running on a Windows Operating System. Java — A Java viewer will be launched. The Java viewer can be used on any browser including Internet Explorer. If your client runs on an operating system other than Windows, then you must use the Java Viewer. If you are accessing iDRAC6 using Internet Explorer while running on a Windows operating system, you may choose either Active-X or Java as the plug-in type. NOTE: vKVM may not launch for the first time for Internet Explorer 8, if Java is selected as the plug-in type.
Local Server Video Enabled	Yes indicates that output to the iKVM monitor is enabled during console redirection. No indicates that the tasks you perform using Console Redirection are not visible on the managed server's local monitor.



NOTE: For information about using Virtual Media with Console Redirection, see "Configuring and Using Virtual Media."

The buttons in Table 11-5 are available on the **Console Redirection** screen.


Table 11-5. Console Redirection Buttons

Button	Definition
Refresh	Reloads the Console Redirection Configuration screen
Launch Viewer	Opens a console redirection session on the targeted remote system
Print	Prints the Console Redirection Configuration screen

- 3 If a console redirection session is available, click **Launch Viewer**.



NOTE: Multiple message boxes may appear after you launch the application. To prevent unauthorized access to the application, you must navigate through these message boxes within three minutes. Otherwise, you will be prompted to relaunch the application.

 **NOTE:** If one or more **Security Alert** windows appear in the following steps, read the information in the window and click **Yes** to continue.

The management station connects to iDRAC6 and the remote system's desktop appears in iDRACView.

- 4 Two mouse pointers appear in the viewer window: one for the remote system and one for your local system. You must synchronize the two mouse pointers so that the remote mouse pointer follows your local mouse pointer. See "Synchronizing the Mouse Pointers."

Using the Video Viewer

The Video Viewer provides a user interface between the management station and the managed server, allowing you to see the managed server's desktop and control its mouse and keyboard functions from your management station. When you connect to the remote system, the Video Viewer starts in a separate window.

The Video Viewer provides various control adjustments such as color mode, mouse synchronization, snapshots, keyboard macros, power actions, and access to Virtual Media. Click **Help** for more information on these functions.

When you start a console redirection session and the Video Viewer appears, you may need to adjust the color mode and synchronize the mouse pointers.

Table 11-6 describes the menu options that are available for use in the viewer.

Table 11-6. Viewer Menu Bar Selections

Menu Item	Item	Description
Video	Pause	Temporarily pauses console redirection.
	Resume	Resumes console redirection.
	Refresh	Redraws the viewer screen image.
	Capture Current Screen	Captures the current remote system screen to a .bmp file. A dialog box is displayed that allows you to save the file to a specified location.
	Full Screen	To make the Video Viewer expand into full screen mode, click on the top right corner of the viewer to get the full screen.
	Exit	When you have finished using the Console and have logged out (using the remote system's log out procedure), select Exit from the Video menu to close the Video Viewer window.
Keyboard	Hold Right Alt Key	Select this item before typing keys you want to combine with the right <Alt> key.
	Hold Left Alt Key	Select this item before typing keys you want to combine with the left <Alt> key.
	Left Windows Key	Select Hold Down before typing characters you want to combine with the left Windows key. Select Press and Release to send a left Windows key keystroke.
	Right Windows Key	Select Hold Down before typing characters you want to combine with the right Windows key. Select Press and Release to send a right Windows key keystroke.

Table 11-6. Viewer Menu Bar Selections (continued)

Menu Item	Item	Description
	Macros	<p>When you select a macro, or enter the hotkey specified for the macro, the action is executed on the remote system. The Video Viewer provides the following macros:</p> <ul style="list-style-type: none">• Alt+Ctrl+Del• Alt+Tab• Alt+Esc• Ctrl+Esc• Alt+Space• Alt+Enter• Alt+Hyphen• Alt+F4• PrtScrn• Alt+PrtScrn• F1• Pause• Alt+M• Alt+D• Alt+PrtScrn+M• Alt+PrtScrn+P
	Keyboard Pass-through	The Keyboard pass-through mode allows all keyboard functions on the client to be redirected to the server.
Mouse	Synchronize Cursor	Synchronizes the cursor so that the mouse on the client is redirected to the mouse on the server.
	Hide Local Cursor	Only the cursor from the KVM will be displayed. It is recommended this setting when running USC in a vKVM.

Table 11-6. Viewer Menu Bar Selections (continued)

Menu Item	Item	Description
Options	Color Mode	Allows you to select a color depth to improve performance over the network. For example, if you are installing software from virtual media, you can choose the lowest color depth, so that less network bandwidth is used by the console viewer leaving more bandwidth for transferring data from the media. The color mode can be set to 15-bit color and 7-bit color.
	Power ON System	Powers on the system.
Power	Power OFF System	Powers off the system.
	Graceful Shutdown	Shuts down the system.
	Reset System (warm boot)	Reboots the system without powering it off.
	Power Cycle System (cold boot)	Powers off, and then reboots the system.
Media	Virtual Media Wizard	The Media menu provides access to the Virtual Media Wizard, which allows you to redirect to a device or image such as a: <ul style="list-style-type: none">• Floppy drive• CD• DVD• Image in ISO format• USB Flash drive For information about the Virtual Media feature, see "Configuring and Using Virtual Media." You must keep the Console Viewer window active when using Virtual Media.
	Help	About iDRACView

Synchronizing the Mouse Pointers

When you connect to a remote Dell PowerEdge system using Console Redirection, the mouse acceleration speed on the remote system may not synchronize with the mouse pointer on your management station, causing two mouse pointers to appear in the Video Viewer window.

To synchronize the mouse pointers click **Mouse**→**Synchronize cursor** or press <Alt> <M>.

The Synchronize cursor menu item is a toggle. Ensure that there is a check mark next to the item in the menu so that the mouse synchronization is active.

When using Red Hat Enterprise Linux or Novell SUSE Linux, be sure to configure the mouse mode for Linux before you launch the viewer. See "Configuring Console Redirection and Virtual Media in iDRAC6 Web Interface" for help with configuration. The operating system's default mouse settings are used to control the mouse arrow in iDRAC6 **Console Redirection** screen.

Disabling or Enabling Local Console

You can configure iDRAC6 to disallow iKVM connections using iDRAC6 Web interface. When the local console is disabled, a yellow status dot appears in the list of servers (OSCAR) to indicate that the console is locked in iDRAC6. When the local console is enabled, the status dot is green.

If you want to ensure that you have exclusive access to the managed server console, you must disable the local console *and* reconfigure the **Max Sessions** to 1 on the **Console Redirection** screen.



NOTE: By disabling (turning off) the local video on the server, the monitor, keyboard, and mouse connected to the iKVM are disabled.

To disable or enable the local console, perform the following procedure:


- 1 On your management station, open a supported Web browser and log in to iDRAC6. See "Accessing the Web Interface" for more information.
- 2 Click **System**, click the **Console/Media** tab, and then click **Configuration**.
- 3 If you want to disable (turn off) local video on the server, in the **Configuration** screen, deselect **Local Server Video Enabled** and then click **Apply**. The default value is **Enabled** (checked).

- 4 If you want to enable (turn on) local video on the server, in the **Configuration** screen, select **Local Server Video Enabled** and then click **Apply**.

The **Console Redirection** screen displays the status of the Local Server Video.


Launching vKVM and Virtual Media Remotely

You can launch vKVM/virtual media by entering a single URL on a supported browser instead of launching it from iDRAC6 Web GUI. Depending on your system configuration, you will either go through the manual authentication process (login page) or will be directed to the vKVM/virtual media viewer (iDRACView) automatically.

 **NOTE:** Internet Explorer supports Local, Active Directory (AD), Smart Card (SC) and Single Sign-On (SSO) logins. Firefox supports SSO, Local, and AD logins.

URL Format

If you enter the link **https://<iDrac6_ip>/console** in the browser, you may be required to go through the normal manual login procedure depending on the login configuration. If SSO is not enabled and Local, AD, or SC login is enabled, the corresponding login page is displayed. If the login is successful, the vKVM/vMedia view is not launched. Instead, you are redirected to iDRAC6 GUI home page.

 **NOTE:** The URL used to launch iDRACView is case-sensitive and should be typed only in lower case.

General Error Scenarios

Table 11-7 lists general error scenarios, the reasons for those errors, and iDRAC6 behavior.

Table 11-7. Error Scenarios

Error Scenarios	Reason	Behavior
Login failed	You have entered either an invalid user name or an incorrect password.	Same behavior when <i>https://<ip></i> is specified and login fails.

Table 11-7. Error Scenarios (continued)

Error Scenarios	Reason	Behavior
Insufficient Privileges	You do not have console redirection and virtual media privileges.	iDRACView is not launched and you are redirected to the Console/Media configuration GUI page.
Console Redirection disabled	Console redirection is disabled on your system.	iDRACView is not launched and you are redirected to the Console/Media configuration GUI page.
Unknown URL parameters detected	The URL you have entered contains undefined parameters.	Page not Found (404) message is displayed.

Frequently Asked Questions

Table 11-8 lists frequently asked questions and answers.

Table 11-8. Using Console Redirection: Frequently Asked Questions

Question	Answer
vKVM fails to log out when the out-of-band Web GUI is logged out.	The vKVM and vMedia sessions stays active even if the web session is logged off. Close the vMedia and vKVM viewer applications to log out of the corresponding session.
Can a new remote console video session be started when the local video on the server is turned off?	Yes.
Why does it take 15 seconds to turn off the local video on the server after requesting to turn off the local video?	It gives a local user an opportunity to take any action before the video is switched off.
Is there a time delay when turning on the local video?	No, once a local video turn ON request is received by iDRAC6 the video is turned on instantly.
Can the local user also turn off the video?	Yes, a local user can use the local RACADM CLI to turn off the video.

Table 11-8. Using Console Redirection: Frequently Asked Questions (continued)

Question	Answer
Can the local user also turn on the video?	No. Once the local console is disabled, the local user's keyboard and mouse are disabled and they are unable to change any settings.
Does switching off the local video also switch off the local keyboard and mouse?	Yes.
Does turning off the local console turn off the video on the remote console session?	No, turning the local video on or off is independent of the remote console session.
What privileges are needed for an iDRAC6 user to turn on or off the local server video?	Any user with iDRAC6 configuration privileges can turn the local console on or off.
How can I get the current status of the local server video?	<p>The status is displayed on the Console Redirection and Virtual Media screen of iDRAC6 Web interface.</p> <p>The RACADM CLI command <code>racadm getconfig -g cfgRacTuning</code> displays the status in the object <code>cfgRacTuneLocalServerVideo</code>. This <code>racadm</code> command can be executed from Telnet/SSH or a remote session to iDRAC6.</p> <p>The remote RACADM command is:</p> <pre>racadm -r <idracip> -u <user> -p <password> getconfig -g cfgRacTuning</pre> <p>The status is also seen on the iKVM OSCAR display. When the local console is enabled, a green status appears next to the server name. When disabled, a yellow dot indicates that the local console is locked by iDRAC6.</p>
I cannot see the bottom of the system screen from the Console Redirection window.	Ensure that the management station's monitor resolution is set to 1280x1024.

Table 11-8. Using Console Redirection: Frequently Asked Questions (continued)

Question	Answer
The console window is garbled.	The console viewer on Linux requires a UTF-8 character set. Check your locale and reset the character set if needed. See "Setting the Locale in Linux" for more information.
Why do I get a blank screen on the managed server when loading the Windows 2000 operating system?	The managed server does not have the correct ATI video driver. Update the video driver.
Why doesn't the mouse sync in DOS when performing Console Redirection?	The Dell BIOS is emulating the mouse driver as a PS/2 mouse. By design, the PS/2 mouse uses relative position for the mouse pointer, which causes the lag in syncing. iDRAC6 has a USB mouse driver, which allows absolute position and closer tracking of the mouse pointer. Even if iDRAC6 passes the USB absolute mouse position to the Dell BIOS, the BIOS emulation would convert it back to relative position and the behavior would remain. To fix this problem, set the mouse mode to USC/Diags in the Configuration screen.
Why doesn't the mouse sync under the Linux text console(either in Dell Unified Server Configurator (USC), Dell Lifecycle Controller (LC) or in Dell Unified Server Configurator Lifecycle Controller Enabled (USC-LCE)?	Virtual KVM requires the USB mouse driver, but the USB mouse driver is available only under the X-Window operating system.

Table 11-8. Using Console Redirection: Frequently Asked Questions (continued)

Question	Answer
I am still having issues with mouse synchronization.	<p>Ensure that the correct mouse is selected for your operating system before starting a console redirection session.</p> <p>Ensure that Synchronize Mouse is checked in the Mouse menu. Press <Alt><M> or select Mouse→Synchronize mouse to toggle mouse synchronization. When synchronization is enabled, a check mark appears next to the selection in the Mouse menu.</p>
Why can't I use a keyboard or mouse while installing a Microsoft® operating system remotely by using iDRAC6 Console Redirection?	<p>When you remotely install a supported Microsoft operating system on a system with Console Redirection enabled in the BIOS, you receive an EMS Connection Message that requires that you select OK before you can continue. You cannot use the mouse to select OK remotely. You must either select OK on the local system or restart the remotely managed server, reinstall, and then turn Console Redirection off in the BIOS.</p> <p>This message is generated by Microsoft to alert the user that Console Redirection is enabled. To ensure that this message does not appear, always turn off Console Redirection in the BIOS before installing an operating system remotely.</p>
Why doesn't the Num Lock indicator on my management station reflect the status of the Num Lock on the remote server?	<p>When accessed through iDRAC6, the Num Lock indicator on the management station does not necessarily coincide with the state of the Num Lock on the remote server. The state of the Num Lock is dependent on the setting on the remote server when the remote session is connected, regardless of the state of the Num Lock on the management station.</p>

Table 11-8. Using Console Redirection: Frequently Asked Questions (*continued*)


Question	Answer
Why do multiple Session Viewer windows appear when I establish a console redirection session from the local host?	You are configuring a console redirection session from the local system. This is not supported.
If I am running a console redirection session and a local user accesses the managed server, do I receive a warning message?	No. If a local user accesses the system, you both have control of the system.
How much bandwidth do I need to run a console redirection session?	It is recommended that you use a 5 MB/sec connection for good performance. A 1 MB/sec connection is required for minimal performance.
What are the minimum system requirements for my management station to run console redirection?	The management station requires an Intel® Pentium® III 500 MHz processor with at least 256 MB of RAM.

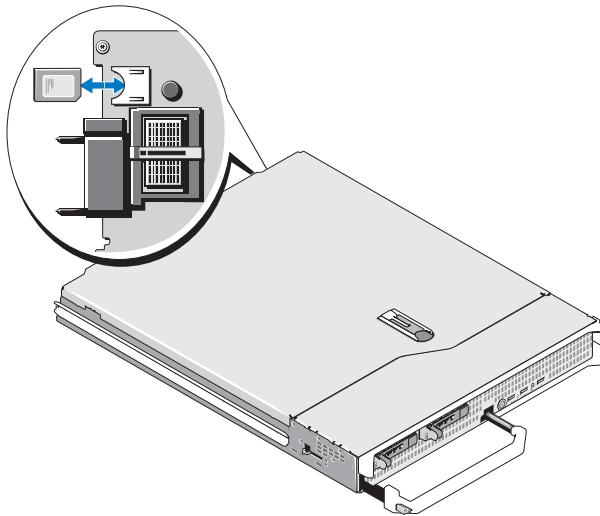
Configuring the VFlash Media Card for Use With iDRAC6


The VFlash media card is a Secure Digital (SD) card that plugs into the optional iDRAC6 Enterprise card slot at the back corner of the system. It provides storage space that behaves like a common USB Flash Key device.

Installing a VFlash Media Card

- 1 Remove the blade from the chassis.
- 2 Locate the VFlash media slot at the back corner of the system.

 **NOTE:** You do not need to remove the blade cover to install or remove the card.




- 3 With the label side facing up, insert the contact-pin end of the SD card into the card slot on the module.
 -  **NOTE:** The slot is keyed to ensure correct insertion of the card.
- 4 Press inward on the card to lock it into the slot.
- 5 Place the blade back in the chassis.

Removing a VFlash Media Card

To remove the VFlash media, push inward on the card to release it, and pull the card from the card slot.

Configuring the VFlash Media Card Using iDRAC6 Web Interface

SD Card Properties

 **NOTE:** This section is displayed only if a SD card with read/write ability is inserted into the server SD card slot. Else, the following message is displayed:

```
SD card not detected. Please insert an SD card of
size 256MB or greater.
```

- 1 Ensure that the VFlash media card has been installed.
- 2 Open a supported Web browser window and log in to iDRAC6 Web interface.
- 3 In the system tree, select **System**.
- 4 Click the **VFlash** tab.

The VFlash screen is displayed.

Table 12-1 lists the SD Card Properties options.

Table 12-1. SD Card Properties

Attribute	Description
Virtual Key Size	<p>Allows you to select the size to be occupied by the VFlash key on the SD card. Select a virtual key size and click Apply. The virtual key re-initializes to the specified size, erases all existing data, and formats a part of the SD card.</p> <p>NOTE: If you have inserted a 1 GB licensed SD card, you can select either 256 MB or 512 MB as the partition size. If you have inserted an unlicensed SD card of any size, you can select only 256 MB as the partition size.</p> <p>If you have uploaded an image using WS-MAN, the maximum partition size you get depends on the size of the image. For example, if you have uploaded a 500 MB image, a 1 GB virtual key size cannot be created with a 1 GB licensed card because 500 MB is already used by the image. In this case, click the Initialize button to re-initialize the card and then select 1 GB as the virtual key size.</p>
VFlash Media Type	<p>Displays whether a Dell branded or a non-Dell SD card is inserted in the server SD card slot.</p> <p>If the SD card is licensed, it displays Dell VFlash followed by the size of the SD card. If the card is not licensed, it displays Non-Dell SD Card.</p>
Image	<p>Displays the name of the image file created on the SD card. It is used as VFlash.</p>
ID File	<p>Displays the name of the text file created on the SD card. It provides information about the VFlash image.</p>
VFlash Attach	<p>Check this option to attach the VFlash. This exposes the image file ManagedStore.IMG created on the SD card as a USB key of the selected size.</p> <p>NOTE: You can attach the VFlash only if a valid ManagedStore.IMG image is present on the SD card.</p>

Table 12-1. SD Card Properties (continued)

Attribute	Description
Initialize	<p>Click Initialize to create the VFlash image, ManagedStore.IMG, on the SD card.</p> <p>NOTE: The Initialize option is enabled only if a VFlash media card is present. Also, the SD card can be formatted only if the VFlash Attach option is unchecked.</p> <p>NOTE: The ManagedStore.IMG and ManagedStore.ID files displayed on the VFlash GUI page are not visible on the host server's operating system but on the SD card.</p>
Apply	<p>Saves the current configuration. If you change the virtual key size using the drop-down menu, click Apply to create a new virtual key with the specified size. All existing data will be erased. This operation may take a few minutes to complete depending on the size of the virtual key selected.</p>

VFlash Drive



NOTE: The image file upload functionality is available only if a valid **ManagedStore.IMG** image is present on the SD card and the **VFlash Attach** option is unchecked.

Table 12-2 lists the **VFlash Drive** settings.

Table 12-2. VFlash Drive

Attribute	Description
Image File	<p>Select a local file on the client machine to be exposed as a VFlash USB key on the remote server. You can store emergency boot images and diagnostic tools directly on the VFlash Media. The image file can be a DOS bootable floppy image, for example, a *.img file for Windows® or a diskboot.img file from the Red Hat® Enterprise Linux® media for Linux. You can use diskboot.img to create a rescue disk or create a disk to perform network installations. You can use VFlash to house a persistent image for general or emergency use in future.</p>

Table 12-2. VFlash Drive (continued)

Attribute	Description
Upload	Click this option to upload the selected image file to the SD card. After the upload is completed, the image file is stored on the SD card as <code>ManagedStore.IMG</code> . NOTE: Uploading ISO images is not supported in this release and may result in errors during upload.



CAUTION: You will not be able to eject the virtual flash drive from the Windows operating system in the managed server by right-clicking on the drive and selecting the "Eject" option. To safely remove the drive, use the option provided in the system tray at the bottom right corner of your system.

If you click a button on the VFlash page when an application such as WSMAN provider, iDRAC6 Configuration Utility, or RACADM is using VFlash, iDRAC6 displays a blank page with the message `VFlash is currently in use by another process`. Try again after some time.

Viewing the Virtual Flash Key Size

The Virtual Key Size drop-down menu displays the current size setting.

Configuring the VFlash Media Card Using RACADM

Enabling or Disabling the VFlash Media Card

Open a local console to the server, log in, and enter:

```
racadm cfgRacVirtual cfgVirMediaKeyEnable [ 1 or 0 ]
```

where 1 is enabled and 0 is disabled.



NOTE: For more information about `cfgRacVirtual`, including output details, see "`cfgRacVirtual`."

Resetting the VFlash Media Card

Open a Telnet/SSH text console to the server, log in, and enter:

```
racadm vmkey reset
```



CAUTION: Resetting the VFlash media card with the RACADM command resets the size of the key to 256MB and deletes all existing data.



NOTE: For more information about vmkey, see "vmkey." The RACADM command functions only if a VFlash media card is present. If a card is not present, the following message is displayed: *ERROR: Unable to perform the requested operation. Ensure that a SD Card is inserted.*

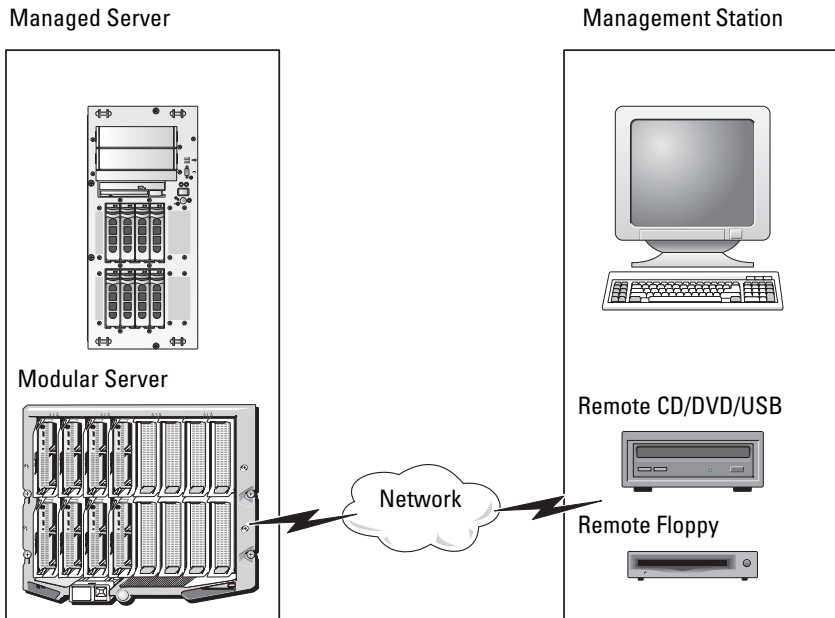
13

Configuring and Using Virtual Media


Overview

The Virtual Media feature, accessed through the console redirection viewer, provides the managed server access to media connected to a remote system on the network. Figure 13-1 shows the overall architecture of Virtual Media.

Figure 13-1. Overall Architecture of Virtual Media



Using Virtual Media, administrators can remotely boot their managed servers, install applications, update drivers, or even install new operating systems remotely from the virtual CD/DVD and diskette drives.

 **NOTE:** Virtual Media requires a minimum available network bandwidth of 128 Kbps.

Virtual Media defines two devices for the managed server's operating system and BIOS: a floppy disk device and an optical disk device.

The management station provides the physical media or image file across the network. When Virtual Media is connected, all virtual CD/floppy drive access requests from the managed server are directed to the management station across the network. Connecting Virtual Media appears the same as inserting media into physical devices on the managed system. When Virtual Media is in attached state, virtual devices on the managed system appear as two drives without the media being installed in the drives.

Table 13-1 lists the supported drive connections for virtual floppy and virtual optical drives.


 **NOTE:** Changing Virtual Media while connected could stop the system boot sequence.

Table 13-1. Supported Drive Connections

Supported Virtual Floppy Drive Connections	Supported Virtual Optical Drive Connections
Legacy 1.44 floppy drive with a 1.44 floppy diskette	CD-ROM, DVD, CDRW, combination drive with CD-ROM media
USB floppy drive with a 1.44 floppy diskette	CD-ROM/DVD image file in the ISO9660 format
1.44 floppy image	USB CD-ROM drive with CD-ROM media
USB removable disk (minimum size 128 MB)	

Windows-Based Management Station

To run the Virtual Media feature on a management station running the Windows operating system, install a supported version of Internet Explorer with the ActiveX Control plug-in. Set the browser security to **Medium** or a lower setting to enable Internet Explorer to download and install signed ActiveX controls.

Depending on your version of Internet Explorer, a custom security setting for ActiveX may be required:

- 1 Start Internet Explorer.
- 2 Click **Tools**→**Internet Options**, and then click the **Security** tab.
- 3 Under **Select a Web content zone to specify its security settings**, click to select the desired zone.
- 4 Under **Security level for this zone**, click **Custom Level**.

The **Security Settings** window appears.

- 5 Under **ActiveX controls and plugins**, ensure that the following settings are set to **Enable**:
 - Allow Scriptlets
 - Automatic prompting for ActiveX controls
 - Download signed ActiveX controls
 - Download unsigned ActiveX controls
- 6 Click **OK** to save any changes and close the **Security Settings** window.
- 7 Click **OK** to close the **Internet Options** window.
- 8 Restart Internet Explorer.

You must have administrator rights to install ActiveX. Before installing the ActiveX control, Internet Explorer may display a security warning. To complete the ActiveX control installation procedure, accept the ActiveX control when Internet Explorer prompts you with a security warning.

Linux-Based Management Station

To run the virtual media feature on a management station running the Linux operating system, install a supported version of Firefox.

A Java[®] Runtime Environment (JRE) is required to run the console redirection plugin. You can download a JRE from java.sun.com.

Configuring Virtual Media

- 1 Log in to iDRAC6 Web interface.
- 2 Click **System**→**Console/Media**→**Configuration**.

3 In the Virtual Media section, select values for the settings. See Table 13-2 for information on Virtual Media configuration values.

4 Click **Apply** to save your settings.

An alert dialog appears with the following message: You are about to change device configuration. All existing redirection sessions will be closed. Do you want to continue?

5 Click **OK** to continue.

An alert dialog appears with the following message: Virtual Media Configuration successfully set.

Table 13-2. Virtual Media Configuration Values

Attribute	Value
Attach Virtual Media	Attach — Immediately attaches Virtual Media to the server. Detach — Immediately detaches Virtual Media from the server. Auto-Attach — Attaches Virtual Media to the server only when a virtual media session is started.
Maximum Sessions	Displays the maximum number of Virtual Media sessions allowed. This value is always 1. NOTE: Only one virtual media user session is allowed; however, multiple devices can be attached in a single session. See "Running Virtual Media."
Active Sessions	Displays the number of Virtual Media sessions that are currently active.
Virtual Media Encryption Enabled	Enables (checked) or disables (not checked) encryption on Virtual Media connections.

Table 13-2. Virtual Media Configuration Values (continued)

Attribute	Value
Floppy Emulation	<p>Indicates whether the Virtual Media appears as a floppy drive or as a USB key to the server. If Floppy Emulation is selected, the Virtual Media device appears as a floppy device on the server. If it is deselected, it appears as a USB Key drive.</p> <p>NOTE: On certain Windows Vista® and Red Hat® Enterprise Linux® environments, you may not be able to virtualize a USB with Floppy Emulation enabled.</p>
Enable Boot Once	<p>Enables (checked) or disables (not checked) the boot-once option, which automatically terminates the Virtual Media session after the server has booted once. Use this attribute to boot from the Virtual Media. On the next boot, the system will boot from the next device in the boot order. This option is useful for automated deployments.</p>

Running Virtual Media



CAUTION: Do not issue a **racreset** command when running a **Virtual Media** session. Otherwise, undesirable results may occur, including data loss.



NOTE: The Console Viewer window application must remain active while you access the virtual media.

- 1 Open a supported Web browser on your management station.
- 2 Log in to iDRAC6 Web interface.
- 3 Click the Console/Media tab.

The **Console Redirection and Virtual Media** screen appears.


To change the values of any of the displayed attributes, see "Configuring Virtual Media."




NOTE: The **Floppy Image File** under **Floppy Drive** (if applicable) may appear, as this device can be virtualized as a virtual floppy. You can select one optical drive and one floppy at the same time, or a single drive.



NOTE: The virtual device drive letters on the managed server do not coincide with the physical drive letters on the management station.

 **NOTE:** Virtual Media may not function properly on Windows operating system clients that are configured with Internet Explorer Enhanced Security. To resolve this issue, see your Microsoft operating system documentation or contact your administrator.

4 Click **Launch Viewer**.

 **NOTE:** On Linux, the file `jviewer.jnlp` is downloaded to your desktop and a dialog box will ask what to do with the file. Choose the option to **Open with program** and then select the `javaws` application, which is located in the `bin` subdirectory of your JRE installation directory.

iDRACView application launches in a separate window.


5 Select **Media**→**Virtual Media Wizard**.

The **Media Redirection** window appears.


6 View the **Status** section at the bottom of the **Media Redirection** window. If media is connected, you can disconnect it before connecting a different media source. To disconnect media, click the **Disconnect** button next to the media in the **Status** window.

7 Select the radio button next to the media types you want to connect.

8 You can select both the **Floppy Image** radio button and one of the radio buttons in the **CD/DVD Drive** section.

 **NOTE:** When a management station CD/DVD media is already in use by iDRAC6 blade, the same media can be redirected and made available to another iDRAC6 blade. In other words, iDRAC6 supports same media (Read only) redirection to two different iDRAC6 blades. But with an USB media, you will not be able to attach to two iDRAC6 blades. iDRAC6 displays a warning message indicating the same.

To connect a floppy image or ISO image, enter the path to the image location on your local computer, or click the **Browse** button to navigate to the image location.

 **NOTE:** You may not be able to mount remote ISO images if you use the Java based Virtual Media plug-in. For example, Linux clients will not allow you to mount the images since they use the Java based plug-in. To avoid this, copy the ISO image to your local system to make the image file available locally. The Java based Virtual Media plug-in does not allow you to specify the share name using `\\computer\share` format.

9 Click the **Connect** button next to each selected media type.

The media is connected and the **Status** window is updated.

- 10 Click **Close**.



NOTE: Whenever a Virtual Media session is initiated or a VFlash is connected, an extra drive named "LCDRIVE" is displayed on the host operating system and the BIOS. The extra drive disappears when the VFlash or the Virtual Media session is disconnected.

Disconnecting Virtual Media

- 1 Select **Media**→**Virtual Media Wizard**.

The **Media Redirection Wizard** appears.

- 2 Click **Disconnect** next to the media you wish to disconnect.

The media is disconnected and the **Status** window is updated.

- 3 Click **Close**.



NOTE: When you launch **iDRACview** and then log out of the Web GUI, **iDRACView** does not terminate and remains active.

Booting From Virtual Media

The system BIOS enables you to boot from virtual optical drives or virtual floppy drives. During POST, enter the BIOS setup window and verify that the virtual drives are enabled and listed in the correct order.

To change the BIOS setting, perform the following steps:

- 1 Boot the managed server.
- 2 Press <F2> to enter the BIOS setup window.
- 3 Scroll to the boot sequence and press <Enter>.

In the pop-up window, the virtual optical drives and virtual floppy drives are listed with the standard boot devices.

- 4 Ensure that the virtual drive is enabled and listed as the first device with bootable media. If required, follow the on-screen instructions to modify the boot order.
- 5 Save the changes and exit.
The managed server reboots.

The managed server attempts to boot from a bootable device based on the boot order. If the virtual device is connected and a bootable media is present, the system boots to the virtual device. Otherwise, the system overlooks the device—similar to a physical device without bootable media.

Installing Operating Systems Using Virtual Media

This section describes a manual, interactive method to install the operating system on your management station that may take several hours to complete. A scripted operating system installation procedure using Virtual Media may take fewer than 15 minutes to complete. See "Deploying the Operating System" for more information.

- 1 Verify the following:
 - The operating system installation DVD/CD is inserted in the management station's DVD/CD drive.
 - The local DVD/CD drive is selected.
 - You are connected to the virtual drives.
- 2 Follow the steps for booting from the Virtual Media in the "Booting From Virtual Media" section to ensure that the BIOS is set to boot from the DVD/CD drive from which you are installing.
- 3 Follow the on-screen instructions to complete the installation.

Using Virtual Media When the Server's Operating System Is Running

Windows-Based Systems

On Windows systems, the Virtual Media drives are automounted if they are attached and configured with a drive letter.

Using the virtual drives from within Windows is similar to using your physical drives. When you connect to the media using the Virtual Media wizard, the media is available at the system by clicking the drive and browsing its content.

Linux-Based Systems

Depending on the configuration of the software on your system, the Virtual Media drives may not be automounted. If your drives are not automounted, manually mount the drives using the Linux **mount** command.

Frequently Asked Questions

Table 13-3 lists frequently asked questions and answers.

Table 13-3. Using Virtual Media: Frequently Asked Questions

Question	Answer
Sometimes, I notice my Virtual Media client connection drop. Why?	<p>When a network time-out occurs, iDRAC6 firmware drops the connection, disconnecting the link between the server and the Virtual Drive.</p> <p>If the Virtual Media configuration settings are changed in iDRAC6 Web interface or by local RACADM commands, any connected media is disconnected when the configuration change is applied.</p> <p>To reconnect to the Virtual Drive, use the Virtual Media wizard.</p>
Which operating systems support iDRAC6?	See "Supported Operating Systems" for a list of supported operating systems.
Which Web browsers support iDRAC6?	See "Supported Web Browsers" for a list of supported Web browsers.
Why do I sometimes lose my client connection?	<ul style="list-style-type: none">• You can sometimes lose your client connection if the network is slow or if you change the CD in the client system CD drive. For example, if you change the CD in the client system's CD drive, the new CD might have an autostart feature. If this is the case, the firmware can time out and the connection can be lost if the client system takes too long before it is ready to read the CD. If a connection is lost, reconnect from the GUI and continue the previous operation.• When a network timeout occurs, iDRAC6 firmware drops the connection, disconnecting the link between the server and the Virtual Drive. Also, someone may have altered the Virtual Media configuration settings in the Web interface or by entering RADACM commands. To reconnect to the Virtual Drive, use the Virtual Media feature.

Table 13-3. Using Virtual Media: Frequently Asked Questions (continued)

Question	Answer
An installation of the Windows operating system seems to take too long. Why?	If you are installing the Windows operating system and have a slow network connection, the installation procedure may require an extended amount of time to access iDRAC6 Web interface due to network latency. While the installation window does not indicate the installation progress, the installation procedure is in progress.
I am viewing the contents of a floppy drive or USB memory key. If I try to establish a Virtual Media connection using the same drive, I receive a connection failure message and am asked to retry. Why?	Simultaneous access to Virtual Floppy drives is not allowed. Close the application used to view the drive contents before you attempt to virtualize the drive.
How do I configure my virtual device as a bootable device?	On the managed server, access the BIOS Setup and navigate to the boot menu. Locate the virtual CD, Virtual Floppy, or VFlash and change the device boot order as needed. For example, to boot from a CD drive, configure the CD drive as the first drive in the boot order.
What types of media can I boot from?	iDRAC6 allows you to boot from the following bootable media: <ul style="list-style-type: none"><li data-bbox="463 978 753 1002">• CDROM/DVD Data media<li data-bbox="463 1018 641 1042">• ISO 9660 image<li data-bbox="463 1058 798 1082">• 1.44 Floppy disk or floppy image<li data-bbox="463 1098 938 1185">• A USB key that is recognized by the operating system as a removable disk (minimum size 128 MB)<li data-bbox="463 1201 652 1225">• A USB key image

Table 13-3. Using Virtual Media: Frequently Asked Questions (continued)

Question	Answer
How can I make my USB key bootable?	<p>Search support.dell.com for the Dell Boot Utility, a Windows program you can use to make your Dell USB key bootable.</p> <p>You can also boot with a Windows 98 startup disk and copy system files from the startup disk to your USB key. For example, from the DOS prompt, enter the following command:</p> <pre>sys a: x: /s</pre> <p>where <i>x</i>: is the USB key you want to make bootable.</p>
What file system types are supported on my Virtual Floppy Drive?	Your Virtual Floppy Drive supports FAT16 or FAT32 file systems.
When I performed a firmware update remotely using iDRAC6 Web interface, my virtual drives at the server were removed. Why?	Firmware updates cause iDRAC6 to reset, drop the remote connection, and unmount the virtual drives. The drives will reappear when iDRAC6 reset is complete.

Table 13-3. Using Virtual Media: Frequently Asked Questions (*continued*)

Question	Answer
I cannot locate my Virtual Floppy device on a system running Red Hat® Enterprise Linux® or the SUSE® Linux operating system. My Virtual Media is attached and I am connected to my remote floppy. What should I do?	<p data-bbox="456 280 963 483">Some Linux versions do not automount the Virtual Floppy Drive and the Virtual CD drive in a similar manner. To mount the Virtual Floppy Drive, locate the device node that Linux assigns to the Virtual Floppy Drive. Perform the following steps to correctly find and mount the Virtual Floppy Drive:</p> <ol data-bbox="468 491 963 1267" style="list-style-type: none"><li data-bbox="468 491 963 544">1 Open a Linux command prompt and run the following command: <pre data-bbox="484 563 776 616">grep "Virtual Floppy" /var/log/messages</pre><li data-bbox="468 627 963 679">2 Locate the last entry to that message and note the time.<li data-bbox="468 691 963 887">3 At the Linux prompt, run the following command: <pre data-bbox="484 762 947 786">grep "hh:mm:ss" /var/log/messages</pre>where: <p data-bbox="512 831 947 887"><i>hh:mm:ss</i> is the time stamp of the message returned by grep in step 1.</p><li data-bbox="468 898 963 978">4 In step 3, read the result of the grep command and locate the device name that is given to the Dell Virtual Floppy.<li data-bbox="468 989 963 1042">5 Ensure that you are attached and connected to the Virtual Floppy Drive.<li data-bbox="468 1053 963 1267">6 At the Linux prompt, run the following command: <pre data-bbox="484 1125 748 1149">mount /dev/sdx /mnt/floppy</pre>where: <p data-bbox="512 1201 963 1225"><i>/dev/sdx</i> is the device name found in step 4</p><p data-bbox="512 1241 860 1267"><i>/mnt/fl0ppy</i> is the mount point.</p>

Using the RACADM Command Line Interface

The RACADM command line interface (CLI) provides access to iDRAC6 management features on the managed server. RACADM provides access to most of the features on iDRAC6 Web interface. RACADM can be used in scripts to ease configuration of multiple servers, instead of using the Web interface, which, is more useful for interactive management.


The following interfaces are available for RACADM:

- Local RACADM
- Remote RACADM
- Telnet/SSH RACADM

Local RACADM commands do not use network connections to access iDRAC6 from the managed server. This means that you can use local RACADM commands to configure the initial iDRAC6 networking. Remote RACADM is a client side utility, which can be executed from a management station through the out of band network interface. SSH/Telnet RACADM is used to refer to the RACADM command usage from a SSH or Telnet prompt.

This section provides the following information:

- RACADM commands and supported RACADM interfaces
- Using local RACADM from a command prompt
- Remote RACADM
- SSH/Telnet RACADM
- Configuring iDRAC6 using the `racadm` command
- Using the RACADM configuration file to configure multiple iDRAC6s

 **CAUTION:** The latest iDRAC6 firmware supports only the latest RACADM version. You may encounter errors if you use an older version of RACADM to query iDRAC6 with the latest firmware. Install the RACADM version shipped with your latest Dell™ OpenManage™ DVD media.

RACADM Subcommands

Table 14-1 provides a description of each RACADM subcommand that you can run in RACADM. For a detailed listing of RACADM subcommands including syntax and valid entries, see "RACADM Subcommand Overview."

Table 14-1. RACADM Subcommands

Command	Description
arp	Displays the contents of the ARP table. ARP table entries cannot be added or deleted.
clearasrscreen	Clears the last crash (ASR) screen.
coredump	Displays the last iDRAC6 core dump.
coredumpdelete	Deletes the core dump stored in iDRAC6.
clrraclog	Clears iDRAC6 log. After clearing, a single entry is made to indicate the user and time that the log was cleared.
clrsl	Clears the managed server's System Event Log entries.
config	Configures iDRAC6.
fwupdate	Updates iDRAC6 firmware.
getconfig	Displays the current iDRAC6 configuration properties.
getniccfg	Displays the current IP configuration for the controller.
getraclog	Displays iDRAC6 log.
getractime	Displays iDRAC6 time.
getsel	Displays SEL entries.
getssninfo	Displays information about active sessions.
getsvctag	Displays the service tag.
getsysinfo	Displays information about iDRAC6 and the managed server, including IP configuration, hardware model, firmware versions, and operating system information.

Table 14-1. RACADM Subcommands (continued)

Command	Description
<code>gettracelog</code>	Displays iDRAC6 trace log. If used with <code>-i</code> , the command displays the number of entries in iDRAC6 trace log.
<code>help</code>	Lists iDRAC6 subcommands.
<code>help <subcommand></code>	Lists usage statement for the specified subcommand.
<code>ifconfig</code>	Displays the contents of the network interface table.
<code>krbkeytabupload</code>	Uploads a Kerberos keytab file.
<code>localconredirdisable</code>	Performs local kVM disable from the local system.
<code>netstat</code>	Displays the routing table and the current connections.
<code>ping</code>	Verifies that the destination IP address is reachable from iDRAC6 with the current routing-table contents. A destination IP address is required. An ICMP echo packet is sent to the destination IP address based on the current routing-table contents.
<code>ping6</code>	Verifies that the destination IPv6 address is reachable from iDRAC6 with the current routing-table contents. A destination IPv6 address is required. An ICMP echo packet is sent to the destination IPv6 address based on the current routing-table contents.
<code>racdump</code>	Displays status and general iDRAC6 information.
<code>racreset</code>	Resets iDRAC6.
<code>racresetcfg</code>	Resets iDRAC6 to the default configuration.
<code>remoteimage</code>	Remote file share
<code>serveraction</code>	Performs power management operations on the managed server.
<code>setniccfg</code>	Sets the IP configuration for the controller.
<code>sshpkauth</code>	Enables you to upload up to 4 different SSH public keys, delete existing keys, and view the keys already in iDRAC6.
<code>sslcertdownload</code>	Downloads a CA certificate.
<code>sslcertupload</code>	Uploads a CA certificate or server certificate to iDRAC6.
<code>sslcertview</code>	Views a CA certificate or server certificate in iDRAC6.

Table 14-1. RACADM Subcommands (continued)

Command	Description
sslcsrgen	Generates and downloads the SSL CSR.
testemail	Forces iDRAC6 to send an e-mail over iDRAC6 NIC.
testtrap	Forces iDRAC6 to send an SNMP alert over iDRAC6 NIC.
traceroute	Traces the network path of routers that packets take as they are forwarded from your system to a destination IPv4 address.
traceroute6	Traces the network path of routers that packets take as they are forwarded from your system to a destination IPv6 address.
version	Displays iDRAC6 version information.
vmdisconnect	Closes all open iDRAC6 virtual media connections from remote clients.
vmkey	Resets the VFlash partition to the default size of 256 MB and removes all data from the partition.

Supported RACADM Interfaces

Table 14-2 provides an overview of RACADM subcommands and their corresponding interface support.

Table 14-2. RACADM Subcommand Interface Support

























Subcommand	Telnet/SSH	Local RACADM	Remote RACADM
arp			
clearasrscreen			
clrraclog			
clrsel			
config			
coredump			
coredumpdelete			
fwupdate			

Table 14-2. RACADM Subcommand Interface Support (continued)

Subcommand	Telnet/SSH	Local RACADM	Remote RACADM
getconfig	✓	✓	✓
getniccfg	✓	✓	✓
getraclog	✓	✓	✓
getractime	✓	✓	✓
getsel	✓	✓	✓
getssninfo	✓	✓	✓
getsvctag	✓	✓	✓
getsysinfo	✓	✓	✓
gettracelog	✓	✓	✓
help	✓	✓	✓
ifconfig	✓	✗	✓
krbkeytabupload	✗	✓	✓
localconredirdisable	✗	✓	✗
netstat	✓	✗	✓
ping	✓	✗	✓
ping6	✓	✗	✓
racdump	✓	✗	✓
racreset	✓	✓	✓
racresetcfg	✓	✓	✓
remoteimage	✓	✓	✓
serveraction	✓	✓	✓

Table 14-2. RACADM Subcommand Interface Support (continued)

Subcommand	Telnet/SSH	Local RACADM	Remote RACADM
setniccfg	✓	✓	✓
sshpkauth	✓	✓	✓
sslcertdownload	✗	✓	✓
sslcertupload	✗	✓	✓
sslcertview	✓	✓	✓
sslcsrgen	✓ (can only generate, not download)	✓	✓
sslkeyupload	✗	✗	✗
testemail	✓	✓	✓
testtrap	✓	✓	✓
traceroute	✓	✗	✓
traceroute6	✓	✗	✓
usercontentupload	✗	✗	✗
usercontentview	✗	✗	✗
version	✓	✓	✓
vmdisconnect	✓	✓	✓
vmkey	✓	✓	✓

✓ = Supported; ✗ = Not supported

Using local RACADM Commands

You run RACADM commands locally (on the managed server) from a command prompt or shell prompt.

Log in to the managed server, start a command shell, and enter local RACADM commands in one of the following formats:

- `racadm <subcommand> [parameters]`
- `racadm <getconfig|config> [-g <group>] [-o <object> <value>]`

Without options, the RACADM command displays general use information. To display the RACADM subcommand list, enter:

```
racadm help
```

or

```
racadm getconfig -h
```

The subcommand list includes all RACADM commands that are supported by iDRAC6.

To get help for a subcommand, enter:

```
racadm help <subcommand>
```

The command displays the syntax and command-line options for the subcommand.

Using the RACADM Utility to Configure iDRAC6

This section describes how to use RACADM to perform various iDRAC6 configuration tasks.

Displaying Current iDRAC6 Settings

The RACADM `getconfig` subcommand retrieves current configuration settings from iDRAC6. The configuration values are organized into *groups* containing one or more *objects*, and the objects have *values*.

See "iDRAC6 Enterprise Property Database Group and Object Definitions" for a complete description of the groups and objects.

To display a list of all iDRAC6 groups, enter this command:

```
racadm getconfig -h
```





To display the objects and values for a particular group, enter this command:

```
racadm getconfig -g <group>
```

For example, to display a list of all `cfgLanNetworking` group object settings, enter the following command:

```
racadm getconfig -g cfgLanNetworking
```

Managing iDRAC6 Users with RACADM

-  **NOTE:** Use caution when using the `racresetcfg` command, as *all* configuration parameters are reset to the original defaults. Any previous changes are lost.
-  **NOTE:** If you are configuring a new iDRAC6 or if you ran the `racadm racresetcfg` command, the only current user is `root` with the password `calvin`.
-  **NOTE:** Users can be enabled and disabled over time. As a result, a user may have a different index number on each iDRAC6.
-  **NOTE:** Users and groups created for Active Directory environments must conform to the Active Directory naming convention.

You can configure up to 15 users in iDRAC6 property database. (A sixteenth user is reserved for the IPMI LAN user.) Before you manually enable an iDRAC6 user, verify if any current users exist.


To verify if a user exists, enter the following command at the command prompt:

```
racadm getconfig -u <username>
```

OR

enter the following command once for each index from 1 to 16:

```
racadm getconfig -g cfgUserAdmin -i <index>
```


-  **NOTE:** You can also enter `racadm getconfig -f <filename>` and view the generated `<filename>` file, which includes all users, as well as all other iDRAC6 configuration parameters.

Several parameters and object IDs are displayed with their current values.

Two objects of interest are:

```
# cfgUserAdminIndex=nn  
  
cfgUserAdminUserName=
```

If the `cfgUserAdminUserName` object has no value, that index number, which is indicated by the `cfgUserAdminIndex` object, is available for use. If a name appears after the `=`, that index is assigned to that user name.

-  **NOTE:** Users and groups created for Active Directory environments must conform to the Active Directory naming convention.

Adding an iDRAC6 User

To add a new user to iDRAC6, perform the following steps:

- 1 Set the user name.
- 2 Set the password.
- 3 Set the Login to iDRAC6 user privilege.
- 4 Enable the user.

Example

The following example describes how to add a new user named "John" with a "123456" password and login privileges to iDRAC6:

```
racadm config -g cfgUserAdmin -o cfgUserAdminUserName  
-i 2 john
```

```
racadm config -g cfgUserAdmin -o cfgUserAdminPassword  
-i 2 123456
```

```
racadm config -g cfgUserAdmin -o  
cfgUserAdminPrivilege -i 2 0x00000001
```

```
racadm config -g cfgUserAdmin -o cfgUserAdminEnable  
-i 2 1
```

To verify the new user, use one of the following commands:

```
racadm getconfig -u john
```

```
racadm getconfig -g cfgUserAdmin -i 2
```

Enabling an iDRAC6 User With Permissions

To grant a user a specific administrative (role-based) permissions, set the `cfgUserAdminPrivilege` property to a bitmask constructed from the values show in Table 14-3:

Table 14-3. Bit Masks for User Privileges

User Privilege	Privilege Bit Mask
Login to iDRAC6	0x00000001
Configure iDRAC6	0x00000002
Configure Users	0x00000004

Table 14-3. Bit Masks for User Privileges (continued)

User Privilege	Privilege Bit Mask
Clear Logs	0x00000008
Execute Server Control Commands	0x00000010
Access Console Redirection	0x00000020
Access Virtual Media	0x00000040
Test Alerts	0x00000080
Execute Debug Commands	0x00000100

For example, to allow the user **Configure iDRAC6**, **Configure Users**, **Clear Logs**, and **Access Console Redirection** privileges, add the values 0x00000002, 0x00000004, 0x00000008, and 0x00000010 to construct the bitmap 0x0000002E. Then enter the following command to set the privilege:

```
racadm config -g cfgUserAdmin -o  
cfgUserAdminPrivilege -i 2 0x0000002E
```

Uploading, Viewing, and Deleting SSH Keys Using RACADM

Upload

The upload mode allows you to upload a keyfile or to copy the key text on the command line. You cannot upload and copy a key at the same time.

From local RACADM:

```
racadm sshpkauth -i <2 to 16> -k <1 to 4> -f  
<filename>
```

From telnet/ssh RACADM:


```
racadm sshpkauth -i <2 to 16> -k <1 to 4> -t  
<key-text>
```

Example:

Upload a valid key to iDRAC6 User 2 in the first key space using a file:

```
$ racadm sshpkauth -i 2 -k 1 -f pkkey.key
```

PK SSH Authentication Key file successfully uploaded to the RAC.

 **CAUTION: The "file" option is not supported on telnet/ssh/serial RACADM.**

View

The view mode allows the user to view a key specified by the user or all keys.

```
racadm sshpkauth -i <2 to 16> -v -k <1 to 4>
```

```
racadm sshpkauth -i <2 to 16> -v -k all
```

Delete

The delete mode allows the user to delete a key specified by the user or all keys.

```
racadm sshpkauth -i <2 to 16> -d -k <1 to 4>
```

```
racadm sshpkauth -i <2 to 16> -d -k all
```



CAUTION: The capability to upload, view, and/or delete SSH keys is based on the "Configure Users" user privilege. This privilege allows user(s) to configure any other user's SSH key. Given the importance of SSH Keys, control the granting of this privilege very carefully.

See "sshpkauth" for information on the subcommand options.

Removing an iDRAC6 User

When using RACADM, users must be disabled manually and on an individual basis. Users cannot be deleted by using a configuration file.

The following example illustrates the command syntax that can be used to delete a RAC user:

```
racadm config -g cfgUserAdmin -o cfgUserAdminUserName  
-i <index> ""
```


A null string of double quote characters ("") instructs iDRAC6 to remove the user configuration at the specified index and reset the user configuration to the original factory defaults.

Testing E-mail Alerting

iDRAC6 e-mail alert feature allows users to receive e-mail alerts when a critical event occurs on the managed server. The following example shows how to test the e-mail alert feature to ensure that iDRAC6 can properly send e-mail alerts across the network.

```
racadm testemail -i 2
```

(-i 2 is for the index entry #2 in the e-mail alert table)

 **NOTE:** Ensure that the SMTP and E-mail Alert settings are configured before testing the e-mail alert feature. See "Configuring E-Mail Alerts" for more information.


Testing iDRAC6 SNMP Trap Alert Feature

iDRAC6 SNMP trap alerting feature allows SNMP trap listener configurations to receive traps for system events that occur on the managed server.

The following example shows how a user can test the SNMP trap alert feature.

```
racadm testtrap -i 2
```

(-i 2 is for the index entry #2 in the e-mail alert table)

 **NOTE:** Before you test iDRAC6 SNMP trap alerting feature, ensure that the SNMP and trap settings are configured correctly. See the `testtrap` and `testemail` subcommand descriptions to configure these settings. See "Configuring Platform Event Traps (PET)" for more information.

Configuring iDRAC6 Network Properties

To generate a list of available network properties, enter the following:

```
racadm getconfig -g cfgLanNetworking
```

To use DHCP to obtain an IP address, use the following command to write the object `cfgNicUseDhcp` and enable this feature:

```
racadm config -g cfgLanNetworking -o cfgNicUseDHCP 1
```

The commands provide the same configuration functionality as iDRAC6 Configuration Utility when you are prompted to press <Ctrl><E>. For more information about configuring network properties with iDRAC6 Configuration Utility, see "iDRAC6 LAN."

The following is an example of how the command may be used to configure desired LAN network properties.

```
racadm config -g cfgLanNetworking -o cfgNicEnable 1
```

```
racadm config -g cfgLanNetworking -o cfgNicIpAddress  
192.168.0.120
```

```
racadm config -g cfgLanNetworking -o cfgNicNetmask  
255.255.255.0
```

```

racadm config -g cfgLanNetworking -o cfgNicGateway
192.168.0.120

racadm config -g cfgLanNetworking -o cfgNicUseDHCP 0

racadm config -g cfgLanNetworking -o
cfgDNSServersFromDHCP 0

racadm config -g cfgLanNetworking -o cfgDNSServer1
192.168.0.5

racadm config -g cfgLanNetworking -o cfgDNSServer2
192.168.0.6

racadm config -g cfgLanNetworking -o
cfgDNSRegisterRac 1

racadm config -g cfgLanNetworking -o cfgDNSRacName
RAC-EK00002

racadm config -g cfgLanNetworking -o
cfgDNSDomainNameFromDHCP 0

racadm config -g cfgLanNetworking -o cfgDNSDomainName
MYDOMAIN


```

 **NOTE:** If `cfgNicEnable` is set to `0`, iDRAC6 LAN is disabled even if DHCP is enabled.

Configuring IPMI Over LAN

- 1 Configure IPMI over LAN by entering the following command:

```
racadm config -g cfgIpmlan -o cfgIpmlanEnable 1
```

 **NOTE:** This setting determines the IPMI commands that can be executed from the IPMI over LAN interface. For more information, see the IPMI 2.0 specifications.

- a Update the IPMI channel privileges by entering the following command:

```
racadm config -g cfgIpmlan -o
cfgIpmlanPrivilegeLimit <level>
```

where `<level>` is one of the following:

- 2 (User)
- 3 (Operator)

- 4 (Administrator)

For example, to set the IPMI LAN channel privilege to 2 (User), enter the following command:

```
racadm config -g cfgIpmiLan -o  
cfgIpmiLanPrivilegeLimit 2
```

- b** Set the IPMI LAN channel encryption key, if required, using a command such as the following:



NOTE: iDRAC6 IPMI supports the RMCP+ protocol. See the IPMI 2.0 specifications for more information.

```
racadm config -g cfgIpmiLan -o  
cfgIpmiEncryptionKey <key>
```

where <key> is a 20-character encryption key in a valid hexadecimal format.

- 2** Configure IPMI Serial over LAN (SOL) using the following command:

```
racadm config -g cfgIpmiSol -o cfgIpmiSolEnable 1
```



NOTE: The IPMI SOL minimum privilege level determines the minimum privilege required to activate IPMI SOL. For more information, see the IPMI 2.0 specification.

- a** Update the IPMI SOL minimum privilege level using the following command:

```
racadm config -g cfgIpmiSol -o  
cfgIpmiSolMinPrivilege <level>
```

where <level> is one of the following:

- 2 (User)
- 3 (Operator)
- 4 (Administrator)

For example, to configure the IPMI privileges to 2 (User), enter the following command:

```
racadm config -g cfgIpmiSol -o  
cfgIpmiSolMinPrivilege 2
```



NOTE: To redirect the serial console over LAN, ensure that the SOL baud rate is identical to your managed server's baud rate.

- b** Update the IPMI SOL baud rate using the following command:

```
racadm config -g cfgIpmiSol -o  
cfgIpmiSolBaudRate <baud-rate>
```

where <baud-rate> is 19200, 57600, or 115200 bps.

For example:

```
racadm config -g cfgIpmiSol -o  
cfgIpmiSolBaudRate 57600
```

- c** Enable SOL by typing the following command at the command prompt.



NOTE: SOL can be enabled or disabled for each individual user.

```
racadm config -g cfgUserAdmin -o  
cfgUserAdminSolEnable 1 -i <id>
```

where <id> is the user's unique ID.

Configuring PEF

You can configure the action you wish iDRAC6 to take for each platform alert. Table 14-4 lists the possible actions and the value to identify them in RACADM.

Table 14-4. Platform Event Action

Action	Value
No action	0
Power off	1
Reboot	2
Power Cycle	3

Configure PEF actions using the following command:

```
racadm config -g cfgIpmiPef -o cfgIpmiPefAction  
-i <index> <action-value>
```

where <index> is the PEF index (Table 5-8), and <action-value> is a value from Table 14-4.

For example, to enable PEF to reboot the system and send an IPMI alert when a processor critical event is detected, enter the following command:

```
racadm config -g cfgIpmiPef -o cfgIpmiPefAction
-i 9 2
```

Configuring PET

- 1 Enable global alerts using the following command:

```
racadm config -g cfgIpmiLan -o
cfgIpmiLanAlertEnable 1
```

- 2 Enable PET using the following command:

```
racadm config -g cfgIpmiPet -o
cfgIpmiPetAlertEnable -i <index> <0|1>
```

where <index> is the PET destination index and 0 or 1 disable PET or enable PET, respectively.

For example, to enable PET with index 4, enter the following command:

```
racadm config -g cfgIpmiPet -o
cfgIpmiPetAlertEnable -i 4 1
```

- 3 Configure your PET policy using the following command:

```
racadm config -g cfgIpmiPet -o
cfgIpmiPetAlertDestIPAddr -i <index> <IP-address>
```

where <index> is the PET destination index and <IP-address> is the destination IP address of the system that receives the platform event alerts.

- 4 Configure the Community Name string.

At the command prompt, enter:

```
racadm config -g cfgIpmiLan -o
cfgIpmiPetCommunityName <name>
```

where <name> is the PET Community Name.

Configuring E-mail Alerts

- 1 Enable global alerts by entering the following command:

```
racadm config -g cfgIpmiLan -o
cfgIpmiLanAlertEnable 1
```

- 2 Enable e-mail alerts by entering the following commands:

```
racadm config -g cfgEmailAlert -o
cfgEmailAlertEnable -i <index> <0|1>
```

where <index> is the e-mail destination index and 0 disables the e-mail alert or 1 enables the alert. The e-mail destination index can be a value from 1 through 4.

For example, to enable e-mail with index 4, enter the following command:

```
racadm config -g cfgEmailAlert -o
cfgEmailAlertEnable -i 4 1
```

- 3 Configure your e-mail settings by entering the following command:

```
racadm config -g cfgEmailAlert -o
cfgEmailAlertAddress -i 1 <email-address>
```

where 1 is the e-mail destination index and <email-address> is the destination e-mail address that receives the platform event alerts.

- 4 To configure the SMTP e-mail server, enter the following command:

```
racadm config -g cfgRemoteHosts -o
cfgRhostsSmtpServerIpAddr <SMTP E-mail Server IP
Address>
```

- 5 To configure a custom message, enter the following command:

```
racadm config -g cfgEmailAlert -o
cfgEmailAlertCustomMsg -i <index> <custom-message>
```

where <index> is the e-mail destination index and <custom-message> is the custom message.

- 6 Test the configured e-mail alert, if desired, by entering the following command:

```
racadm testemail -i <index>
```

where <index> is the e-mail destination index to test.

Configuring IP Filtering (IP Range)

IP address filtering (or *IP Range Checking*) allows iDRAC6 access only from clients or management workstations whose IP addresses are within a user-specified range. All other login requests are denied.

IP filtering compares the IP address of an incoming login to the IP address range that is specified in the following **cfgRacTuning** properties:

- **cfgRacTuneIpRangeAddr**
- **cfgRacTuneIpRangeMask**

The **cfgRacTuneIpRangeMask** property is applied to both the incoming IP address and to the **cfgRacTuneIpRangeAddr** properties. If the results are identical, the incoming login request is allowed to access iDRAC6.

Logins from IP addresses outside this range receive an error.

The login proceeds if the following expression equals zero:

```
cfgRacTuneIpRangeMask & (<incoming-IP-address> ^
cfgRacTuneIpRangeAddr)
```

where & is the bitwise AND of the quantities and ^ is the bitwise exclusive-OR.

See "cfgRacTuning" for a complete list of **cfgRacTuning** properties.

Table 14-5. IP Address Filtering (IPRange) Properties

Property	Description
cfgRacTuneIpRangeEnable	Enables the IP range checking feature.
cfgRacTuneIpRangeAddr	Determines the acceptable IP address bit pattern, depending on the 1's in the subnet mask. This property is bitwise <i>anded</i> with cfgRacTuneIpRangeMask to determine the upper portion of the allowed IP address. Any IP address that contains this bit pattern in its upper bits is allowed to log in. Logins from IP addresses that are outside this range fail. The default values in each property allow an address range from 192.168.1.0 to 192.168.1.255 to log in.
cfgRacTuneIpRangeMask	Defines the significant bit positions in the IP address. The mask should be in the form of a netmask, where the more significant bits are all 1's with a single transition to all zeros in the lower-order bits.

Following are examples using local RACADM to set up IP filtering.



NOTE: See "Using the RACADM Command Line Interface" for more information about RACADM and RACADM commands.

- 1 The following RACADM commands block all IP addresses except 192.168.0.57:

```
racadm config -g cfgRacTuning -o  
cfgRacTuneIpRangeEnable 1
```

```
racadm config -g cfgRacTuning -o  
cfgRacTuneIpRangeAddr 192.168.0.57
```

```
racadm config -g cfgRacTuning -o  
cfgRacTuneIpRangeMask 255.255.255.255
```

- 2 To restrict logins to a small set of four adjacent IP addresses (for example, 192.168.0.212 through 192.168.0.215), select all but the lowest two bits in the mask, as shown below:

```
racadm config -g cfgRacTuning -o  
cfgRacTuneIpRangeEnable 1
```

```
racadm config -g cfgRacTuning -o  
cfgRacTuneIpRangeAddr 192.168.0.212
```

```
racadm config -g cfgRacTuning -o  
cfgRacTuneIpRangeMask 255.255.255.252
```

The last byte of the range mask is set to 252, the decimal equivalent of 11111100b.

IP Filtering Guidelines

Use the following guidelines when enabling IP filtering:

- Ensure that **cfgRacTuneIpRangeMask** is configured in the form of a netmask, where all most significant bits are 1's (which defines the subnet in the mask) with a transition to all 0's in the low-order bits.
- Use the desired range's base address as the value of **cfgRacTuneIpRangeAddr**. The 32-bit binary value of this address should have zeros in all the low-order bits where there are zeros in the mask.

Configuring IP Blocking

IP blocking dynamically determines when excessive login failures occur from a particular IP address and blocks (or prevents) the address from logging in to iDRAC6 for a preselected time span.

The IP blocking features include:

- The number of allowed login failures (**cfgRacTuneIpBlkFailcount**)
- The time frame in seconds during which these failures must occur (**cfgRacTuneIpBlkFailWindow**)
- The amount of time in seconds that the blocked IP address is prevented from establishing a session after the allowed number of failures is exceeded (**cfgRacTuneIpBlkPenaltyTime**)

As login failures accumulate from a specific IP address, they are registered by an internal counter. When the user logs in successfully, the failure history is cleared and the internal counter is reset.



NOTE: When login attempts are refused from the client IP address, some SSH clients may display the following message: `ssh exchange identification: Connection closed by remote host.`

See "iDRAC6 Enterprise Property Database Group and Object Definitions" for a complete list of **cfgRacTune** properties.

"Log In Retry Restriction (IP Blocking) Properties" lists the user-defined parameters.

Table 14-6. Log In Retry Restriction (IP Blocking) Properties

Property	Definition
cfgRacTuneIpBlkEnable	Enables the IP blocking feature. When consecutive failures (cfgRacTuneIpBlkFailCount) from a single IP address are encountered within a specific amount of time (cfgRacTuneIpBlkFailWindow), all further attempts to establish a session from that address are rejected for a certain time span (cfgRacTuneIpBlkPenaltyTime).
cfgRacTuneIpBlkFailCount	Sets the number of login failures from an IP address before the login attempts are rejected.

Table 14-6. Log In Retry Restriction (IP Blocking) Properties (continued)

Property	Definition
<code>cfgRacTuneIpBlkFailWindow</code>	The time frame in seconds during which the failure attempts are counted. When the failures exceed this limit, they are dropped from the counter.
<code>cfgRacTuneIpBlkPenaltyTime</code>	Defines the time span in seconds that login attempts from an IP address with excessive failures are rejected.

Enabling IP Blocking

The following example prevents a client IP address from establishing a session for five minutes if that client has failed five login attempts in a one-minute period of time.

```
racadm config -g cfgRacTuning -o
cfgRacTuneIpRangeEnable 1
racadm config -g cfgRacTuning -o
cfgRacTuneIpBlkFailCount 5
racadm config -g cfgRacTuning -o
cfgRacTuneIpBlkFailWindow 60
racadm config -g cfgRacTuning -o
cfgRacTuneIpBlkPenaltyTime 300
```


The following example prevents more than three failed attempts within one minute, and prevents additional login attempts for an hour.

```
racadm config -g cfgRacTuning -o
cfgRacTuneIpBlkEnable 1
racadm config -g cfgRacTuning -o
cfgRacTuneIpBlkFailCount 3
racadm config -g cfgRacTuning -o
cfgRacTuneIpBlkFailWindow 60
racadm config -g cfgRacTuning -o
cfgRacTuneIpBlkPenaltyTime 3600
```

Configuring iDRAC6 Telnet and SSH Services Using Local RACADM

The Telnet/SSH console can be configured locally (on the managed server) using RACADM commands.

 **NOTE:** You must have **Configure iDRAC6** permission to execute the commands in this section.

 **NOTE:** When you reconfigure Telnet or SSH settings in iDRAC6, any current sessions are terminated without warning.

To enable Telnet and SSH from the local RACADM, log in to the managed server and enter the following commands at a command prompt:

```
racadm config -g cfgSerial -o cfgSerialTelnetEnable 1
racadm config -g cfgSerial -o cfgSerialSshEnable 1
```

To disable the Telnet or SSH service, change the value from 1 to 0:

```
racadm config -g cfgSerial -o cfgSerialTelnetEnable 0
racadm config -g cfgSerial -o cfgSerialSshEnable 0
```

Enter the following command to change the Telnet port number on iDRAC6:

```
racadm config -g cfgRacTuning -o cfgRacTuneTelnetPort
<new port number>
```

For example, to change the Telnet port from the default 23 to 8022, enter this command:

```
racadm config -g cfgRacTuning -o cfgRacTuneTelnetPort
8022
```

For a complete list of available RACADM CLI commands, see "Using the RACADM Command Line Interface."

Remote and SSH/Telnet RACADM

Remote RACADM is a client side utility, which can be executed from a management station through the out of band network interface. A remote capability option (-r) is provided that allows you to connect to the managed system and execute RACADM subcommands from a remote console or management station. To use the remote capability, you need a valid user name (-u option) and password (-p option), and iDRAC6 IP address. SSH/Telnet RACADM is used to refer to the RACADM command usage from a SSH or Telnet prompt.

The maximum number of simultaneous remote RACADM sessions is four. These sessions are independent and in addition to the Telnet and SSH sessions. iDRAC6 can simultaneously support four SSH sessions and four Telnet sessions, in addition to the four RACADM sessions.



NOTE: Configure the IP address on your iDRAC6 before using the RACADM remote capability.



NOTE: If the system from where you are accessing the remote system does not have an iDRAC6 certificate in its default certificate store, a message is displayed when you type a RACADM command.

```
Security Alert: Certificate is invalid - Name on
Certificate is invalid or does not match site name
```

```
Continuing execution. Use -S option for racadm to
stop the execution on certificate-related errors.
```

```
RACADM continues to execute the command. However, if you use the -S
option, RACADM stops executing the command and displays the
following message:
```

```
Security Alert: Certificate is invalid - Name on
Certificate is invalid or does not match site name
```

```
Racadm not continuing execution of the command.
```

```
ERROR: Unable to connect to iDRAC6 at specified
IP address
```



NOTE: When using the RACADM remote capability, you must have write permissions on the folders where you are using the RACADM subcommands involving file operations, for example:

```
racadm getconfig -f <file name>
```

or

```
racadm sslcertdownload -t <type> [-f <filename>]
```

Remote RACADM Usage

```
racadm -r <iDRAC6 IP Address> -u <username> -p
<password> <subcommand> <subcommand options>
```

```
racadm -i -r <iDRAC6 IP Address> <subcommand>
<subcommand options>
```

For example:

```
racadm -r 192.168.0.120 -u root -p calvin getsysinfo  
racadm -i -r 192.168.0.120 getsysinfo
```

If the HTTPS port number of iDRAC6 has been changed to a custom port other than the default port (443), the following syntax must be used:

```
racadm -r <iDRAC6 IP Address>:<port> -u <username> -p  
<password> <subcommand> <subcommand options>  
racadm -i -r <iDRAC6 IP Address>:<port> <subcommand>  
<subcommand options>
```

Remote RACADM Options

Table 14-7 lists the options for the remote RACADM command.

Table 14-7. RACADM Command Options

Option	Description
-r <racIpAddr>	Specifies the controller's remote IP address.
-r <racIpAddr>:<port number>	Use:<port number> if iDRAC6 port number is not the default port (443)
-i	Instructs RACADM to interactively query the user for user name and password.
-u <usrName>	Specifies the user name that is used to authenticate the command transaction. If the -u option is used, the -p option must be used, and the -i option (interactive) is not allowed.
-p <password>	Specifies the password used to authenticate the command transaction. If the -p option is used, the -i option is not allowed.
-S	Specifies that RACADM should check for invalid certificate errors. RACADM stops the execution of the command with an error message if it detects an invalid certificate.

Using an iDRAC6 Configuration File

An iDRAC6 configuration file is a text file that contains a representation of the values in iDRAC6 database. You can use the RACADM `getconfig` subcommand to generate a configuration file containing the current values from iDRAC6. You can then edit the file and use the RACADM `config -f` subcommand to load the file back into iDRAC6, or to copy the configuration to other iDRAC6s.

Creating an iDRAC6 Configuration File

The configuration file is a plain text file. You can use any valid file name; however, the `.cfg` file extension is the recommended convention.

The configuration file can be:

- Created with a text editor
- Obtained from iDRAC6 with the RACADM `getconfig` subcommand
- Obtained from iDRAC6 with the RACADM `getconfig` subcommand and then edited

To obtain a configuration file with the RACADM `getconfig` command, enter the following command:

```
racadm -r <remote iDRAC6 IP> -u <user> -p <password>  
getconfig -f myconfig.cfg
```

This command creates the file `myconfig.cfg` in the current directory.

Configuration File Syntax



NOTE: Edit the configuration file with a plain text editor, such as Notepad on Windows or `vi` on Linux. The `racadm` utility parses ASCII text only. Any formatting confuses the parser and may corrupt iDRAC6 database.

This section describes the format of the configuration file.

- Lines that start with `#` are comments.

A comment *must* start in the first column of the line. A `#` character in any other column is treated as a normal `#` character.

Example:

```
#
```

```
# This is a comment
[cfgUserAdmin]
cfgUserAdminPrivilege=4
```

- Group entries must be surrounded by [and] characters. The starting [character denoting a group name *must* start in column one. This group name *must* be specified before any of the objects in that group. Objects that do not include an associated group name generate an error. The configuration data is organized into groups as defined in "iDRAC6 Enterprise Property Database Group and Object Definitions."

The following example displays a group name, object, and the object's property value.

Example:

```
[cfgLanNetworking] (group name)
cfgNicIpAddress=192.168.1.1 (object name)
```

- Parameters are specified as *object=value* pairs with no white space between the object, =, and value.

White space that is included after the value is ignored. White space inside a value string remains unmodified. Any character to the right of the = is taken as is (for example, a second =, or a #, [,], and so forth).

- The parser ignores an index object entry. You *cannot* specify which index is used. If the index already exists, it is either used or the new entry is created in the first available index for that group.

The `racadm getconfig -f <filename>` command places a comment in front of index objects, allowing you to see the included comments.



NOTE: You can create an indexed group manually using the following command: `racadm config -g <groupName> -o <anchored-object> -i <index> <unique-anchor-name>`.

- The line for an indexed group *cannot* be deleted from a configuration file. You must remove an indexed object manually using the following command:

```
racadm config -g <groupName> -o <objectName> -i  
<index> ""
```



NOTE: A NULL string (identified by two "" characters) directs iDRAC6 to delete the index for the specified group.

To view the contents of an indexed group, use the following command:

```
racadm getconfig -g <groupName> -i <index>
```

- For indexed groups the object anchor *must* be the first object after the [] pair. The following are examples of the current indexed groups:

```
[cfgUserAdmin]
```

```
cfgUserAdminUserName=<username>
```

- If the parser encounters an indexed group, it is the value of the anchored object that differentiates the various indexes.

The parser reads in all of the indexes from iDRAC6 for that group.

Any objects within that group are simple modifications when iDRAC6 is configured. If a modified object represents a new index, the index is created on iDRAC6 during configuration.

- You cannot specify a desired index in a configuration file.

Indexes may be created and deleted, so over time the group may become fragmented with used and unused indexes. If an index is present, it is modified. If an index is not present, the first available index is used.

This method allows flexibility when adding indexed entries where you do not need to make exact index matches between all the RACs being managed. New users are added to the first available index. A configuration file that parses and runs correctly on one iDRAC6 may not run correctly on another if all indexes are full and you must add a new user.

Modifying iDRAC6 IP Address in a Configuration File

When you modify iDRAC6 IP address in the configuration file, remove all unnecessary `<variable>=<value>` entries. Only the actual variable group's label with "[" and "]" remains, including the two `<variable>=<value>` entries pertaining to the IP address change.

For example:

```
#
```


```

# Object Group "cfgLanNetworking"
#
[cfgLanNetworking]
cfgNicIpAddress=10.35.10.110
cfgNicGateway=10.35.10.1
This file will be updated as follows:
#
# Object Group "cfgLanNetworking"
#
[cfgLanNetworking]
cfgNicIpAddress=10.35.9.143
# comment, the rest of this line is ignored
cfgNicGateway=10.35.9.1


```

Loading the Configuration File Into iDRAC6

The command `racadm config -f <filename>` parses the configuration file to verify that valid group and object names are present and that syntax rules are followed. If the file is error-free the command then updates iDRAC6 database with the contents of the file.

 **NOTE:** To verify the syntax only and not update iDRAC6 database, add the `-c` option to the `config` subcommand.

Errors in the configuration file are flagged with the line number and a message that explains the problem. You must correct all errors before the configuration file can update iDRAC6.

 **NOTE:** Use the `racresetcfg` subcommand to reset the database and iDRAC6 NIC settings to the original default settings and remove all users and user configurations. While the root user is available, other users' settings are also reset to the default settings.

Before you execute the `racadm config -f <filename>` command, you can run the `racresetcfg` subcommand to reset iDRAC6 to its default settings. Ensure that the configuration file you will load includes all desired objects, users, indexes, and other parameters.

To update iDRAC6 with the configuration file, execute the following command:

```
racadm -r <remote iDRAC6 IP> -u <user> -p <password>  
config -f myconfig.cfg
```

After the command has completed, you can execute the RACADM `getconfig` subcommand to confirm that the update succeeded.

Configuring Multiple iDRAC6s

Using a configuration file, you can configure other iDRAC6s with identical properties. Follow these steps to configure multiple iDRAC6s:

- 1 Create the configuration file from iDRAC6 settings you want to replicate to the others. Enter the following command:

```
racadm -r <remote iDRAC6 IP> -u <user> -p  
<password> getconfig -f <filename>
```

where *<filename>* is the name of a file to save iDRAC6 properties, such as `myconfig.cfg`.

The below example shows how you can use remote RACADM commands to configure multiple iDRAC6s. Create a batch file on the management station and call remote `racadm` commands from the batch file.

For example:

```
racadm -r <Server IP 1> -u <user> -p <password>  
config -f myconfig.cfg
```

```
racadm -r <Server IP 2> -u <user> -p <password>  
config -f myconfig.cfg
```

...

See "Creating an iDRAC6 Configuration File" for more information.



NOTE: Some configuration files contain unique iDRAC6 information (such as the static IP address) that must be modified before you export the file to other iDRAC6s.

- 2 Edit the configuration file you created in the previous step and remove or comment-out any settings you *do not* want to replicate.
- 3 Copy the edited configuration file to a network drive where it is accessible to each managed server whose iDRAC6 you want to configure.
- 4 For each iDRAC6 you want to configure:

- a Log in to the managed server and start a command prompt.
- b If you want to reconfigure iDRAC6 from the default settings, enter the following command:

```
racadm racreset
```

- c Load the configuration file into iDRAC6 with the following command:

```
racadm -r <remote iDRAC6 IP> -u <user> -p  
<password> config -f <filename>
```

where *<filename>* is the name of the configuration file you created. Include the full path if the file is not in the working directory.

- d Reset iDRAC6 that was configured by entering the following command:

```
racadm reset
```


Power Monitoring and Power Management

Dell™ PowerEdge™ systems incorporate many new and enhanced power management features. The entire platform, from hardware to firmware to systems management software, has been designed with a focus on power efficiency, power monitoring, and power management.



NOTE: iDRAC6 power management logic utilizes a Complex Programmable Logic Device (CPLD) present in the blade server. Updates to CPLD devices are available at the Dell Support website at support.dell.com under the **System Firmware** or **System Board** sections. It is recommended that you update your blade server with the latest CPLD firmware version. The current CPLD firmware version is displayed in iDRAC6 Web GUI.

Dell PowerEdge systems provide many features for monitoring and managing power:

- **Power Monitoring:** iDRAC6 collects a history of power measurements and calculates running averages, peaks, and so on. Using iDRAC6 Web interface, you can view the information on the **Power Monitoring** screen. You can also view the information in graph form by clicking **Show Graph** at the bottom of the **Power Monitoring** screen. See "Power Monitoring" for more information.
- **Power Budgeting:** At boot, a system inventory enables a system power budget of the current configuration to be calculated. See "Power Budgeting" for more information.
- **Power Control:** iDRAC6 enables you to remotely perform several power management actions on the managed system. See "Power Control" for more information.

Configuring and Managing Power

You can use iDRAC6 Web interface and RACADM command line interface (CLI) to manage and configure power controls on the Dell PowerEdge system. Specifically, you can:

- View the power status of the server. See "Viewing Power Monitoring."
- View power budget information for the server, including the minimum and maximum potential power consumption. See "Viewing Power Budget."
- View power budget threshold for the server. See "Power Budget Threshold."
- Execute power control operations on the server (for example, power on, power off, system reset, power cycle, and graceful shutdown). See "Executing Power Control Operations on the Server."

Power Monitoring

iDRAC6 monitors the power consumption in Dell PowerEdge servers continuously. iDRAC6 calculates the following power values and provides the information through its Web interface or RACADM CLI:

- Cumulative System Power
- System Peak Power and System Peak Amperage
- Average, Minimum, and Maximum Power Consumption
- Power consumption (also shown in graphs in the Web interface)
- Max and Min Power Times

Viewing Power Monitoring

Using the Web Interface

To view the power monitoring data:

- 1 Log in to iDRAC6 Web interface.
- 2 In the system tree, select **Power Monitoring**.

The **Power Monitoring** screen appears, displaying the following information:

Power Monitoring

- **Status:** A **green check** indicates that the power status is normal, **Warning** indicates that a warning alert was issued, and **Severe** indicates a failure alert was issued.
- **Probe Name:** Lists the name of the sensor.
- **Reading:** Indicates the wattage reported by the probe.

- **Warning Threshold:** Displays the acceptable power consumption (in Watts and BTU/hr) recommended for system operation. Power consumption that exceeds this value results in warning events.
- **Failure Threshold:** Displays the highest acceptable power consumption (in Watts and BTU/hr) required for system operation. Power consumption that exceeds this value results in critical/failure events.


Amperage

- **Location:** Displays the name of the system board sensor.
- **Reading:** The current consumption in AC Amps.

Power Tracking Statistics and Peak Statistics

- **Statistic:**
 - **Cumulative System Power** displays the current cumulative energy consumption (in kWh) for the server. The value represents the total energy used by the system. You can reset this value to 0 by clicking **Reset** at the end of the table row.
 - **System Peak Power** specifies the system peak value in AC Watts.
 - **System Peak Amperage** specifies the system peak amperage. The peak value is the highest value recorded between the **Measurement Start Time** and now. The peak time was the point in time when that peak value occurred. Click **Reset** at the end of the table row to set it back to the current instantaneous value (which, if the server is running, will not be 0). Clicking reset will also reset the measurement start time to the current time.
 - **Measurement Start Time** displays the date and time recorded when the system energy consumption value was last cleared and the new measurement cycle began. For **Cumulative System Power**, **System Peak Amperage**, and **System Peak Power** statistics, the peak values when reset, will immediately reflect the current instantaneous value.
 - **Measurement Current Time** for **Cumulative System Power** displays the current date and time when the system energy consumption was calculated for display. For **System Peak Amperage** and **System Peak Power**, the **Peak Time** fields display the time when these peaks occurred.

- **Reading:** The value of the appropriate statistic—**Cumulative System Power**, **System Peak Power**, and **System Peak Amperage** since the counter was started.


 **NOTE:** Power Tracking Statistics are maintained across system resets and so reflect all activity in the interval between the stated Start and Current times. The power values displayed in the Power Consumption table are cumulative averages over the respective time interval (last minute, hour, day and week). Since the Start to Finish time intervals here may differ from those of the Power Tracking Statistics ones, peak power values (Max Peak Watts versus Max Power Consumption) may differ.

Power Consumption

- **Average Power Consumption:** Average over previous minute, previous hour, previous day, and previous week.
- **Max Power Consumption and Min Power Consumption:** The maximum and minimum power consumptions observed within the given time interval.
- **Max Power Time and Min Power Time:** The times (by minute, hour, day, and week) when the maximum and minimum power consumptions occurred.

Show Graph

Click **Show Graph** to display graphs illustrating iDRAC6 power consumption in Watts over the last hour, 24 hours, three days, and one week. Use the drop-down menu provided above the graph to select the time period.

 **NOTE:** Each data point plotted on the graphs represents the average of readings over a 5 minute period. As a result, the graphs may not reflect brief fluctuations in power or current consumption.

Power Budgeting

The **Power Budget** screen displays the power threshold limits, which cover the range of AC power consumptions a system under heavy workload will present to the datacenter.

Before a server powers up, iDRAC6 provides CMC with its power envelope requirement. It may request a smaller power envelope after the server is powered up based on the actual power consumed by the server. If the power consumption increases over time and if the server is consuming power near its maximum allocation, iDRAC6 may request an increase of the maximum

potential power consumption thus increasing the power envelope. iDRAC6 only increases its maximum potential power consumption request to CMC. It does not request for a lesser minimum potential power if the consumption decreases.

CMC reclaims any unused power from lower priority servers and subsequently allocates the reclaimed power to a higher priority infrastructure module or a server.

Viewing Power Budget

The server provides power budget status overviews of the power subsystem on the **Power Budget** screen.

Using the Web Interface



NOTE: To perform power management actions, you must have **Administrative** privilege.

- 1 Log in to iDRAC6 Web interface.
- 2 In the system tree, select **System**.
- 3 Click the **Power Management** tab, and then click **Power Budget**.

The **Power Budget** screen appears.

The **Power Budget Information** table displays the minimum and maximum limits of power thresholds for the current system configuration. These cover the range of AC power consumptions a thresholded system under heavy workload will present to the datacenter.

- **Minimum Potential Power Consumption** represents the lowest Power Budget Threshold value.
- **Maximum Potential Power Consumption** represents the highest Power Budget Threshold value. This value is also the current system configuration's absolute maximum power consumption.

Using RACADM

On a managed server, open a command line interface and enter:

```
racadm getconfig -g cfgServerPower
```



NOTE: For more information about `cfgServerPower`, including output details, see "`cfgServerPower`."

Power Budget Threshold

Power Budget Threshold, if enabled, enforces power limits for the system. System performance is dynamically adjusted to maintain power consumption near the specified threshold.

Actual power consumption may be less for light workloads and momentarily may exceed the threshold until performance adjustments have completed.

Using the Web Interface

- 1 Log in to iDRAC6 Web interface.
- 2 In the system tree, select **System**.
- 3 Click the **Power Management** tab, and then click **Power Budget**.
The **Power Budget** screen appears.
- 4 Click **Power Budget Threshold**.



NOTE: Power budget threshold is read-only and cannot be enabled or configured in iDRAC6.

The **Power Budget Threshold** table displays the power limit information for the system:

- **Enabled** indicates whether the system enforces the power budget threshold.
- **Threshold in Watts** and **Threshold in BTU/hr** display the limit in AC Watts and BTU/hr respectively.
- **Threshold in Percentage(of Maximum)** displays the percentage of power capping range.

Using RACADM

On a managed server, open a command line interface and enter:

To view the Power Budget Threshold data from local RACADM, enter the following commands at a command prompt:

```
racadm getconfig -g cfgServerPower -o  
cfgServerPowerCapWatts
```

returns *<power cap value in AC Watts>*

```
racadm getconfig -g cfgServerPower -o  
cfgServerPowerCapBTUhr
```

returns <power cap value in BTU/hr>

```
racadm getconfig -g cfgServerPower -o  
cfgServerPowerCapPercent
```

returns <power cap value in %>



NOTE: For more information about `cfgServerPower`, including output details, see "cfgServerPower."

Power Control

iDRAC6 enables you to remotely perform a power-on, power off, reset, graceful shutdown, non-masking interruption (NMI), or power cycle. Use the **Power Control** screen to perform an orderly shutdown through the operating system when rebooting and powering on or off.

Executing Power Control Operations on the Server



NOTE: To perform power management actions, you must have **Administrator** privilege.

iDRAC6 enables you to remotely perform a power-on, reset, graceful shutdown, NMI, or power cycle.

Using the Web Interface

- 1 Log in to iDRAC6 Web interface.
- 2 In the system tree, select **System**.
- 3 Click the **Power Management** tab.
The **Power Control** screen displays.
- 4 Select one of the following **Power Control Operations** by clicking its radio button:
 - **Power On System** turns on the server (the equivalent of pressing the power button when the server power is off). This option is disabled if the system is already powered on.
 - **Power Off System** turns off the server. This option is disabled if the system is already powered off.

- **NMI (Non-Masking Interrupt)** generates an NMI to halt system operation. An NMI sends a high-level interrupt to the operating system, which causes the system to halt operation to allow for critical diagnostic or troubleshooting activities. This option is disabled if the system is already powered off.
- **Graceful Shutdown** attempts to cleanly shutdown the operating system, then powers off the system. Graceful shutdown requires an ACPI (Advanced Configuration and Power Interface)-aware operating system, which allows for system directed power management. This option is disabled if the system is already powered off.
- **Reset System (warm boot)** reboots the system without powering off. This option is disabled if the system is already powered off.
- **Power Cycle System (cold boot)** powers off and then reboots the system. This option is disabled if the system is already powered off.

5 Click Apply.

A dialog box appears requesting confirmation.

6 Click OK to execute the power management action you selected.

Using RACADM

To perform power actions from local RACADM, enter the below command at a command prompt:

```
racadm serveraction <action>
```

where <action> is powerup, powerdown, powercycle, hardreset, or powerstatus.



NOTE: For more information about serveraction, including output details, see "serveraction."

Using iDRAC6 Enterprise SM-CLP Command Line Interface

This section provides information about the Server Management Workgroup (SMWG) Server Management-Command Line Protocol (SM-CLP) that is incorporated in iDRAC6.



NOTE: This section assumes that you are familiar with the Systems Management Architecture for Server Hardware (SMASH) Initiative and the SMWG SM-CLP specifications. For more information on these specifications, see the Distributed Management Task Force (DMTF) website at www.dmtf.org.

iDRAC6 SM-CLP is a protocol driven by the DMTF and SMWG to provide standards for systems management CLI implementations. Many efforts are driven by a defined SMASH architecture that is targeted as a foundation for more standardized systems management set of components. The SMWG SM-CLP is a subcomponent of the overall SMASH efforts driven by DMTF.

SM-CLP provides a subset of the functionality provided by the local RACADM command line interface, but with a different access path. SM-CLP executes within iDRAC6, while RACADM executes on the managed server. Also, RACADM is a Dell™ proprietary interface, where SM-CLP is an industry standard interface.



NOTE: For information on iDRAC6 SM-CLP Property Database, mapping between WS-MAN classes and SM-CLP targets, and Dell implementation details, see the *iDRAC6 CIM Element Mapping* and *iDRAC6 SM-CLP Property Database* documents available on the Dell Enterprise Technology Center at www.delltechcenter.com. Information included in the *iDRAC6 CIM Element Mapping* document is specified in the DMTF profiles. The WSMAN structures are documented in the DMTF profiles and MOFs available at <http://www.dmtf.org/standards/profiles/>. Further, Dell extensions are available at <http://www.delltechcenter.com/page/DCIM++Dell+CIM+Extensions>.

System Management With SM-CLP

iDRAC6 SM-CLP enables you to manage the following system features from a command line:

- Server Power Management — Turn on, shutdown, or reboot the system
- System Event Log (SEL) Management — Display or clear the SEL records
- iDRAC6 user account management
- Active Directory configuration
- iDRAC6 LAN configuration
- SSL Certificate Signature Request (CSR) generation
- Virtual media configuration

iDRAC6 SM-CLP Support

SM-CLP is hosted from iDRAC6 firmware, and supports Telnet and SSH connections. iDRAC6 SM-CLP interface is based on the SM-CLP Specification Version 1.0 provided by the DMTF organization.

The following sections provide an overview of the SM-CLP feature that is hosted from iDRAC6.



NOTE: If you have established an SM-CLP session through Telnet/SSH and the session is not closed successfully due to the network being disconnected, a message indicating that you have reached the maximum number of connections may be displayed. To resolve this, terminate the SM-CLP session in the Web GUI under **System**→**Remote Access**→**iDRAC6**→**Network/Security**→**Sessions** before attempting to establish a new one.



NOTE: iDRAC6 supports up to 4 Telnet sessions and 4 SSH sessions simultaneously. However, only *one* of those 8 potential sessions may use SM-CLP. That is, iDRAC6 supports only one SM-CLP session at a time.

How to start an SM-CLP session

- Connect to iDRAC6 through SSH/Telnet which takes you to the CLI (console).
- Enter "smclp" at the dollar prompt to start the SM-CLP console.

Syntax:

```
telnet <iDRAC6-ip-address>
$; (the CLI prompt is displayed)
$smclp; (in the CLI prompt, type smclp)
```

SM-CLP Features

The SM-CLP specification provides a common set of standard SM-CLP verbs that can be used for simple systems management through the CLI.

SM-CLP promotes the concept of verbs and targets to provide system configuration capabilities through the CLI. The verb indicates the operation to perform and the target is the entity (or object) on which the operation is performed.

The following is the syntax of the SM-CLP command line:

```
<verb> [<options>] [<target>] [<properties>]
```

Table 16-1 provides a list of the verbs iDRAC6 CLI supports, the syntax of each command, and a list of the options the verb supports.

Table 16-1. Supported SM-CLP CLI Verbs

Verb	Description	Options
cd	Navigates through the managed system address space using the shell. Syntax: cd [options] [target]	-default, -examine, -help, -output, -version
delete	Deletes an object instance. Syntax: delete [options] target	-examine, -help, -output, -version
exit	Exits from the SM-CLP shell session. Syntax: exit [options]	-help, -output, -version
help	Displays help for SM-CLP commands. help	-examine, -help, -output, -version

Table 16-1. Supported SM-CLP CLI Verbs (continued)

Verb	Description	Options
reset	Resets the target. Syntax: reset [options] [target]	-examine, -help, -output, -version
set	Sets the properties of a target Syntax: set [options] [target] <property name>=<value>	-examine, -help, -output, -version
show	Displays the target properties, verbs, and subtargets. Syntax: show [options] [target] <property name>=<value>	-all, -default, -display, -examine, -help, -level, -output, -version
start	Starts a target. Syntax: start [options] [target]	-examine, -force, -help, -output, -version
stop	Shuts down a target. Syntax: stop [options] [target]	-examine, -force, -help, -output, -version, -wait
version	Displays the version attributes of a target. Syntax: version [options]	-examine, -help, -output, -version

Table 16-2 describes the SM-CLP options. Some options have abbreviated forms, as shown in the table.

Table 16-2. Supported SM-CLP Options

SM-CLP Option	Description
-all, -a	Instructs the verb to perform all possible functions.

Table 16-2. Supported SM-CLP Options (continued)

SM-CLP Option	Description
-destination	Specifies the location to store an image in the dump command. Syntax: -destination <URI>
-display, -d	Filters the command output. Syntax: -display <properties targets verbs>[, <properties targets verbs>]*
-examine, -x	Instructs the command processor to validate the command syntax without executing the command.
-help, -h	Displays help for the verb.
-level, -l	Instructs the verb to operate on targets at additional levels beneath the specified target. Syntax: -level <n all>
-output, -o	Specifies the format for the output. Syntax: -output format=<text clpcsv keyword clpxml> or -o format=<text clpcsv keyword clpxml>
-version, -v	Displays the SM-CLP version number.

Navigating the MAP Address Space



NOTE: The slash (/) and backslash (\) are interchangeable in SM-CLP address paths. However, a backslash at the end of a command line continues the command on the next line and is ignored when the command is parsed.

Objects that can be managed with SM-CLP are represented by targets arranged in a hierarchical space called the Manageability Access Point (MAP) address space. An address path specifies the path from the root of the address space to an object in the address space.

The root target is represented by a slash (/) or a backslash (\). It is the default starting point when you log in to iDRAC6. Navigate down from the root using the `cd` verb.

For example to navigate to the third record in the System Event Log (SEL), enter the following command:

```
->cd /admin1/system1/logs1/log1/record3
```

Enter the `cd` verb with no target to find your current location in the address space. The `..` and `.` abbreviations work as they do in Windows and Linux: `..` refers to the parent level and `.` refers to the current level.

Targets

For a list of targets available through the SM-CLP, see the SM-CLP mapping document available on the Dell Enterprise Technology Center at www.delltechcenter.com.

Using the Show Verb

To learn more about a target use the `show` verb. This verb displays the target's properties, sub-targets, associations, and a list of the SM-CLP verbs that are allowed at that location.

Using the -display Option

The `show -display` option allows you to limit the output of the command to one or more of properties, targets, associations, and verbs. For example, to display just the properties and targets at the current location, use the following command:

```
/admin1/system1/spl/oemdcim_mfaaccount1 show -display properties,targets
```

To list only certain properties, qualify them, as in the following command:

```
show -d properties=(userid,name)
/admin1/system1/spl/oemdcim_mfaaccount1
```

If you only want to show one property, you can omit the parentheses.

Using the -level Option

The `show -level` option executes `show` over additional levels beneath the specified target. To see all targets and properties in the address space, use the `-l all` option.

Using the -output Option

The `-output` option specifies one of four formats for the output of SM-CLP verbs: `text`, `clpcsv`, `keyword`, and `clpxml`.

The default format is `text`, and is the most readable output. The `clpcsv` format is a comma-separated values format suitable for loading into a spreadsheet program. The `keyword` format outputs information as a list of keyword=value pairs one per line. The `clpxml` format is an XML document containing a `response` XML element. The DMTF has specified the `clpcsv` and `clpxml` formats and their specifications can be found on the DMTF website at www.dmtf.org.

The following example shows how to output the contents of the SEL in XML:

```
show -l all -output format=clpxml
/admin1/system1/logs1/log1
```

iDRAC6 SM-CLP Examples

The following subsections provide examples on how to login to iDRAC6 using the SSH interface and start an SM-CLP session to perform the following operations:

- Server power management
- SEL management
- MAP target navigation
- Display system properties

Server Power Management

Table 16-3 provides examples of using SM-CLP to perform power management operations on a managed server.

Enter `"smc1p"` to start the SM-CLP console.

Table 16-3. Server Power Management Operations

Operation	Syntax
Logging in to iDRAC6 using the SSH interface	<pre>>ssh 192.168.0.120 >login: root >password:</pre> <p>Enter "smclp" to start the SM-CLP console.</p>
Power down the server	<pre>->stop /admin1/system1 system1 successfully stopped</pre>
Power up the server from a powered-off state	<pre>->start /admin1/system1 system1 successfully started</pre>
Reboot the server	<pre>->reset /admin1/system1 RESET successful for system1</pre>

SEL Management

Table 16-4 provides examples of using the SM-CLP to perform SEL-related operations on the managed system.

MAP Target Navigation

Table 16-5 provides examples of using the `cd` verb to navigate the MAP. In all examples, the initial default target is assumed to be `/`.

Table 16-4. SEL Management Operations

Operation	Syntax
Viewing the SEL	<pre>->show -d targets,properties,verbs /admin1/system1/logs1/log1</pre> <p>Might return:</p> <p>Targets: record1/ record2/...</p> <p>Properties: OverwritePolicy=7 LogState=4 CurrentNumberOfRecords=60 MaxNumberOfRecords=512 ElementName=Record Log 1 HealthState=5 EnabledState=2 RequestedState=12 EnabledDefault=2 TransitioningToState=12 InstanceID=DCIM: SEL Log OperationalStatus={2}</p> <p>Verbs: show exit version cd help</p>

Table 16-4. SEL Management Operations (continued)

Operation	Syntax
Viewing the SEL record	<pre>->show /admin1/system1/logs1/log1/record4</pre> <p>Might return:</p> <pre>ufip=/admin1/system1/logs1/log1/record4</pre> <p>Associations:LogManagesRecord= >/admin1/system1/logs1/log1</p> <p>Properties:</p> <pre>RecordData=*0.0.65*4 2*1245152621*65 65*4*31*0*true*111*1*255*255* RecordFormat= *IPMI_SensorNumber.IPMI_OwnerLUN.IPMI_OwnerID*IPMI_RecordID*IPMIRecordType*IPMI_TimeStamp*IPMI_GeneratorID*IPMI_EvMRev*IPMI_SensorType*IPMI_SensorNumber*IPMI_AssertionEvent*IPMI_EventType*IPMI_EventData1*IPMI_EventData2*IPMI_EventData3*IANA* Description=:0:Assert:OEM specific ElementName=DCIM System Event Log Entry InstanceID=DCIM:SEL LOG:4 LogInstanceID=idrac:Unknown:Unknown SEL Log LogName=DCIM System Event Log Entry RecordID=DCIM:SEL LOG:4 CreationTimeStamp=20090616114341.000000+000</pre>

Table 16-4. SEL Management Operations (continued)

Operation	Syntax
	Verbs: show exit version cd help delete
Clearing the SEL	->delete /admin1/system1/logs1/log1/record* Returns: Records deleted successfully.

Table 16-5. Map Target Navigation Operations

Operation	Syntax
Navigate to the system target and reboot	->cd admin1/system1 ->reset NOTE: The current default target is /.
Navigate to the SEL target and display the log records	->cd admin1 ->cd system1 ->cd logs1 ->cd log1 ->show is equivalent to ->cd admin1/system1/logs1/log1 ->show
Display current target	->cd .
Move up one level	->cd ..
Exit the shell	->exit

Using the WS-MAN Interface

Web Services for Management (WS-MAN) is a Simple Object Access Protocol (SOAP)-based protocol used for systems management. WS-MAN provides an interoperable protocol for devices to share and exchange data across networks. iDRAC6 uses WS-MAN to convey Distributed Management Task Force (DMTF) Common Information Model (CIM)-based management information; the CIM information defines the semantics and information types that can be manipulated in a managed system. The Dell™-embedded server platform management interfaces are organized into profiles, where each profile defines the specific interfaces for a particular management domain or area of functionality. Additionally, Dell has defined a number of model and profile extensions that provide interfaces for additional capabilities.

The data available through WS-MAN is provided by iDRAC6 instrumentation interface mapped to the DMTF profiles and Dell extension profiles.

WS-Management Features

The WS-Management specification promotes interoperability between management applications and managed resources. By identifying a core set of Web service specifications and usage requirements to expose a common set of operations that are central to all systems management, WS-Management has the ability to:

- DISCOVER the presence of management resources and navigate between them
- GET, SET, CREATE, and DELETE individual management resources, such as settings and dynamic values

- ENUMERATE the contents of containers and collections, such as large tables and logs
- EXECUTE specific management methods with strongly typed input and output parameters

Supported CIM Profiles

Table 17-1. Supported CIM Profiles

Standard DMTF

- 1 Base Server**
Defines CIM classes for representing the host server.
- 2 Base Metrics**
Defines CIM classes for providing the ability to model and control metrics captured for managed elements.
- 3 Service Processor**
Defines CIM classes for modeling service processors.
- 4 USB Redirection**
Defines CIM classes for describing information about USB redirections. For keyboard, video, and mouse devices, this profile should be used if the devices are to be managed as USB devices.
- 5 Physical Asset**
Defines CIM classes for representing the physical aspect of the managed elements. iDRAC6 uses this profile to represent the host server's and its component's FRU information, as well as the physical topology.
- 6 SM CLP Admin Domain**
Defines CIM classes for representing CLP's configuration. iDRAC6 uses this profile for its own implementation of CLP.
- 7 Power State Management**
Defines CIM classes for power control operations. iDRAC6 uses this profile for the host server's power control operations.
- 8 CLP Service**
Defines CIM classes for representing CLP's configuration. iDRAC6 uses this profile for its own implementation of CLP.
- 9 IP Interface**
Defines CIM classes for representing an IP interface of a managed system.

Table 17-1. Supported CIM Profiles (continued)

- 10 DHCP Client**
Defines CIM classes for representing a DHCP client and its associated capabilities and configuration.
- 11 DNS Client**
Defines CIM classes for representing a DNS client in a managed system.
- 12 Record Log**
Defines CIM classes for representing different type of logs. iDRAC6 uses this profile to represent the System Event Log (SEL) and iDRAC6 RAC Log.
- 13 Role Based Authorization**
Defines CIM classes for representing roles. iDRAC6 uses this profile for configuring iDRAC6 account privileges.
- 14 SMASH Collections**
Defines CIM classes for representing CLP's configuration. iDRAC6 uses this profile for its own implementation of CLP.
- 15 Profile Registration**
Defines CIM classes for advertising the profile implementations. iDRAC6 uses this profile to advertise its own implemented profiles, as described in this table.
- 16 Simple Identity Management**
Defines CIM classes for representing identities. iDRAC6 uses this profile for configuring iDRAC6 accounts.
- 17 Ethernet Port**
Defines CIM classes for representing an Ethernet port, its associated controller, and Ethernet interfaces in a managed system. Associations with the port's physical aspects and profile-implementation version information are modeled in this profile.
- 18 Sensor**
Defines CIM classes used to describe the sensors in a managed system. It also defines association classes that describe the relationship of the sensors with the monitored devices.

Dell Extensions

- 1 Active Directory Client**
Defines CIM and Dell extension classes for configuring iDRAC6 Active Directory client and the local privileges for Active Directory groups.
- 2 Virtual Media**
Defines CIM and Dell extension classes for configuring iDRAC6 Virtual Media. Extends *USB Redirection* Profile.

Table 17-1. Supported CIM Profiles (*continued*)

3 OS Deployment

Defines CIM and Dell extension classes for representing the configuration of OS Deployment features. It extends the management capability of referencing profiles by adding the capability to support OS deployment activities by manipulating OS Deployment features provided by the service processor.

4 Software Inventory

Defines CIM and Dell Extensions for representing currently installed BIOS, component firmware, Diagnostics, Unified Server Configurator, and Driver Pack versions. Also provides representation of versions of BIOS and firmware update images available in Lifecycle Controller for rollback and re-installation.

5 Software Update

Defines CIM and Dell extensions for representing the service class and methods for updating BIOS, Diagnostics, driver pack, and component and Lifecycle Controller firmware. Update methods support update from CIFS, NFS, FTP, and HTTP network share locations and from update images located in the Lifecycle Controller. Update requests are formulated as jobs and can be scheduled immediately or later with a choice of types of reboot actions to apply the updates.

6 Job Control

Defines CIM and Dell extensions for managing jobs generated by update requests. Jobs can be created, deleted, modified, and aggregated into job queues to sequence and perform multiple updates in a single reboot.

7 LC Management

Defines CIM and Dell extensions for getting and setting attributes for managing Auto-Discovery and Part Replacement Lifecycle Controller features.

iDRAC6 WS-MAN implementation uses SSL on port 443 for transport security, and supports basic and digest authentication. Web services interfaces can be utilized by leveraging client infrastructure such as Windows® WinRM and Powershell CLI, open source utilities like WSMANCLI, and application programming environments like Microsoft® .NET®.

There are additional implementation guides, white papers, profile, and code samples available in the Dell Enterprise Technology Center at www.delltechcenter.com. For more information, also see the following:

- DTMF Web site: www.dmtf.org/standards/profiles/
- WS-MAN release notes or Readme file.

Deploying Your Operating System Using iVMCLI

The Integrated Virtual Media Command Line Interface (iVMCLI) utility is a command-line interface that provides virtual media features from the management station to iDRAC6 in the remote system. Using iVMCLI and scripted methods, you can deploy your operating system on multiple remote systems in your network.

This section provides information on integrating the iVMCLI utility into your corporate network.

Before You Begin

Before using the iVMCLI utility, ensure that your targeted remote systems and corporate network meet the requirements listed in the following sections.

Remote System Requirements

- iDRAC6 is configured in each remote system.

Network Requirements

A network share must contain the following components:

- Operating system files
- Required drivers
- Operating system boot image file(s)

The image file must be an operating system CD or a CD/DVD ISO image with an industry-standard, bootable format.

Creating a Bootable Image File

Before you deploy your image file to the remote systems, ensure that a supported system can boot from the file. To test the image file, transfer the image file to a test system using iDRAC6 Web user interface and then reboot the system.

The following sections provide specific information for creating image files for Linux and Windows systems.

Creating an Image File for Linux Systems

Use the Data Duplicator (dd) utility to create a bootable image file for your Linux system.

To run the utility, open a command prompt and enter the following:

```
dd if=<input-device> of=<output-file>
```

For example:

```
dd if=/dev/sdc0 of=mycd.img
```

Creating an Image File for Windows Systems

When choosing a data replicator utility for Windows image files, select a utility that copies the image file and the CD/DVD boot sectors.

Preparing for Deployment

Configuring the Remote Systems

- 1 Create a network share that can be accessed by the management station.
- 2 Copy the operating system files to the network share.
- 3 If you have a bootable, preconfigured deployment image file to deploy the operating system to the remote systems, skip this step.

If you do not have a bootable, preconfigured deployment image file, create the file. Include any programs and/or scripts used for the operating system deployment procedures.

For example, to deploy a Microsoft® Windows® operating system, the image file may include programs that are similar to deployment methods used by Microsoft Systems Management Server (SMS).

When you create the image file, do the following:

- Follow standard network-based installation procedures.
 - Mark the deployment image as "read only" to ensure that each target system boots and executes the same deployment procedure.
- 4 Perform one of the following procedures:
- Integrate **IPMITool** and the Virtual Media command line interface (iVMCLI) into your existing operating system deployment application. Use the sample **ivmdeploy** script as a guide to using the utility.
 - Use the existing **ivmdeploy** script to deploy your operating system.



NOTE: **ivmdeploy** internally uses the **iVMCLI** and **ipmitool**. You should have *IPMI over LAN* privilege to use this tool. Also, the virtual media should be in the attached state when using the **ivmdeploy** script.

Deploying the Operating System

Use the iVMCLI utility and the **ivmdeploy** script included with the utility to deploy the operating system to your remote systems.

Before you begin, review the sample **ivmdeploy** script included with the iVMCLI utility. The script shows the detailed steps needed to deploy the operating system to remote systems in your network.

The following procedure provides a high-level overview for deploying the operating system on targeted remote systems.

- 1 List iDRAC6 IP addresses of the remote systems that will be deployed in the **ip.txt** text file, one IP address per line.
- 2 Insert a bootable operating system CD or DVD into the client media drive.
- 3 Run **ivmdeploy** at the command line.

To run the **ivmdeploy** script, enter the following command at the command prompt:

```
ivmdeploy -r ip.txt -u <idrac-user> -p <idrac-passwd>  
-c {<iso9660-img> | <path>}
```

where:

- **<idrac-user>** is iDRAC6 user name—for example, **root**

- `<idrac-passwd>` is the password for iDRAC6 user—for example, `calvin`
- `<iso9660-img>` is the path to an ISO9660 image of the operating system installation CD or DVD
- `<path>` is the path to the device containing the operating system installation CD or DVD

The `ivmdeploy` script passes its command line options to the `iVMCLI` utility. See "Command Line Options" for details about these options. The script processes the `-r` option slightly differently than the `iVMCLI -r` option. If the argument to the `-r` option is the name of an existing file, the script reads iDRAC6 IP addresses from the specified file and runs the `iVMCLI` utility once for each line. If the argument to the `-r` option is not a filename, then it should be the address of a single iDRAC6. In this case, the `-r` works as described for the `iVMCLI` utility.

The `ivmdeploy` script supports installation only from a CD/DVD or a CD/DVD ISO9660 image. If you need to install from a floppy disk or a floppy disk image, you can modify the script to use the `iVMCLI -f` option.

Using the Virtual Media Command Line Interface Utility

The Virtual Media Command Line Interface (`iVMCLI`) utility is a scriptable command-line interface that provides virtual media features from the management station to iDRAC6.


The `iVMCLI` utility provides the following features:



NOTE: When virtualizing read-only image files, multiple sessions may share the same image media. When virtualizing physical drives, only one session can access a given physical drive at a time.

- Removable media devices or image files that are consistent with the Virtual Media plug-ins
- Automatic termination when iDRAC6 firmware boot once option is enabled
- Secure communications to iDRAC6 using Secure Sockets Layer (SSL)

Before you run the utility, ensure that you have Virtual Media user privilege to iDRAC6.

 **CAUTION:** It is recommended to use the interactive flag '-i' option, when starting up the iVMCLI command line utility. This ensures tighter security by keeping the username and password private because on many Windows and Linux operating systems, the username and password are visible in clear text when processes are examined by other users.

If your operating system supports administrator privileges or an operating system-specific privilege or group membership, administrator privileges are also required to run the iVMCLI command.

The client system's administrator controls user groups and privileges, thereby controlling the users who can run the utility.

For Windows systems, you must have Power User privileges to run the iVMCLI utility.

For Linux systems, you can access the iVMCLI utility without administrator privileges by using the **sudo** command. This command provides a centralized means of providing non-administrator access and logs all user commands. To add or edit users in the iVMCLI group, the administrator uses the **visudo** command. Users without administrator privileges can add the **sudo** command as a prefix to the iVMCLI command line (or to the iVMCLI script) to obtain access to iDRAC6 in the remote system and run the utility.

Installing the iVMCLI Utility

The iVMCLI utility is located on the *Dell Systems Management Tools and Documentation* DVD, which is included with your Dell™ OpenManage™ system management software kit. To install the utility, insert the DVD into your system, and follow the on-screen instructions.

The *Dell Systems Management Tools and Documentation* DVD contains the latest systems management software products, including diagnostics, storage management, remote access service, and the RACADM utility. This DVD also contains readme files, which provide the latest systems management software product information.

The *Dell Systems Management Tools and Documentation* DVD also includes **ivmdeploy**—a sample script that illustrates how to use the iVMCLI and RACADM utilities to deploy software to multiple remote systems.



NOTE: The **ivmdeploy** script is dependent upon the other files that are present in its directory when it is installed. If you want to use the script from another directory, copy all the files with it.

Command Line Options

The iVMCLI interface is identical on both Windows and Linux systems. The utility uses options that are consistent with the RACADM utility options. For example, an option to specify iDRAC6 IP address requires the same syntax for both RACADM and iVMCLI utilities.

The iVMCLI command format is as follows:

```
iVMCLI [parameter] [operating_system_shell_options]
```

Command-line syntax is case-sensitive. See "iVMCLI Parameters" for more information.

If the remote system accepts the commands and iDRAC6 authorizes the connection, the command continues to run until either of the following occurs:

- The iVMCLI connection terminates for any reason.
- The process is manually terminated using an operating system control. For example, in Windows, you can use the Task Manager to terminate the process.

iVMCLI Parameters

iDRAC6 IP Address

```
-r <iDRAC-IP-address>[:<iDRAC-SSL-port>]
```

This parameter provides iDRAC6 IP address and SSL port, which the utility needs to establish a Virtual Media connection with the target iDRAC6. If you enter an invalid IP address or DDNS name, an error message displays and the command terminates.

<iDRAC-IP-address> is a valid, unique IP address or iDRAC6 Dynamic Domain Naming System (DDNS) name (if supported). If <iDRAC-SSL-port> is omitted, port 443 (the default port) is used. The optional SSL port is not required unless you change iDRAC6 default SSL port.

iDRAC6 User Name

```
-u <iDRAC-user-name>
```

This parameter provides iDRAC6 user name that will run Virtual Media.

The <iDRAC-user-name> must have the following attributes:

- Valid user name
- iDRAC6 Virtual Media User permission

If iDRAC6 authentication fails, an error message displays and the command terminates.

iDRAC6 User Password

`-p <iDRAC-user-password>`

This parameter provides the password for the specified iDRAC6 user.

If iDRAC6 authentication fails, an error message displays and the command terminates.

Floppy/Disk Device or Image File

`-f {<device-name> | <image-file>}`

where `<device-name>` is a valid drive letter (for Windows systems) or a valid device file name, including the mountable file system partition number, if applicable (for Linux systems); and `<image-file>` is the filename and path of a valid image file.

This parameter specifies the device or file to supply the virtual floppy/disk media.

For example, an image file is specified as:

`-f c:\temp\myfloppy.img` (Windows system)

`-f /tmp/myfloppy.img` (Linux system)

If the file is not write-protected, Virtual Media may write to the image file. Configure the operating system to write-protect a floppy image file that should not be overwritten.

For example, a device is specified as:

`-f a:\` (Windows system)

`-f /dev/sdb4 # 4th partition on device /dev/sdb`
(Linux system)

If the device provides a write-protection capability, use this capability to ensure that Virtual Media will not write to the media.

Omit this parameter from the command line if you are not virtualizing floppy media. If an invalid value is detected, an error message displays and the command terminates.

CD/DVD Device or Image File

```
-c {<device-name> | <image-file>}
```

where *<device-name>* is a valid CD/DVD drive letter (Windows systems) or a valid CD/DVD device file name (Linux systems) and *<image-file>* is the file name and path of a valid ISO-9660 image file.

This parameter specifies the device or file that will supply the virtual CD/DVD-ROM media:

For example, an image file is specified as:

```
-c c:\temp\mydvd.img (Windows systems)
```

```
-c /tmp/mydvd.img (Linux systems)
```

For example, a device is specified as:

```
-c d:\ (Windows systems)
```

```
-c /dev/cdrom (Linux systems)
```

Omit this parameter from the command line if you are not virtualizing CD/DVD media. If an invalid value is detected, an error message is listed and the command terminates.

Specify at least one media type (floppy or CD/DVD drive) with the command, unless only switch options are provided. Otherwise, an error message displays and the command terminates and generates an error.

Version Display

```
-v
```

This parameter is used to display the iVMCLI utility version. If no other non-switch options are provided, the command terminates without an error message.

Help Display

```
-h
```

This parameter displays a summary of the iVMCLI utility parameters. If no other non-switch options are provided, the command terminates without error.

Manual Display

-m

This parameter displays a detailed “man page” for the iVMCLI utility, including descriptions of all of the possible options.

Encrypted Data

-e

When this parameter is included in the command line, iVMCLI will use an SSL-encrypted channel to transfer data between the management station and iDRAC6 in the remote system. If this parameter is not included in the command line, the data transfer is not encrypted.

iVMCLI Operating System Shell Options

The following operating system features can be used in the iVMCLI command line:

- `stderr/stdout` redirection — Redirects any printed utility output to a file. For example, using the greater-than character (`>`) followed by a filename overwrites the specified file with the printed output of the iVMCLI utility.



NOTE: The iVMCLI utility does not read from standard input (`stdin`). As a result, `stdin` redirection is not required.

- Background execution — By default, the iVMCLI utility runs in the foreground. Use the operating system's command shell features to cause the utility to run in the background. For example, under a Linux operating system, the ampersand character (`&`) following the command causes the program to be spawned as a new background process.

The latter technique is useful in script programs, as it allows the script to proceed after a new process is started for the iVMCLI command (otherwise, the script would block until the iVMCLI program terminates).

When multiple iVMCLI instances are started in this way, and one or more of the command instances must be manually terminated, use the operating system-specific facilities for listing and terminating processes.

iVMCLI Return Codes

0 = No error

1 = Unable to connect

2 = iVMCLI command line error

3 = RAC firmware connection dropped

English-only text messages are also issued to standard error output whenever errors are encountered.

Using iDRAC6 Configuration Utility

Overview

iDRAC6 Configuration Utility is a pre-boot configuration environment that allows you to view and set parameters for iDRAC6 and for the managed system. Specifically, you can:

- View the firmware revision numbers for iDRAC6 and primary backplane firmware
- Configure, enable, or disable iDRAC6 local area network (LAN)
- Enable or disable IPMI Over LAN
- Configure LAN parameters
- Enable, disable, or cancel System Services
- Enable or disable Auto-Discovery and configure the Provisioning Server
- Attach or detach the Virtual Media devices
- Enable or Disable VFlash
- Enable or Disable Smart Card Logon and Single Sign On
- Configure System Services
- Change the administrative username and password
- Reset iDRAC6 configuration to the factory defaults
- View System Event Log (SEL) messages or clear messages from the log

The tasks you can perform using iDRAC6 Configuration Utility can also be performed using other utilities provided by iDRAC6 or Dell™ OpenManage™ software, including the Web interface, the SM-CLP command line interface, the local and remote RACADM command line interface and, in the case of basic network configuration, at iDRAC6 LCD during initial iDRAC6 configuration.

Starting iDRAC6 Configuration Utility

You must use an iDRAC6 KVM-connected console to access iDRAC6 Configuration Utility initially or after resetting iDRAC6 to the default settings.

- 1 At the keyboard connected to iDRAC6 KVM console, press <Print Screen> to display **iDRAC6 KVM On Screen Configuration and Reporting (OSCAR)** menu. Use <Up Arrow> and <Down Arrow> to highlight the slot containing your server, then press <Enter>.
- 2 Turn on or restart the server by pressing the power button on the front of the server.
- 3 When you see the message **Press <Ctrl-E> for Remote Access Setup within 5 sec.....**, immediately press <Ctrl><E>. iDRAC6 Configuration Utility displays.



NOTE: If your operating system begins to load before you press <Ctrl><E>, allow the system to finish booting, then restart your server and try again.

The first two lines of the Configuration Utility provide information about iDRAC6 firmware and primary backplane firmware revisions. The revision levels can be useful in determining whether a firmware upgrade is needed.

iDRAC6 firmware is the portion of the firmware concerned with external interfaces, such as the Web interface, SM-CLP, and Web interfaces. The primary backplane firmware is the portion of the firmware that interfaces with and monitors the server hardware environment.

Using iDRAC6 Configuration Utility

Beneath the firmware revision messages, the remainder of iDRAC6 Configuration Utility is a menu of items that you can access by using the up-arrow and down-arrow keys.

- If a menu item leads to a submenu or an editable text field, press <Enter> to access the item and <Esc> to leave it when you have finished configuring it.
- If an item has selectable values, such as **Yes/No** or **Enabled/Disabled**, press the left-arrow or right-arrow keys or the spacebar to choose a value.
- If an item is not editable, it appears in blue. Some items become editable depending upon other selections you make.

- The bottom line of the screen displays instructions for the current item. You can press <F1> to display help for the current item.
- When you have finished using iDRAC6 Configuration Utility, press <Esc> to view the exit menu, where you can choose to save or discard your changes or return to the utility.

The following sections describe iDRAC6 Configuration Utility menu items.

iDRAC6 LAN

Use the left-arrow and right-arrow keys and the spacebar to select between **On** and **Off**.

iDRAC6 LAN is disabled in the default configuration. The LAN must be enabled to permit the use of iDRAC6 facilities, such as the Web interface, Telnet/SSH access to the SM-CLP command line interface, console redirection, and virtual media.

If you choose to disable the LAN the following warning displays:

```
iDRAC Out-of-Band interface will be disabled if the
LAN Channel is OFF.
```

The message informs you that in addition to facilities that you access by connecting to iDRAC6 HTTP, HTTPS, Telnet, or SSH ports directly, out-of-band management network traffic, such as IPMI messages sent to iDRAC6 from a management station, are not received when the LAN is disabled. The local RACADM interface remains available and can be used to reconfigure iDRAC6 LAN.

Press any key to clear the message and continue.

IPMI Over LAN

Press the left-arrow and right-arrow keys and the spacebar to choose between **On** and **Off**. When **Off** is selected, iDRAC6 will not accept IPMI messages arriving over the LAN interface.

If you choose **Off**, a warning message is displayed.

Press any key to clear the message and continue. For an explanation of the message, see "iDRAC6 LAN."

LAN Parameters

Press <Enter> to display the LAN Parameters submenu. When you have finished configuring the LAN parameters, press <Esc> to return to the previous menu.

Table 19-1. LAN Parameters

Item	Description
Common Settings	
MAC Address	This is the non-editable MAC address of iDRAC6 network interface.
VLAN Enable	Displays On/Off . On will enable the Virtual LAN filtering for iDRAC6.
VLAN ID	Displays any any VLAN ID value between 1-4094.
VLAN	Displays the priority of the VLAN between 0-7
Register iDRAC6 Name	Select On to register iDRAC6 name in the DNS service. Select Off if you do not want users to locate iDRAC6 name in DNS.
iDRAC6 Name	If Register iDRAC Name is set to On , press <Enter> to edit the Current DNS iDRAC Name text field. Press <Enter> when you have finished editing iDRAC6 name. Press <Esc> to return to the previous menu. iDRAC6 name must be a valid DNS host name.
Domain Name from DHCP	Select On if you want to obtain the domain name from a DHCP service on the network. Select Off if you want to specify the domain name.
Domain Name	If Domain Name from DHCP is set to Off , press <Enter> to edit the Current Domain Name text field. Press <Enter> when you have finished editing. Press <Esc> to return to the previous menu. The domain name must be a valid DNS domain, for example mycompany.com .
Host Name String	Press <Enter> to edit. Enter the name of the host for Platform Event Trap (PET) alerts.
LAN Alert Enabled	Select On to enable the PET LAN alert.
Alert Policy Entry 1	Select Enable or Disable to activate the first alert destination.

Table 19-1. LAN Parameters (continued)

Item	Description
Alert Destination 1	if LAN Alert Enabled is set to On , enter the IP address where PET LAN alerts will be forwarded.
IPv4 Settings	Enable or disable support for the IPv4 connection.
IPv4	Select Enabled or Disabled IPv4 protocol support. The default is enabled.
RMCP+ Encryption Key	Press <Enter> to edit the value and <Esc> when finished. The RMCP+ Encryption key is a 40-character hexadecimal string (characters 0-9, a-f, and A-F). RMCP+ is an IPMI extension that adds authentication and encryption to IPMI. The default value is a string of 40 0s (zeros).
IP Address Source	Select between DHCP and Static . When DHCP is selected, the Ethernet IP Address , Subnet Mask , and Default Gateway fields are obtained from a DHCP server. If no DHCP server is found on the network, the fields are set to zeros. When Static is selected, the Ethernet IP Address , Subnet Mask , and Default Gateway items become editable.
Ethernet IP Address	If the IP Address Source is set to DHCP , this field displays the IP address obtained from DHCP. If the IP Address Source is set to Static , enter the IP address you want to assign to iDRAC6. The default is 192.168.0.120 .
Subnet Mask	If the IP Address Source is set to DHCP , this field displays the subnet mask address obtained from DHCP. If the IP Address Source is set to Static , enter the subnet mask for iDRAC6. The default is 255.255.255.0 .
Default Gateway	If the IP Address Source is set to DHCP , this field displays the IP address of the default gateway obtained from DHCP. If the IP Address Source is set to Static , enter the IP address of the default gateway. The default is 192.168.0.1 .
DNS Servers from DHCP	Select On to retrieve DNS server addresses from a DHCP service on the network. Select Off to specify the DNS server addresses below.

Table 19-1. LAN Parameters (continued)

Item	Description
DNS Server 1	If DNS Servers from DHCP is Off , enter the IP address of the first DNS server.
DNS Server 2	If DNS Servers from DHCP is Off , enter the IP address of the second DNS server.
IPv6 Settings	
IPv6	Enable or disable support for the IPv6 connection.
IPv6 Address Source	Select between AutoConfig and Static . When AutoConfig is selected, the IPv6 Address 1 , Prefix Length , and Default Gateway fields are obtained from DHCP. When Static is selected, the IPv6 Address 1 , Prefix Length , and Default Gateway items become editable.
IPv6 Address 1	If the IP Address Source is set to AutoConfig , this field displays the IP address obtained from DHCP. If the IP Address Source is set to Static , enter the IP address you want to assign to iDRAC6.
Prefix Length	Configures the Prefix length of the IPv6 address. It can be a value between 1 and 128, inclusive.
Default Gateway	If the IP Address Source is set to AutoConfig , this field displays the IP address of the default gateway obtained from DHCP. If the IP Address Source is set to Static , enter the IP address of the default gateway.
IPv6 Link-local Address	This is the non-editable IPv6 Link-local Address of iDRAC6 network interface.
IPv6 Address 2-15	This is the non-editable IPv6 Address 2...IPv6 Address 15 of iDRAC6 network interface.
DNS Servers from DHCPv6	Select On to retrieve DNS server addresses from a DHCP service on the network. Select Off to specify the DNS server addresses below.
DNS Server 1	If DNS Servers from DHCP is Off , enter the IP address of the first DNS server.

Table 19-1. LAN Parameters (continued)

Item	Description
DNS Server 2	If DNS Servers from DHCP is Off, enter the IP address of the first DNS server.

Virtual Media Configuration

Virtual Media

Use the left-arrow and right-arrow keys to select **Auto-Attached**, **Attached** or **Detached**.

- If you select **Attached**, the virtual media devices are attached to the USB bus, making them available for use during **Console Redirection** sessions.
- If you select **Detached**, users cannot access virtual media devices during **Console Redirection** sessions.
- If you select **Auto-Attached**, the Virtual Media devices are automatically attached to the server when a virtual media session is started.



NOTE: To use a USB Flash Drive with the Virtual Media feature, you must set **USB Flash Drive Emulation Type** to **Hard disk** in the BIOS Setup Utility. Access the BIOS Setup Utility by pressing <F2> during server start-up. If **USB Flash Drive Emulation Type** is set to **Auto**, the Flash Drive appears as a floppy drive to the system.

VFlash

Use the left-arrow and right-arrow keys to select **Enabled** or **Disabled**.

- **Enabled/Disabled** causes a **Detach** and an **Attach** of all Virtual Media devices from the USB bus.
- **Disabled** causes the VFlash to be removed and to become unavailable for use.



NOTE: This field will be read-only if an SD card of a size larger than 256 MB is not present on iDRAC6 Express card slot.



NOTE: Dell-branded VFlash media is required for the VFlash partition.

Smart Card/SSO

This option configures the **Smart Card Logon** and **Single Sign On** features. The available options are **Enabled** and **Disabled**.



NOTE: If you enable the **Single Sign On** feature, the **Smart Card Logon** feature is disabled.

System Services

System Services

Use the left-arrow and right-arrow keys to select **Enabled** or **Disabled**. If enabled, certain iDRAC6 features can be configured through the Lifecycle Controller. For more information, see the *Lifecycle Controller User Guide*, available on the Dell Support Website at support.dell.com/manuals.



NOTE: Modifying this option restarts the server when you **Save** and **Exit** to apply the new settings.

Cancel System Services

Use the up-arrow and down-arrow keys to select **Yes** or **No**.

When you select **Yes**, all Lifecycle Controller sessions are closed, and the server restarts when you **Save** and **Exit** to apply the new settings.

Collect System Inventory on Restart

Select **Enabled** to allow the collection of inventory during boot. See the *Dell Lifecycle Controller User Guide* available on the Dell Support website at support.dell.com/manuals for more information.



NOTE: Modifying this option restarts the server after you have saved your settings and exited from iDRAC6 Configuration Utility.

LAN User Configuration

The LAN user is iDRAC6 administrator account, which is **root** by default. Press <Enter> to display the LAN User Configuration submenu. When you have finished configuring the LAN user, press <Esc> to return to the previous menu.

Table 19-2. Lan User Configuration Screen

Item	Description
Auto-Discovery	<p>The auto-discovery feature enables automated discovery of unprovisioned systems on the network; further, it <i>securely</i> establishes initial credentials so that these discovered systems can be managed. This feature enables iDRAC6 to locate the provisioning server. iDRAC6 and provisioning service server mutually authenticate each other. The remote provisioning server sends the user credentials to have iDRAC6 create a user account with these credentials. Once the user account is created, a remote console can establish WSMAN communication with iDRAC6 using the credentials specified in the discovery process and then send the secure instructions to iDRAC6 to deploy an operating system remotely.</p> <p>For information on remote operating system deployment, see the <i>Dell Lifecycle Controller User Guide</i> available on the Dell Support website at support.dell.com/manuals.</p> <p>Do the following prerequisite actions in a <i>separate iDRAC6 Configuration Utility</i> session <i>before manually enabling auto-discovery</i>:</p> <ul style="list-style-type: none">• Enable NIC (blade servers)• Enable IPv4 (blade servers)• DHCP enable• Get domain name from DHCP• Disable admin account (account #2)• Get DNS server address from DHCP• Get DNS domain name from DHCP <p>Select Enabled to enable the auto-discovery feature. By default, this option is Disabled. If you have ordered a Dell system with the auto discovery feature Enabled, then iDRAC6 on the Dell system is shipped with DHCP enabled with no default credentials for a remote login.</p>

Table 19-2. Lan User Configuration Screen (continued)

Item	Description
Auto-Discovery (continued...)	Before adding your Dell system to the network and using the auto-discovery feature, ensure that: <ul style="list-style-type: none">• Dynamic Host Configuration Protocol (DHCP) server/Domain Name System (DNS) are configured.• Provisioning Web services is installed, configured, and registered.
Provisioning Server	This field is used to configure the provisioning server. The provisioning server address can be a combination of IPv4 addresses or hostnames and should not exceed 255 characters. Each address or hostname should be separated by a comma. If you have enabled the auto-discovery feature, user credentials are retrieved from the configured provisioning server to allow future remote provisioning after the auto-discovery process has completed successfully. For more information, see the <i>Dell Lifecycle Controller User Guide</i> available on the Dell Support website at support.dell.com/manuals .
Account Access	Select Enabled to enable the administrator account. Select Disabled to disable the administrator account or when Auto-Discovery is enabled.
IPMI LAN Privilege	Select between Admin , User , Operator , and No Access .
Account User Name	Press <Enter> to edit the user name and press <Esc> when you have finished. The default user name is root .
Enter Password	Enter the new password for the administrator account. The characters are not echoed on the display as you enter them.
Confirm Password	Re-enter the new password for the administrator account. If the characters you enter do not match the characters you entered in the Enter Password field, a message displays and you must re-enter the password.

Reset to Default

Use the **Reset to Default** menu item to reset all of iDRAC6 configuration items to the factory defaults. This may be required, for example, if you have forgotten the administrative user password or if you want to reconfigure iDRAC6 from the default settings.



NOTE: In the default configuration, iDRAC6 networking is disabled. You cannot reconfigure iDRAC6 over the network until you have enabled iDRAC6 network in iDRAC6 Configuration Utility.

Press <Enter> to select the item. The following warning message appears:

```
Resetting to factory defaults will restore remote Non-
Volatile user settings. Continue?
```

```
< NO (Cancel) >
```

```
< YES (Continue) >
```

To reset iDRAC6 to the defaults, select **YES** and press <Enter>.

System Event Log Menu

The **System Event Log** Menu allows you to view System Event Log (SEL) messages and to clear the log messages. Press <Enter> to display the **System Event Log Menu**. The system counts the log entries and then displays the total number of records and the most recent message. The SEL retains a maximum of 512 messages.

To view SEL messages, select **View System Event Log** and press <Enter>.

To navigate:

- Use the left-arrow key to move to the previous (older) message and the right-arrow key to move to the next (newer) message.
- Enter a specific record number to jump to that record.

Press <Esc> to exit the System Event Log.



NOTE: You can only clear the SEL in iDRAC6 Configuration Utility or in iDRAC6 Web interface.

To clear the SEL, select **Clear System Event Log** and press <Enter>.

When you have finished with the SEL menu, press <Esc> to return to the previous menu.

Exiting iDRAC6 Configuration Utility

When you have finished making changes to iDRAC6 configuration, press the <Esc> key to display the Exit menu.

Select **Save Changes and Exit** and press <Enter> to retain your changes.

Select **Discard Changes and Exit** and press <Enter> to ignore any changes you made.

Select **Return to Setup** and press <Enter> to return to iDRAC6 Configuration Utility.


Recovering and Troubleshooting the Managed System

This section explains how to perform tasks related to diagnosing and troubleshooting a remote managed system using iDRAC6 utilities. It contains the following subsections:

- Trouble indications — Helps you to find messages and other system indications that can lead to a diagnosis of the problem
- Problem-solving tools — Describes iDRAC6 tools that you can use to troubleshoot your system
- Troubleshooting and frequently asked questions — Answers to typical situations you may encounter

Safety First – For You and Your System

To perform certain procedures in this section, you must work with the chassis, the Dell PowerEdge™ system, or other hardware modules. Do not attempt to service the system hardware except as explained in this guide and elsewhere in your system documentation.

 **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by online or telephone service and support team. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty. Read and follow the safety instructions that came with the product.**

Trouble Indicators

This section describes indications that there may be a problem with your system.

LED Indicators

LEDs on the chassis or on components installed in the chassis are generally the first indicators of system trouble. The following components and modules have status LEDs:

- Chassis LCD display
- Servers
- Fans
- CMCs
- I/O modules
- Power supplies

The single LED on the chassis LCD summarizes the status of all of the components in the system. A solid blue LED on the LCD indicates that no fault conditions have been detected in the system. A blinking amber LED on the LCD indicates that one or more fault conditions have been detected.

If the chassis LCD has a blinking amber LED, you can use the LCD menu to locate the component that has a fault. See the *Dell Chassis Management Controller Firmware User Guide* for help using the LCD.

Table 20-1 describes the meanings of the LED on the Dell PowerEdge system:

Table 20-1. Blade Server LED Indicators

LED indicator	Meaning
solid green (<i>only for power button</i>)	The server is powered on. Absence of the green LED means the server is not powered on.
solid blue	iDRAC6 is healthy.
flashing amber	iDRAC6 has detected a fault condition or may be in the process of updating firmware.
flashing blue	A user has activated the locator ID for this server.

Hardware Trouble Indicators

Indications that a module has a hardware problem include the following:

- Failure to power up
- Noisy fans
- Loss of network connectivity
- Battery, temperature, voltage, or power monitoring sensor alerts
- Hard drive failures
- USB media failure
- Physical damage caused by dropping, water, or other external stress

When these kinds of problems occur, inspect the damage caused, and then try to correct the problem using these strategies:

- Reseat the module and restart it
- Try inserting the module into a different bay in the chassis
- Try replacing hard drives or USB keys
- Reconnect or replace the power and network cables

If these steps do not correct the problem, consult the *Hardware Owner's Manual* for specific troubleshooting information for the hardware device.

Other Trouble Indicators

Table 20-2. Trouble Indicators

Look for:	Action:
Alert messages from the systems management software	See the systems management software documentation.
Messages in the System Event Log	See "Checking the System Event Log (SEL)."
Messages in the start-up POST codes	See "Checking the Post Codes."
Messages on the last crash screen	See "Viewing the Last System Crash Screen."
Alert Messages on the Server Status Screen in the LCD	See "Checking the Server Status Screen for Error Messages."
Messages in iDRAC6 Log	See "Viewing iDRAC6 Log."

Problem Solving Tools





This section describes iDRAC6 utilities you can use to diagnose problems with your system, especially when you are trying to solve problems remotely.

- Checking the system health
- Checking the System Event Log for error messages
- Checking the POST codes
- Viewing the last crash screen
- Viewing the Most Recent Boot Sequences
- Checking the Server Status Screen on the LCD for Error Messages
- Viewing iDRAC6 log
- Viewing system information
- Identifying the managed server in the chassis
- Using the diagnostics console
- Managing power on a remote system

Checking the System Health

When you log in to iDRAC6 Web interface, the **System Summary** screen displays the health of the system components. Table 20-3 describes the meaning of the system health indicators.

Table 20-3. Server Health Indicators

Indicator	Description
	A green check mark indicates a healthy (normal) status condition.
	A yellow triangle containing an exclamation point indicates a warning (noncritical) status condition.
	A red X indicates a critical (failure) status condition.
	A question mark icon indicates that the status is unknown.

Click any component on the **Server Health** section to see information about the component. Sensor readings are displayed for batteries, temperatures, voltages, and power monitoring, helping to diagnose some types of problems. iDRAC6 and CMC information screens provide useful current status and configuration information.

Checking the System Event Log (SEL)

The **SEL Log** screen displays messages for events that occur on the managed server.

To view the **System Event Log**, perform the following steps:


- 1 Click **System** and then click the **Logs** tab.
- 2 Click **System Event Log** to display the **System Event Log** screen.
The **System Event Log** screen displays a system health indicator (see Table 20-3), a time stamp, and a description of the event.
- 3 Click the appropriate **System Event Log** button to continue (see Table 20-4).

Table 20-4. SEL Buttons

Button	Action
Print	Prints the SEL in the sort order that it appears in the window.
Clear Log	Clears the SEL. NOTE: The Clear Log button appears only if you have Clear Logs permission.
Save As	Opens a pop-up window that enables you to save the SEL to a directory of your choice. NOTE: If you are using Internet Explorer and encounter a problem when saving, be sure to download the Cumulative Security Update for Internet Explorer, located on the Microsoft® Support website at support.microsoft.com .
Refresh	Reloads the SEL screen.

Checking the Post Codes

The **Post Codes** screen displays the last system post code prior to booting the operating system. Post codes are progress indicators from the system BIOS, indicating various stages of the boot sequence from Power on Reset, and allow you to diagnose any faults related to system boot-up.

 **NOTE:** View the text for POST code message numbers in the LCD display or in the *Hardware Owner's Manual*.


To view the Post Codes, perform the following steps:

- 1 Click **System**, the **Logs** tab, and then **Post Code**.
The **Post Code** screen displays a system health indicator (see Table 20-3), a hexadecimal code, and a description of the code.
- 2 Click the appropriate **Post Code** button to continue (see Table 20-5).

Table 20-5. Post Code Buttons

Button	Action
Print	Prints the Post Code screen.
Refresh	Reloads the Post Code screen.

Viewing the Last System Crash Screen

 **NOTE:** The last crash screen feature must be configured in the Server Administrator and in iDRAC6 Web interface. See "Configuring the Managed Server to Capture the Last Crash Screen" for instructions on configuring this feature.

The **Last Crash Screen** screen displays the most recent crash screen, which includes information about the events that occurred before the system crash. The last system crash image is saved in iDRAC6 persistent store and is remotely accessible.

To view the **Last Crash Screen** screen, perform the following steps:

- Click **System**, the **Logs** tab, and then **Last Crash Screen**.

The **Last Crash Screen** screen provides the buttons shown in Table 20-6:


 **NOTE:** The **Save** and **Delete** buttons do not appear if there is no saved crash screen.

Table 20-6. Last Crash Screen Buttons

Button	Action
Print	Prints the Last Crash Screen screen.
Save	Opens a pop-up window that enables you to save the Last Crash Screen to a directory of your choice.
Delete	Deletes the Last Crash Screen screen.
Refresh	Reloads the Last Crash Screen screen.



NOTE: Due to fluctuations in the Auto Recovery timer, the Last Crash Screen may not be captured when the System Reset Timer is configured with a value that is too high. The default setting is 480 seconds. Use Server Administrator or IT Assistant to set the System Reset Timer to 60 seconds and ensure that the Last Crash Screen functions properly. See "Configuring the Managed Server to Capture the Last Crash Screen" for additional information.

Viewing the Most Recent Boot Sequences

If you experience boot problems, you can view the screen activity of what happened during the last three boot sequences from the **Boot Capture** screen. Playback of the boot screens occurs at a rate of 1 frame per second. iDRAC6 records fifty frames during boot time.

Table 20-7 lists the available control actions.



NOTE: You must have administrator privileges to view playback of the Boot Capture sequences.

Table 20-7. Boot Capture Options

Button/Option	Description
Select the boot sequence	Allows you to select the boot sequence to load and play. <ul style="list-style-type: none">• Boot Capture 1 — Loads the most recent boot sequence.• Boot Capture 2 — Loads the (second most recent) boot sequence that occurred prior to Boot Capture 1.• Boot Capture 3 — Loads the (third most recent) boot sequence that occurred prior to Boot Capture 2.

Table 20-7. Boot Capture Options (continued)

Button/Option	Description
Save As	Creates a compressed .zip file that contains all boot capture images of the current sequence. The user must have administrator privileges to perform this action.
Previous Screen	Takes you to previous screen, if any, in the replay console.
Play	Starts the screenplay from current screen in the replay console.
Pause	Pauses the screenplay on the current screen being displayed in the replay console.
Stop	Stops the screenplay and loads the first screen of that boot sequence.
Next Screen	Takes you to next screen, if any, in the replay console.
Print	Prints the Boot Capture image that appears on the screen.
Refresh	Reloads the Boot Capture screen.

Checking the Server Status Screen for Error Messages

When a flashing amber LED is lit, and a particular server has an error, the main Server Status Screen on the LCD will highlight the affected server in orange. Use the LCD navigation buttons to highlight the affected server, then click the center button. Error and warning messages will be displayed on the second line. The following table lists all of the error messages and their severity.

Table 20-8. Server Status Screen

Severity	Message	Cause
Warning	System Board Ambient Temp: Temperature sensor for System Board, warning event	Server ambient temperature crossed a warning threshold
Critical	System Board Ambient Temp: Temperature sensor for System Board, failure event	Server ambient temperature crossed a failure threshold
Critical	System Board CMOS Battery: Battery sensor for System Board, failed was asserted	CMOS battery is not present or has no voltage

Table 20-8. Server Status Screen (continued)

Severity	Message	Cause
Warning	System Board System Level: Current sensor for System Board, warning event	Current crossed a warning threshold
Critical	System Board System Level: Current sensor for System Board, failure event	Current crossed a failure threshold
Critical	CPU<number> <voltage sensor name>: Voltage sensor for CPU<number>, state asserted was asserted	Voltage out of range
Critical	System Board <voltage sensor name>: Voltage sensor for System Board, state asserted was asserted	Voltage out of range
Critical	CPU<number> <voltage sensor name>: Voltage sensor for CPU<number>, state asserted was asserted	Voltage out of range
Critical	CPU<number> Status: Processor sensor for CPU<number>, IERR was asserted	CPU failure
Critical	CPU<number> Status: Processor sensor for CPU<number>, thermal tripped was asserted	CPU overheated
Critical	CPU<number> Status: Processor sensor for CPU<number>, configuration error was asserted	Incorrect processor type or in wrong location
Critical	CPU<number> Status: Processor sensor for CPU<number>, presence was deasserted	Required CPU is missing or not present

Table 20-8. Server Status Screen (continued)

Severity	Message	Cause
Critical	System Board Video Riser: Module sensor for System Board, device removed was asserted	Required module was removed
Critical	Mezz B<slot number> Status: Add-in Card sensor for Mezz B<slot number>, install error was asserted	Incorrect Mezzanine card installed for IO fabric
Critical	Mezz C<slot number> Status: Add-in Card sensor for Mezz C<slot number>, install error was asserted	Incorrect Mezzanine card installed for I/O fabric
Critical	Backplane Drive <number>: Drive Slot sensor for Backplane, drive removed	Storage drive was removed
Critical	Backplane Drive <number>: Drive Slot sensor for Backplane, drive fault was asserted	Storage drive failed
Critical	System Board PFault Fail Safe: Voltage sensor for System Board, state asserted was asserted	This event is generated when the system board voltages are not at normal levels
Critical	System Board OS Watchdog: Watchdog sensor for System Board, timer expired was asserted	iDRAC6 watchdog timer expired and no action is set
Critical	System Board OS Watchdog: Watchdog sensor for System Board, reboot was asserted	iDRAC6 watchdog detected that the system has crashed (timer expired because no response was received from Host) and the action is set to reboot
Critical	System Board OS Watchdog: Watchdog sensor for System Board, power off was asserted	iDRAC6 watchdog detected that the system has crashed (timer expired because no response was received from Host) and the action is set to power off

Table 20-8. Server Status Screen (continued)

Severity	Message	Cause
Critical	System Board OS Watchdog: Watchdog sensor for System Board, power cycle was asserted	iDRAC6 watchdog detected that the system has crashed (timer expired because no response was received from Host) and the action is set to power cycle
Critical	System Board SEL: Event Log sensor for System Board, log full was asserted	The SEL device detects that only one entry can be added to the SEL before it is full
Warning	ECC Corr Err: Memory sensor, correctable ECC (<DIMM Location>) was asserted	Correctable ECC errors reached a critical rate
Critical	ECC Uncorr Err: Memory sensor, uncorrectable ECC (<DIMM Location>) was asserted	An uncorrectable ECC error was detected
Critical	I/O Channel Chk: Critical Event sensor, I/O channel check NMI was asserted	A critical interrupt is generated in the I/O Channel
Critical	PCI Parity Err: Critical Event sensor, PCI PERR was asserted	Parity error was detected on the PCI bus
Critical	PCI System Err: Critical Event sensor, PCI SERR (<Slot number or PCI Device ID>) was asserted	PCI error detected by device
Critical	SBE Log Disabled: Event Log sensor, correctable memory error logging disabled was asserted	Single bit error logging is disabled when too many SBE get logged
Critical	Logging Disabled: Event Log sensor, all event logging disabled was asserted	All error logging is disabled
Non-Recoverable	CPU Protocol Err: Processor sensor, transition to non-recoverable was asserted	The processor protocol entered a non-recoverable state

Table 20-8. Server Status Screen (continued)

Severity	Message	Cause
Non-Recoverable	CPU Bus PERR: Processor sensor, transition to non-recoverable was asserted	The processor bus PERR entered a non-recoverable state
Non-Recoverable	CPU Init Err: Processor sensor, transition to non-recoverable was asserted	The processor initialization entered a non-recoverable state
Non-Recoverable	CPU Machine Chk: Processor sensor, transition to non-recoverable was asserted	The processor machine check entered a non-recoverable state
Critical	Memory Spared: Memory sensor, redundancy lost (<DIMM Location>) was asserted	Memory spare is no longer redundant
Critical	Memory Mirrored: Memory sensor, redundancy lost (<DIMM Location>) was asserted	Mirrored memory is no longer redundant
Critical	Memory RAID: Memory sensor, redundancy lost (<DIMM Location>) was asserted	RAID Memory is no longer redundant
Warning	Memory Added: Memory sensor, presence (<DIMM Location>) was deasserted	Added memory module was removed
Warning	Memory Removed: Memory sensor, presence (<DIMM Location>) was deasserted	Memory module was removed
Critical	Memory Cfg Err: Memory sensor, configuration error (<DIMM Location>) was asserted	Memory configuration is incorrect for the system
Warning	Mem Redun Gain: Memory sensor, redundancy degraded (<DIMM Location>) was asserted	Memory redundancy is downgraded but not lost

Table 20-8. Server Status Screen (continued)

Severity	Message	Cause
Critical	PCIe Fatal Err: Critical Event sensor, bus fatal error was asserted	Fatal error is detected on the PCIe bus
Critical	Chipset Err: Critical Event sensor, PCI PERR was asserted	Chip error is detected
Warning	Mem ECC Warning: Memory sensor, transition to non-critical from OK (<DIMM Location>) was asserted	Correctable ECC errors have increased from a normal rate
Critical	Mem ECC Warning: Memory sensor, transition to critical from less severe (<DIMM Location>) was asserted	Correctable ECC errors have reached a critical rate
Critical	POST Err: POST sensor, No memory installed	No memory detected on board
Critical	POST Err: POST sensor, Memory configuration error	Memory detected but is not configurable
Critical	POST Err: POST sensor, Unusable memory error	Memory configured but not usable
Critical	POST Err: POST sensor, Shadow BIOS failed	System BIOS shadow failure
Critical	POST Err: POST sensor, CMOS failed	CMOS failure
Critical	POST Err: POST sensor, DMA controller failed	DMA controller failure
Critical	POST Err: POST sensor, Interrupt controller failed	Interrupt controller failure
Critical	POST Err: POST sensor, Timer refresh failed	Timer refresh failure
Critical	POST Err: POST sensor, Programmable interval timer error	Programmable interval timer error
Critical	POST Err: POST sensor, Parity error	Parity error

Table 20-8. Server Status Screen (continued)

Severity	Message	Cause
Critical	POST Err: POST sensor, SIO failed	SIO failure
Critical	POST Err: POST sensor, Keyboard controller failed	Keyboard controller failure
Critical	POST Err: POST sensor, System management interrupt initialization failed	System Management Interrupt initialization failure
Critical	POST Err: POST sensor, BIOS shutdown test failed	BIOS shutdown test failure
Critical	POST Err: POST sensor, BIOS POST memory test failed	BIOS POST memory test failure
Critical	POST Err: POST sensor, Dell remote access controller configuration failed	Dell Remote Access Controller configuration failure
Critical	POST Err: POST sensor, CPU configuration failed	CPU configuration failure
Critical	POST Err: POST sensor, Incorrect memory configuration	Incorrect memory configuration
Critical	POST Err: POST sensor, POST failure	General failure after video
Critical	Hdwar version err: Version Change sensor, hardware incompatibility was asserted	Incompatible hardware was detected
Critical	Hdwar version err: Version Change sensor, hardware incompatibility (BMC firmware) was asserted	Hardware is incompatible with the firmware
Critical	Hdwar version err: Version Change sensor, hardware incompatibility (BMC firmware and CPU mismatch) was asserted	CPU and firmware not compatible

Table 20-8. Server Status Screen (continued)

Severity	Message	Cause
Critical	Mem Overtemp: Memory sensor, correctable ECC <DIMM Location> was asserted	Memory module overheating
Critical	Mem Fatal SB CRC: Memory sensor, uncorrectable ECC was asserted	South bridge memory failed
Critical	Mem Fatal NB CRC: Memory sensor, uncorrectable ECC was asserted	North bridge memory failed
Critical	WatchDog Timer: Watchdog sensor, reboot was asserted	Watch dog timer caused system to reboot
Critical	WatchDog Timer: Watchdog sensor, timer expired was asserted	Watch dog timer expired but no action taken
Warning	Link Tuning: Version Change sensor, successful software or F/W change was deasserted	Failed to update link tuning setting for proper NIC operation
Warning	Link Tuning: Version Change sensor, successful hardware change <device slot number> was deasserted	Failed to update link tuning setting for proper NIC operation
Critical	LinkT/FlexAddr: Link Tuning sensor, failed to program virtual MAC address (Bus # Device # Function #) was asserted	FlexAddress could not be programmed for this device
Critical	LinkT/FlexAddr: Link Tuning sensor, device option ROM failed to support link tuning or flex address (Mezz <location>) was asserted	Option ROM does not support FlexAddress or linking tuning
Critical	LinkT/FlexAddr: Link Tuning sensor, failed to get link tuning or flex address data from BMC/iDRAC6 was asserted	Failed to obtain linking tuning or FlexAddress information from BMC/iDRAC6

Table 20-8. Server Status Screen (continued)

Severity	Message	Cause
Critical	LinkT/FlexAddr: Link Tuning sensor, device option ROM failed to support link tuning or FlexAddress (Mezz XX) was asserted	This event is generated when the PCI device Option ROM for a NIC does not support link tuning or the Flex addressing feature
Critical	LinkT/FlexAddr: Link Tuning sensor, failed to program the virtual MAC address (<location>) was asserted	This event is generated when the BIOS fails to program the virtual MAC address on the given NIC device
Critical	I/O Fatal Err: Fatal IO Group sensor, fatal IO error (<location>)	This event is generated in association with a CPU IERR and indicates which device caused the CPU IERR
Warning	PCIE NonFatal Er: Non Fatal I/O Group sensor, PCIe error (<location>)	This event is generated in association with a CPU IERR

Viewing iDRAC6 Log

iDRAC6 Log is a persistent log maintained in iDRAC6 firmware. The log contains a list of user actions (such as log in, log out, and security policy changes) and alerts issued by iDRAC6. The log gets erased after iDRAC6 firmware update.

Where the **System Event Log (SEL)** contains records of events that occur in the managed server, **iDRAC6 Log** contains records of events that occur in iDRAC6.

To access **iDRAC6 Log**, perform the following steps:

- Click **System**→**Remote Access**→**iDRAC6** and then click **Logs**→**iDRAC6 Log**.

iDRAC6 Log provides the information in Table 20-9.

Table 20-9. iDRAC6 Log Information

Field	Description
Date/Time	The date and time (for example, Dec 19 16:55:47). iDRAC6 sets its clock from the managed server's clock. When iDRAC6 initially starts and is unable to communicate with the managed server, the time is displayed as the string <code>System Boot</code> .
Source	The interface that caused the event.
Description	A brief description of the event and the user name that logged in to iDRAC6.

Using iDRAC6 Log Buttons

iDRAC6 Log screen provides the following buttons (see Table 20-10).

Table 20-10. iDRAC6 Log Buttons

Button	Action
Print	Prints iDRAC6 Log screen.
Clear Log	Clears iDRAC6 Log entries. NOTE: The Clear Log button only appears if you have Clear Logs permission.
Save As	Opens a pop-up window that enables you to save iDRAC6 Log to a directory of your choice. NOTE: If you are using Internet Explorer and encounter a problem when saving, be sure to download the Cumulative Security Update for Internet Explorer, located on the Microsoft Support website at support.microsoft.com .
Refresh	Reloads iDRAC6 Log screen.

Viewing System Information

The **System Details** screen displays information about the following system components:

- Main system enclosure
- Integrated Dell Remote Access Controller 6—Enterprise

To access the system information, click **System**→**Properties**→**System Details**.

See "Recovering and Troubleshooting the Managed System" for information on the system summary, main system enclosure, and iDRAC6.

Identifying the Managed Server in the Chassis

The Dell PowerEdge M1000e chassis holds up to sixteen servers. To locate a specific server in the chassis, you can use iDRAC6 Web interface to turn on a blue flashing LED on the server. When you turn on the LED, you can specify the number of seconds that you want the LED to flash to ensure that you can reach the chassis while the LED is still flashing. Entering 0 leaves the LED flashing until you disable it.

To identify the server:

- 1 Click **System**→**Remote Access**→**iDRAC6**→**Troubleshooting**.
- 2 On the **Identify** screen, select **Identify Server**.
- 3 In the **Identify Server Timeout** field, enter the number of seconds that you want the LED to blink. Enter 0 if you want the LED to remain flashing until you disable it.
- 4 Click **Apply**.

A blue LED on the server will flash for the number of seconds you specified.

If you entered 0 to leave the LED flashing, follow these steps to disable it:

- 1 Click **System**→**Remote Access**→**iDRAC6**→**Troubleshooting**.
- 2 On the **Identify** screen, deselect **Identify Server**.
- 3 Click **Apply**.

Using the Diagnostics Console

iDRAC6 provides a standard set of network diagnostic tools (see Table 20-11) that are similar to the tools included with Microsoft® Windows® or Linux-based systems. Using iDRAC6 Web interface, you can access the network debugging tools.

To access the **Diagnostics Console** screen, perform the following steps:

- 1 Click **System**→**iDRAC6**→**Troubleshooting**.
- 2 Select the **Diagnostics Console** tab.

Table 20-11 describes the commands that can be entered on the **Diagnostics Console** screen. Enter a command and click **Submit**. The debugging results appear in the **Diagnostics Console** screen.

Click the **Clear** button to clear the results displayed by the previous command.

To refresh the **Diagnostics Console** screen, click **Refresh**.

Table 20-11. Diagnostic Commands

Command	Description
<code>arp</code>	Displays the contents of the Address Resolution Protocol (ARP) table. ARP entries may not be added or deleted.
<code>ifconfig</code>	Displays the contents of the network interface table.
<code>netstat</code>	Prints the content of the routing table.
<code>ping <IP Address></code>	Verifies that the destination IP address is reachable from iDRAC6 with the current routing-table contents. A destination IP address must be entered in the field to the right of this option. An Internet control message protocol (ICMP) echo packet is sent to the destination IP address based on the current routing-table contents.
<code>ping6 <IPv6 Address></code>	Verifies that the destination IPv6 address is accessible from iDRAC6 with the current routing-table contents. A destination IPv6 address must be entered in the field to the right of this option. An ICMP (Internet control message protocol) echo packet is sent to the destination IPv6 address based on the current routing-table contents.
<code>tracert <IP Address></code>	Used to determine the route taken by packets across an IP network.
<code>tracert6 <IPv6 Address></code>	Used to determine the route taken by packets across an IPv6 network.
<code>gettracelog</code>	Displays iDRAC6 trace log. See "gettracelog" for more information.

Managing Power on a Remote System

iDRAC6 enables you to remotely perform several power management actions on the managed server. Use the **Power Management** screen to perform an orderly shutdown through the operating system when rebooting and powering on and off.



NOTE: You must have **Execute Server Action Commands** permission to perform power management actions. See "Adding and Configuring iDRAC6 Users" for help configuring user permissions.

- 1 Click **System**, then click the **Power Management**→**Power Control** tab.
- 2 Select a **Power Control Operation**, for example **Reset System (warm boot)**.
Table 20-12 provides information about Power Control Actions.
- 3 Click **Apply** to perform the selected action.

Table 20-12. Power Control Actions

Power On System	Turns on the system power (equivalent to pressing the power button when the system power is off).
Power Off System	Turns off the system power (equivalent to pressing the power button when the system power is on).
NMI (Non-Masking Interrupt)	Sends a high-level interrupt to the operating system, which causes the system to halt operation to allow for critical diagnostic or troubleshooting activities.
Graceful Shutdown	Attempts to cleanly shut down the operating system, then powers off the system. It requires an ACPI (Advanced Configuration and Power Interface) aware operating system, which allows for system directed power management. NOTE: A graceful shutdown of the server operating system may not be possible when the server software stops responding, or if you are not logged as an administrator at a local Windows console. In these cases, you must specify a forced reboot instead of a graceful shutdown of Windows. In addition, depending on the version of the Windows OS, there might be a policy configured around the shutdown process that modifies shutdown behavior when triggered from iDRAC6. See Microsoft's documentation for the local computer policy "Shutdown: Allow system to be shut down without having to login."
Reset System (warm boot)	Reboots the system without powering off (warm boot).
Power Cycle System (cold boot)	Powers off, then reboots the system (cold boot).

See "Power Monitoring and Power Management" for more information.

Troubleshooting and Frequently Asked Questions

Table 20-13 contains frequently asked questions about troubleshooting issues.

Table 20-13. Frequently Asked Questions/Troubleshooting

Question	Answer
The LED on the server is blinking amber.	<p>Check the SEL for messages and then clear the SEL to stop the blinking LED.</p> <p>From iDRAC6 Web interface:</p> <ul style="list-style-type: none">• See "Checking the System Event Log (SEL)" <p>From SM-CLP:</p> <ul style="list-style-type: none">• See "SEL Management" <p>From iDRAC6 Configuration Utility:</p> <ul style="list-style-type: none">• See "System Event Log Menu"
There is a blinking blue LED on the server.	<p>A user has activated the locator ID for the server. This is a signal to help them identify the server in the chassis. See "Identifying the Managed Server in the Chassis" for information about this feature.</p>
How can I find the IP address of iDRAC6?	<p>From CMC Web interface:</p> <ol style="list-style-type: none">1 Click Chassis→Servers, then click the Setup tab.2 Click Deploy.3 Read the IP address for your server from the table that is displayed. <p>From the iKVM:</p> <ul style="list-style-type: none">• Reboot the server and enter iDRAC6 Configuration Utility by pressing <Ctrl><E>.• Watch for the IP address which displays during BIOS POST.• Select the "Dell CMC" console in the OSCAR to log in to CMC through a local serial connection. CMC RACADM commands can be issued from this connection. See the <i>Dell Chassis Management Controller Administrator Reference Guide</i> for a complete list of CMC RACADM subcommands.• Use the local RACADM getsysinfo command to view iDRAC6 IP address.

Table 20-13. Frequently Asked Questions/Troubleshooting (continued)

Question	Answer
	For example:
	<pre>\$ racadm getniccfg -m server-1</pre>
	DHCP Enabled = 1
	IP Address = 192.168.0.1
	Subnet Mask = 255.255.255.0
	Gateway = 192.168.0.1

From local RACADM:

Enter the following command at a command prompt:

```
racadm getsysinfo
```

From the LCD:

- 1** On the Main Menu, highlight **Server** and press the check button.
- 2** Select the server whose IP address you seek and press the check button.

Table 20-13. Frequently Asked Questions/Troubleshooting (continued)

Question	Answer
<p>How can I find the IP address of CMC?</p>	<p>From iDRAC6 Web interface:</p> <ul style="list-style-type: none"> Click System→Remote Access→CMC. CMC IP address is displayed on the CMC Summary screen. <p>From the iKVM:</p> <ul style="list-style-type: none"> Select the "Dell CMC" console in the OSCAR to log in to CMC through a local serial connection. CMC RACADM commands can be issued from this connection. See the <i>Dell Chassis Management Controller Administrator Reference Guide</i> for a complete list of CMC RACADM subcommands <pre data-bbox="375 598 879 933"> \$ racadm getniccfg -m chassis NIC Enabled = 1 DHCP Enabled = 1 Static IP Address = 192.168.0.120 Static Subnet Mask = 255.255.255.0 Static Gateway = 192.168.0.1 Current IP Address = 10.35.155.151 Current Subnet Mask = 255.255.255.0 Current Gateway = 10.35.155.1 Speed = Autonegotiate Duplex = Autonegotiate </pre> <p>NOTE: The above action can also be performed with remote RACADM.</p>
<p>iDRAC6 network connection is not working.</p>	<ul style="list-style-type: none"> Ensure that the LAN cable is connected to CMC. Ensure that NIC settings, IPv4 or IPv6 settings, and either Static or DHCP is enabled for your network.
<p>I inserted the server into the chassis and pressed the power button, but nothing happened.</p>	<ul style="list-style-type: none"> iDRAC6 requires upto 2 minutes to initialize before the server can power up. Check CMC power budget. The chassis power budget may have exceeded.

Table 20-13. Frequently Asked Questions/Troubleshooting (continued)

Question	Answer
I have forgotten iDRAC6 administrative user name and password.	<p>You must restore iDRAC6 to its default settings.</p> <ol style="list-style-type: none">1 Reboot the server and press <Ctrl><E> when prompted to enter iDRAC6 Configuration Utility.2 On iDRAC6 Configuration Utility menu, highlight Reset to Default and press <Enter>. <p>NOTE: You can also reset iDRAC6 from local RACADM by issuing <code>racadm racresetcfg</code>.</p> <p>For more information, see "Reset to Default."</p>
How can I change the name of the slot for my server?	<ol style="list-style-type: none">1 Log in to CMC Web interface.2 Open the Chassis tree and click Servers.3 Click the Setup tab.4 Enter the new name for the slot in the row for your server.5 Click Apply.
When starting a console redirection session from iDRAC6 Web interface, an ActiveX security popup appears.	<p>iDRAC6 may not be a trusted site. To prevent the security popup from appearing every time you begin a console redirection session, add iDRAC6 to the trusted site list in the client browser:</p> <ol style="list-style-type: none">1 Click Tools→Internet Options→Security→Trusted sites.2 Click Sites and enter the IP address or the DNS name of iDRAC6.3 Click Add.4 Click Custom Level.5 In the Security Settings window, select Prompt under Download unsigned ActiveX Controls.
When I start a console redirection session, the viewer screen is blank.	<p>If you have Virtual Media privilege but not Console Redirection privilege, you are able to start the viewer so that you can access the virtual media feature, but the managed server's console will not display.</p>
iDRAC6 is not responding during boot.	<p>Remove and reinsert the server.</p> <p>Check CMC Web interface to see if iDRAC6 appears as an upgradable component. If it does, follow the instructions in "Updating iDRAC6 Firmware Using CMC."</p> <p>If this does not correct the problem, contact technical support.</p>


Table 20-13. Frequently Asked Questions/Troubleshooting (*continued*)

Question	Answer
When attempting to boot the managed server, the power indicator is green, but there is no POST or no video at all.	This can happen if any of the following conditions is true: <ul style="list-style-type: none">• Memory is not installed or is inaccessible.• The CPU is not installed or is inaccessible.• The video riser card is missing or improperly connected. Also, look for error messages in iDRAC6 log from iDRAC6 Web interface or from the LCD.

A

RACADM Subcommand Overview

This section provides descriptions of the subcommands that are available in the RACADM command line interface.

 **CAUTION: The latest iDRAC6 firmware supports only the latest RACADM version. You may encounter errors if you use an older version of RACADM to query iDRAC6 with the latest firmware. Install the RACADM version shipped with the Dell™ OpenManage™ 6.2 DVD media.**

help

Table A-1 describes the **help** command.

Table A-1. Help Command

Command	Definition
help	Lists all of the subcommands available to use with racadm and provides a short description for each.

Synopsis

```
racadm help
```

```
racadm help <subcommand>
```

Description

The **help** subcommand lists all of the subcommands that are available when using the **racadm** command along with a one-line description. You may also enter a subcommand after **help** to get the syntax for a specific subcommand.

Output

The **racadm help** command displays a complete list of subcommands.

The `racadm help <subcommand>` command displays information for the specified subcommand only.

Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

config

Table A-2 describes the `config` subcommand.

Table A-2. config/getconfig

Subcommand	Definition
config	Configures iDRAC6.

Synopsis

```
racadm config [-c|-p] -f <filename>
```

```
racadm config -g <groupName> -o <objectName> [-i  
<index>] <value>
```

Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

Description

The `config` subcommand allows you to set iDRAC6 configuration parameters individually or to batch them as part of a configuration file. If the data is different, that iDRAC6 object is written with the new value.



NOTE: See "iDRAC6 Enterprise Property Database Group and Object Definitions" for information on the group and object to be used with this command.

Input

Table A-3 describes the **config** subcommand options.

Table A-3. config Subcommand Options and Descriptions

Option	Description
-f	The -f <filename> option causes config to read the contents of the file specified by <filename> and configure iDRAC6. The file must contain data in the format specified in "Configuration File Syntax" on page 275.
-p	The -p , or password, option directs config to delete the password entries contained in the config file -f <filename> after the configuration is complete.
-g	The -g <groupName>, or group, option must be used with the -o option. The <groupName> specifies the group containing the object that is to be set.
-o	The -o <objectName> <value>, or object, option must be used with the -g option. This option specifies the object name that is written with the string <value>.
-i	The -i <index>, or index, option is only valid for indexed groups and can be used to specify a unique group. The index is specified here by the index value, not a "named" value.
-c	The -c , or check, option is used with the config subcommand and allows you to parse the .cfg file to find syntax errors. If errors are found, the line number and a short description of what is incorrect are displayed. Writes do not occur to iDRAC6. This option is a check only.

Output

This subcommand generates error output upon encountering either of the following:

- Invalid syntax, group name, object name, index, or other invalid database members
- RACADM CLI failures

This subcommand returns an indication of how many configuration objects that were written out of how many total objects were in the **.cfg** file.


Examples

- ```
racadm config -g cfgLanNetworking -o
cfgNicIpAddress 10.35.10.110
```

Sets the `cfgNicIpAddress` configuration parameter (object) to the value 10.35.10.110. This IP address object is contained in the group `cfgLanNetworking`.

- `racadm config -f myrac.cfg`

Configures or reconfigures iDRAC6. The `myrac.cfg` file may be created with the `getconfig` command. The `myrac.cfg` file may also be edited manually as long as the parsing rules are followed.


 **NOTE:** The `myrac.cfg` file does not contain passwords. To include passwords in the file, you must enter them manually. If you want to remove passwords from the `myrac.cfg` file during configuration, use the `-p` option.

## getconfig

The `getconfig` subcommand allows you to retrieve iDRAC6 configuration parameters individually, or all iDRAC6 configuration groups may be retrieved and saved into a file.

### Input

Table A-4 describes the `getconfig` subcommand options.

 **NOTE:** The `-f` option without a file specification will output the contents of the file to the terminal screen.

**Table A-4. getconfig Subcommand Options**

| Option          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-f</code> | The <code>-f &lt;filename&gt;</code> option directs <code>getconfig</code> to write the entire iDRAC6 configuration to a configuration file. This file can then be used for batch configuration operations using the <code>config</code> subcommand.<br><b>NOTE:</b> The <code>-f</code> option does not create entries for the <code>cfgLpmiPet</code> and <code>cfgLpmiPef</code> groups. You must set at least one trap destination to capture the <code>cfgLpmiPet</code> group to the file. Also, <code>cfgLpmiPet</code> and <code>cfgLpmiPef</code> will be saved only by remote and telnet/ssh RACADM and not by local RACADM in this current release. |
| <code>-g</code> | The <code>-g &lt;groupName&gt;</code> , or <code>group</code> , option can be used to display the configuration for a single group. The <code>groupName</code> is the name for the group used in the <code>racadm.cfg</code> files. If the group is an indexed group, use the <code>-i</code> option.                                                                                                                                                                                                                                                                                                                                                          |

**Table A-4. getconfig Subcommand Options (continued)**

| Option | Description                                                                                                                                                                                                                                                                                                 |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -h     | The <b>-h</b> , or help, option displays a list of all available configuration groups that you can use. This option is useful when you do not remember exact group names.                                                                                                                                   |
| -i     | The <b>-i</b> <index>, or index, option is valid only for indexed groups and can be used to specify a unique group. If <b>-i</b> <index> is not specified, a value of 1 is assumed for groups, which are tables that have multiple entries. The index is specified by the index value, not a "named" value. |
| -o     | The <b>-o</b> <objectname>, or object, option specifies the object name that is used in the query. This option can be used with the <b>-g</b> option.                                                                                                                                                       |
| -u     | The <b>-u</b> <username>, or user name, option can be used to display the configuration for the specified user. The <username> option is the login name for the user.                                                                                                                                       |
| -v     | The <b>-v</b> , or verbose, option displays additional details with the display of the properties and is used with the <b>-g</b> option.                                                                                                                                                                    |

## Output

This subcommand generates error output upon encountering either of the following:

- Invalid syntax, group name, object name, index, or other invalid database members
- RACADM CLI transport failures

If errors are not encountered, this subcommand displays the contents of the specified configuration.



**NOTE:** See "iDRAC6 Enterprise Property Database Group and Object Definitions" for information on the group and object to be used with this command.

## Examples

- `racadm getconfig -g cfgLanNetworking`  
Displays all of the configuration properties (objects) that are contained in the group `cfgLanNetworking`.
- `racadm getconfig -f myrac.cfg`  
Saves all group configuration objects from iDRAC6 to `myrac.cfg`.

- `racadm getconfig -h`  
Displays a list of the available configuration groups on iDRAC6.
- `racadm getconfig -u root`  
Displays the configuration properties for the user named **root**.
- `racadm getconfig -g cfgUserAdmin -i 2 -v`  
Displays the user group instance at index 2 with extensive information for the property values.

## Synopsis

```
racadm getconfig -f <filename>
racadm getconfig -g <groupName> [-i <index>]
racadm getconfig -u <username>
racadm getconfig -h
racadm getconfig -g <groupName> -o <objectName>
[-i index]
```

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

## getssninfo

Table A-5 describes the `getssninfo` subcommand.

**Table A-5. getssninfo Subcommand**

| Subcommand              | Definition                                                                                                                   |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <code>getssninfo</code> | Retrieves session information for one or more currently active or pending sessions from the Session Manager's session table. |



## Synopsis

```
racadm getssninfo [-A] [-u <username> | *]
```

## Description

The `getssninfo` command returns a list of users that are connected to iDRAC6. The summary information provides the following information:

- Username
- IP address (if applicable)
- Session type (for example, SSH or Telnet)

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

## Input

Table A-6 describes the `getssninfo` subcommand options.

**Table A-6. getssninfo Subcommand Options**

| Option | Description                                                                                                                                                                                                                                                           |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -A     | The -A option eliminates the printing of data headers.                                                                                                                                                                                                                |
| -u     | The -u <username> user name option limits the printed output to only the detail session records for the given user name. If an asterisk (*) symbol is given as the user name, all users are listed. Summary information is not printed when this option is specified. |

## Examples

- `racadm getssninfo`

Table A-7 provides an example of output from the `racadm getssninfo` command.

```
C:\>racadm -r 10.35.155.185 -u root -p calvin
getssninfo
```

Security Alert: Certificate is invalid - Certificate is not signed by Trusted Third Party  
Continuing execution. Use -S option for racadm to stop execution on certificate-related errors.

**Table A-7. getssninfo Subcommand Output Example**

| User | IP Address  | Type   |
|------|-------------|--------|
| root | 192.168.1.1 | RACADM |

## getsysinfo

Table A-8 describes the `racadm getsysinfo` subcommand.

**Table A-8. getsysinfo**

| Command                 | Definition                              |
|-------------------------|-----------------------------------------|
| <code>getsysinfo</code> | Displays information related to iDRAC6. |

### Synopsis

```
racadm getsysinfo [-d] [-s] [-w] [-A] [-4] [-6]
```

### Description

The `getsysinfo` subcommand displays information related to iDRAC6, the managed server, and the watchdog configuration.

### Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

### Input

Table A-9 describes the `getsysinfo` subcommand options.

**Table A-9. getsysinfo Subcommand Options**

| Option | Description                                |
|--------|--------------------------------------------|
| -d     | Displays iDRAC6 information.               |
| -s     | Displays system information                |
| -w     | Displays watchdog information              |
| -A     | Eliminates the printing of headers/labels. |
| -4     | Displays iDRAC6 IPv4 information.          |
| -6     | Displays iDRAC6 IPv6 information.          |

## Output

The `getsysinfo` subcommand displays information related to iDRAC6, the managed server, and the watchdog configuration.



**NOTE:** The local `racadm getsysinfo` subcommand on Linux displays the *PrefixLength* for IPv6 Address 2 to IPv6 Address 15 and the Link Local Address on separate lines.

## Sample Output

### RAC Information:

RAC Date/Time = Tue Apr 15 03:52:56 2036

Firmware Version = 02.20

Firmware Build = 25

Last Firmware Update = Mon Oct 26 18:01:39 2009

Hardware Version = 0.0

MAC Address = 00:21:9b:fe:6b:21

### Common settings:

Register DNS RAC Name = 0

DNS RAC Name = iDRAC-tt

Current DNS Domain =

Domain Name from DHCP = 1

**IPv4 settings:**

Enabled = 1

Current IP Address = 192.168.1.166

Current IP Gateway = 0.0.0.0

Current IP Netmask = 255.255.255.0

DHCP Enabled = 1

Current DNS Server 1 = 0.0.0.0

Current DNS Server 2 = 0.0.0.0

DNS Servers from DHCP = 1

**IPv6 settings:**

Enabled = 0

Current IP Address 1 = ::

Current IP Gateway = ::

Prefix Length = 64

Autoconfig = 0

Link Local IP Address = ::

Current IP Address 2 = ::

Current IP Address 3 = ::

Current IP Address 4 = ::

Current IP Address 5 = ::

Current IP Address 6 = ::

Current IP Address 7 = ::

Current IP Address 8 = ::

Current IP Address 9 = ::

Current IP Address 10 = ::

Current IP Address 11 = ::

Current IP Address 12 = ::  
Current IP Address 13 = ::  
Current IP Address 14 = ::  
Current IP Address 15 = ::  
DNS Servers from DHCPv6 = 0  
Current DNS Server 1 = ::  
Current DNS Server 2 = ::

**System Information:**

System Model = PowerEdge M710  
System BIOS Version = 1.1.4  
Service Tag = 2JWK22S  
Host Name = WIN-IHF5D2BF5SN  
OS Name = Microsoft Windows Server 2008 R2, Standard x64 Edition  
Power Status = ON

**Watchdog Information:**

Recovery Action = None  
Present countdown value = 0 seconds  
Initial countdown value = 0 seconds

**Embedded NIC MAC Addresses:**

NIC1 Ethernet = 00:23:AE:EC:2E:38  
iSCSI = 00:23:AE:EC:2E:39  
NIC2 Ethernet = 00:23:AE:EC:2E:3A  
iSCSI = 00:23:AE:EC:2E:3B  
NIC3 Ethernet = 00:23:AE:EC:2E:3C  
iSCSI = 00:23:AE:EC:2E:3D  
NIC4 Ethernet = 00:23:AE:EC:2E:3E

iSCSI = 00:23:AE:EC:2E:3F

## Examples

```
racadm getsysinfo -A -s
```

```
"System Information:" "PowerEdge M600" "0.2.1" "0.32" "48192" "dell-x92i38xc2n" "" "ON"
```

```
racadm getsysinfo -w -s
```

### System Information:

System Model = PowerEdge M600

System BIOS Version = 0.2.1

BMC Firmware Version = 0.32

Service Tag = 48192

Host Name = dell-x92i38xc2n

OS Name =

Power Status = ON

### Watchdog Information:

Recovery Action = None

Present countdown value = 0 seconds

Initial countdown value = 0 seconds

## Restrictions

The **Hostname** and **OS Name** fields in the **getsysinfo** output display accurate information only if Dell OpenManage Server Administrator is installed on the managed server. If it is not installed on the managed server, these fields may be blank or inaccurate. An exception to this are VMware<sup>®</sup> operating system names which are displayed even if Server Administrator is not installed on the managed system.

## getractive

Table A-10 describes the **getractive** subcommand.

**Table A-10. getractive**

| Subcommand | Definition |
|------------|------------|
|------------|------------|

**Table A-10. getractime (continued)**

---

|            |                                                              |
|------------|--------------------------------------------------------------|
| getractime | Displays the current time from the remote access controller. |
|------------|--------------------------------------------------------------|

---

## Synopsis

```
racadm getractime [-d]
```

## Description

With no options, the **getractime** subcommand displays the time in a common readable format.

With the **-d** option, **getractime** displays the time in the format, *yyyymmddhhmmss.mmmmmms*, which is the same format returned by the UNIX® **date** command.

## Output

The **getractime** subcommand displays the output on one line.

## Sample Output

```
racadm getractime
Thu Dec 8 20:15:26 2005
```

```
racadm getractime -d
20071208201542.000000
```

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

## setniccfg

Table A-11 describes the **setniccfg** subcommand.

**Table A-11. setniccfg**

| Subcommand | Definition                                    |
|------------|-----------------------------------------------|
| setniccfg  | Sets the IP configuration for the controller. |

### Synopsis

```
racadm setniccfg -d
racadm setniccfg -s [<ipAddress> <netmask> <gateway>]
racadm setniccfg -o [<ipAddress> <netmask> <gateway>]
```

### Description

The **setniccfg** subcommand sets iDRAC6 IP address.

- The **-d** option enables DHCP for the NIC (default is DHCP enabled).
- The **-s** option enables static IP settings. The IP address, netmask, and gateway can be specified. Otherwise, the existing static settings are used. *<ipAddress>*, *<netmask>*, and *<gateway>* must be entered as dot-separated strings.

```
racadm setniccfg -s 192.168.0.120 255.255.255.0
192.168.0.1
```

- The **-o** option disables the NIC completely. *<ipAddress>*, *<netmask>*, and *<gateway>* must be entered as dot-separated strings.

```
racadm setniccfg -o 192.168.0.120 255.255.255.0
192.168.0.1
```

### Output

The **setniccfg** subcommand displays an appropriate error message if the operation is not successful. If successful, a message is displayed.

### Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM



# getniccfg

Table A-12 describes the `getniccfg` subcommand.

**Table A-12.** `getniccfg`

| Subcommand             | Definition                                        |
|------------------------|---------------------------------------------------|
| <code>getniccfg</code> | Displays the current IP configuration for iDRAC6. |

## Synopsis

```
racadm getniccfg
```

## Description

The `getniccfg` subcommand displays the current NIC settings.

## Sample Output

The `getniccfg` subcommand will display an appropriate error message if the operation is not successful. Otherwise, on success, the output is displayed in the following format:

### IPv4 settings:

```
NIC Enabled = 1
DHCP Enabled = 1
IP Address = 10.35.0.64
Subnet Mask = 255.255.255.0
Gateway = 10.35.0.1
```

### IPv6 settings:

```
IPv6 Enabled = 0
DHCP6 Enabled = 0
IP Address 1 = ::
Prefix Length = 64
Gateway = ::
Link Local Address = ::
```

```

IP Address 2 = ::
IP Address 3 = ::
IP Address 4 = ::
IP Address 5 = ::
IP Address 6 = ::
IP Address 7 = ::
IP Address 8 = ::
IP Address 9 = ::
IP Address 10 = ::
IP Address 11 = ::
IP Address 12 = ::
IP Address 13 = ::
IP Address 14 = ::
IP Address 15 = ::

```

 **NOTE:** IPv6 information is displayed only if iDRAC6 supports IPv6.

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

## getsvctag

Table A-13 describes the `getsvctag` subcommand.

**Table A-13.** `getsvctag`

| Subcommand             | Definition              |
|------------------------|-------------------------|
| <code>getsvctag</code> | Displays a service tag. |

## Synopsis

```
racadm getsvctag
```

## Description

The `getsvctag` subcommand displays the service tag of the host system.

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

## racreset

Table A-14 describes the `racreset` subcommand.

**Table A-14.** `racreset`

| Subcommand            | Definition     |
|-----------------------|----------------|
| <code>racreset</code> | Resets iDRAC6. |



**NOTE:** When you issue a `racreset` subcommand, iDRAC6 may require up to two minutes to return to a usable state.

## Synopsis

```
racadm racreset [hard | soft]
```

## Description

The `racreset` subcommand resets iDRAC6. The reset event is written into iDRAC6 log. A hard reset performs a deep reset operation on iDRAC6. A hard reset should only be performed as a last case resort to recover iDRAC6. A soft reset performs a graceful reboot operation on iDRAC6.

## Examples

- `racadm racreset`  
Start iDRAC6 soft reset sequence.
- `racadm racreset hard`  
Start iDRAC6 hard reset sequence.

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

## racresetcfg

Table A-15 describes the **racresetcfg** subcommand.

**Table A-15. racresetcfg**

| Subcommand  | Definition                                                                                                                                                              |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| racresetcfg | Resets the entire iDRAC6 configuration to factory default values.<br><br><b>NOTE:</b> The <b>racresetcfg</b> subcommand does not reset the <b>cfgDNSRacName</b> object. |

## Synopsis

```
racadm racresetcfg
```

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

## Description

The **racresetcfg** command removes all user-configured database property entries. The database has default properties for all entries that are used to restore iDRAC6 back to the default settings.



**NOTE:** This command deletes your current iDRAC6 configuration, disables DHCP, and resets iDRAC6 configuration to the default settings. After reset, the default name and password are **root** and **calvin**, respectively, and the IP address is **192.168.0.120** plus the number of the slot the server inhabits in the chassis.

# serveraction

Table A-16 describes the **serveraction** subcommand.

**Table A-16. serveraction**

| Subcommand   | Definition                                             |
|--------------|--------------------------------------------------------|
| serveraction | Executes a managed server reset or power-on/off/cycle. |

## Synopsis

```
racadm serveraction <action>
```

## Description

The **serveraction** subcommand enables users to perform power management operations on the host system. Table A-17 describes the **serveraction** power control options.

**Table A-17. serveraction Subcommand Options**

| String   | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <action> | Specifies the action. The <action> string options are: <ul style="list-style-type: none"><li>• <b>powerdown</b> — Powers down the managed server.</li><li>• <b>powerup</b> — Powers up the managed server.</li><li>• <b>powercycle</b> — Issues a power-cycle operation on the managed server. This action is similar to pressing the power button on the system's front panel to power down and then power up the system.</li><li>• <b>powerstatus</b> — Displays the current power status of the server (ON, or OFF).</li><li>• <b>hardreset</b> — Performs a reset (reboot) operation on the managed server.</li></ul> |

## Output

The **serveraction** subcommand displays an error message if the requested operation could not be performed, or a success message if the operation completed successfully.

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

## getraclog

Table A-18 describes the `racadm getraclog` command.

**Table A-18. getraclog**

| Command                   | Definition                                    |
|---------------------------|-----------------------------------------------|
| <code>getraclog -i</code> | Displays the number of entries in iDRAC6 log. |
| <code>getraclog</code>    | Displays iDRAC6 log entries.                  |

### Synopsis

```
racadm getraclog -i
```

```
racadm getraclog [-A] [-o] [-c count] [-s start-record] [-m]
```

### Description

The `getraclog -i` command displays the number of entries in iDRAC6 log.



**NOTE:** If no options are provided, the entire log is displayed.

The following options allow the `getraclog` command to read entries:

**Table A-19. getraclog Subcommand Options**

| Option          | Description                                                                                                                    |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------|
| <code>-A</code> | Displays the output with no headers or labels.                                                                                 |
| <code>-c</code> | Provides the maximum count of entries to be returned.                                                                          |
| <code>-m</code> | Displays one screen of information at a time and prompts the user to continue (similar to the UNIX <code>more</code> command). |
| <code>-o</code> | Displays the output in a single line.                                                                                          |
| <code>-i</code> | Displays the number of entries in iDRAC6 log.                                                                                  |

**Table A-19. getraclog Subcommand Options (continued)**

| Option | Description                                         |
|--------|-----------------------------------------------------|
| -s     | Specifies the starting record used for the display. |

## Output

The default output display shows the record number, time stamp, source, and description. The timestamp begins at midnight, January 1 and increases until the managed server boots. After the managed server boots, the managed server's system time is used for the timestamp.



**NOTE:** Rac Log entries for *SystemBoot* displayed using the local racadm command "racadm getraclog" may not be correctly formatted. For example, some extra characters may be displayed in the "Description" field, or the "Source" field may be empty.

## Sample Output

```
Record: 1
Date/Time: Dec 8 08:10:11
Source: login[433]
Description: root login from 192.168.1.1
```

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

# clrraclog

## Synopsis

```
racadm clrraclog
```

## Description

The **clrraclog** subcommand removes all existing records from iDRAC6 log. A new single record is created to record the date and time when the log was cleared.

# getsel

Table A-20 describes the `getsel` command.

**Table A-20. getsel**

| Command                | Definition                                                      |
|------------------------|-----------------------------------------------------------------|
| <code>getsel -i</code> | Displays the number of entries in the <b>System Event Log</b> . |
| <code>getsel</code>    | Displays SEL entries.                                           |

## Synopsis

```
racadm getsel -i
```

```
racadm getsel [-E] [-R] [-A] [-o] [-c count] [-s count] [-m]
```

## Description

The `getsel -i` command displays the number of entries in the SEL.

The following `getsel` options (without the `-i` option) are used to read entries.



**NOTE:** If no arguments are specified, the entire log is displayed.

**Table A-21. getsel Subcommand Options**

| Option          | Description                                                                                                     |
|-----------------|-----------------------------------------------------------------------------------------------------------------|
| <code>-A</code> | Specifies output with no display headers or labels.                                                             |
| <code>-c</code> | Provides the maximum count of entries to be returned.                                                           |
| <code>-o</code> | Displays the output in a single line.                                                                           |
| <code>-s</code> | Specifies the starting record used for the display.                                                             |
| <code>-E</code> | Places the 16 bytes of raw SEL at the end of each line of output as a sequence of hex values.                   |
| <code>-R</code> | Only the raw data is printed.                                                                                   |
| <code>-i</code> | Displays the number of entries in the SEL.                                                                      |
| <code>-m</code> | Displays one screen at a time and prompts the user to continue (similar to the UNIX <code>more</code> command). |



## Output

The default output display shows the record number, timestamp, severity, and description.

For example:

```
Record: 1
Date/Time: 11/16/2005 22:40:43
Severity: Ok
Description: System Board SEL: event log sensor for
System Board, log cleared was asserted
```

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

# clrsele

## Synopsis

```
racadm clrsele
```

## Description

The `clrsele` command removes all existing records from the System Event Log (SEL).

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

# gettracelog

Table A-22 describes the `gettracelog` subcommand.

**Table A-22. gettracelog**

| Command                     | Definition                                          |
|-----------------------------|-----------------------------------------------------|
| <code>gettracelog -i</code> | Displays the number of entries in iDRAC6 trace log. |
| <code>gettracelog</code>    | Displays iDRAC6 trace log.                          |

## Synopsis

```
racadm gettracelog -i
racadm gettracelog [-A] [-o] [-c count] [-s
startrecord] [-m]
```

## Description

The `gettracelog` (without the `-i` option) command reads entries. The following `gettracelog` entries are used to read entries:

**Table A-23. gettracelog Subcommand options**

| Option          | Description                                                                                                     |
|-----------------|-----------------------------------------------------------------------------------------------------------------|
| <code>-i</code> | Displays the number of entries in iDRAC6 trace log.                                                             |
| <code>-m</code> | Displays one screen at a time and prompts the user to continue (similar to the UNIX <code>more</code> command). |
| <code>-o</code> | Displays the output in a single line.                                                                           |
| <code>-c</code> | specifies the number of records to display.                                                                     |
| <code>-s</code> | specifies the starting record to display.                                                                       |
| <code>-A</code> | do not display headers or labels.                                                                               |

## Output

The default output display shows the record number, timestamp, source, and description. The timestamp begins at midnight, January 1 and increases until the managed system boots. After the managed system boots, the managed system's system time is used for the timestamp.

For example:

```
Record: 1
Date/Time: Dec 8 08:21:30
Source: ssnmgrd[175]
Description: root from 192.168.1.1: session timeout
sid 0be0aef4
```

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

## sslcsrgen

Table A-24 describes the `sslcsrgen` subcommand.

**Table A-24.** `sslcsrgen`

| Subcommand             | Description                                                                    |
|------------------------|--------------------------------------------------------------------------------|
| <code>sslcsrgen</code> | Generates and downloads an SSL certificate signing request (CSR) from the RAC. |

## Synopsis

```
racadm sslcsrgen [-g] [-f <filename>]
```

```
racadm sslcsrgen -s
```

## Description


The `sslcsrgen` subcommand can be used to generate a CSR and download the file to the client's local file system. The CSR can be used for creating a custom SSL certificate that can be used for SSL transactions on the RAC.

## Options

Table A-25 describes the `sslcsrgen` subcommand options.

**Table A-25. sslcsrgen Subcommand Options**


| Option | Description                                                                                         |
|--------|-----------------------------------------------------------------------------------------------------|
| -g     | Generates a new CSR.                                                                                |
| -s     | Returns the status of a CSR generation process (generation in progress, active, or none).           |
| -f     | Specifies the filename of the location, <i>&lt;filename&gt;</i> , where the CSR will be downloaded. |

 **NOTE:** If the **-f** option is not specified, the filename defaults to **sslcsr** in your current directory.

If no options are specified, a CSR is generated and downloaded to the local file system as **sslcsr** by default. The **-g** option cannot be used with the **-s** option, and the **-f** option can only be used with the **-g** option.

The **sslcsrgen -s** subcommand returns one of the following status codes:

- CSR was generated successfully.
- CSR does not exist.
- CSR generation in progress.

 **NOTE:** Before a CSR can be generated, the CSR fields must be configured in the RACADM **cfgRacSecurity** group. For example: `racadm config -g cfgRacSecurity -o cfgRacSecCsrCommonName MyCompany`

### Examples

```
racadm sslcsrgen -s
```

or

```
racadm sslcsrgen -g -f c:\csr\csrtest.txt
```

### Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM (can only generate, not download. **-f** option is not applicable)

# sslcertupload

Table A-26 describes the `sslcertupload` subcommand.

**Table A-26. sslcertupload**

| Subcommand                 | Description                                                              |
|----------------------------|--------------------------------------------------------------------------|
| <code>sslcertupload</code> | Uploads a custom SSL server or CA certificate from the client to iDRAC6. |

## Synopsis

```
racadm sslcertupload -t <type> [-f <filename>]
```

## Options

Table A-27 describes the `sslcertupload` subcommand options.

**Table A-27. sslcertupload Subcommand Options**

| Option          | Description                                                                                                                                                  |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-t</code> | Specifies the type of certificate to upload, either the CA certificate or server certificate.<br>1 = server certificate<br>2 = CA certificate                |
| <code>-f</code> | Specifies the file name of the certificate to be uploaded. If the file is not specified, the <code>sslcert</code> file in the current directory is selected. |

The `sslcertupload` command returns 0 when successful and returns a nonzero number when unsuccessful.

## Example

```
racadm sslcertupload -t 1 -f c:\cert\cert.txt
```

## Supported Interfaces

- Local RACADM
- Remote RACADM

# sslcertdownload

Table A-28 describes the `sslcertdownload` subcommand.

**Table A-28. sslcertdownload**

| Subcommand                   | Description                                                            |
|------------------------------|------------------------------------------------------------------------|
| <code>sslcertdownload</code> | Downloads an SSL certificate from the RAC to the client's file system. |

## Synopsis

```
racadm sslcertdownload -t <type> [-f <filename>]
```

## Options

Table A-29 describes the `sslcertdownload` subcommand options.

**Table A-29. sslcertdownload Subcommand Options**

| Option          | Description                                                                                                                                                                                       |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-t</code> | Specifies the type of certificate to download, either the Microsoft® Active Directory® certificate or server certificate.<br>1 = server certificate<br>2 = Microsoft Active Directory certificate |
| <code>-f</code> | Specifies the file name of the certificate to be downloaded. If the <code>-f</code> option or the filename is not specified, the <code>sslcert</code> file in the current directory is selected.  |

The `sslcertdownload` command returns 0 when successful and returns a nonzero number when unsuccessful.

## Example

```
racadm sslcertdownload -t 1 -f c:\cert\cert.txt
```

## Supported Interfaces

- Local RACADM
- Remote RACADM

# sslcertview

Table A-30 describes the `sslcertview` subcommand.

**Table A-30. sslcertview**

| Subcommand               | Description                                                      |
|--------------------------|------------------------------------------------------------------|
| <code>sslcertview</code> | Displays the SSL server or CA certificate that exists on iDRAC6. |

## Synopsis

```
racadm sslcertview -t <type> [-A]
```

## Options

Table A-31 describes the `sslcertview` subcommand options.

**Table A-31. sslcertview Subcommand Options**

| Option          | Description                                                                                                                                                                                     |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-t</code> | Specifies the type of certificate to view, either the Microsoft Active Directory certificate or server certificate.<br><br>1 = server certificate<br>2 = Microsoft Active Directory certificate |
| <code>-A</code> | Prevents printing headers/labels.                                                                                                                                                               |

## Output Example

```
racadm sslcertview -t 1
```

```
Serial Number : 00
```

```
Subject Information:
```

```
Country Code (CC) : US
```

```
State (S) : Texas
```

```
Locality (L) : Round Rock
```

```
Organization (O) : Dell Inc.
```

```
Organizational Unit (OU) : Remote Access Group
Common Name (CN) : iDRAC default certificate
```

Issuer Information:

```
Country Code (CC) : US
State (S) : Texas
Locality (L) : Round Rock
Organization (O) : Dell Inc.
Organizational Unit (OU) : Remote Access Group
Common Name (CN) : iDRAC default certificate
```

```
Valid From : Jul 8 16:21:56 2005 GMT
Valid To : Jul 7 16:21:56 2010 GMT
```

```
racadm sslcertview -t 1 -A
```

```
00
US
Texas
Round Rock
Dell Inc.
Remote Access Group
iDRAC default certificate
US
Texas
Round Rock
Dell Inc.
Remote Access Group
iDRAC default certificate
Jul 8 16:21:56 2005 GMT
Jul 7 16:21:56 2010 GMT
```

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM



# testemail

Table A-32 describes the `testemail` subcommand.

**Table A-32. testemail configuration**

| Subcommand | Description                           |
|------------|---------------------------------------|
| testemail  | Tests iDRAC6 e-mail alerting feature. |

## Synopsis

```
racadm testemail -i <index>
```

## Description

Sends a test e-mail from iDRAC6 to a specified destination.

Prior to executing the `testemail` command, ensure that the SMTP server is configured and the specified index in the RACADM `cfgEmailAlert` group is enabled and configured properly. Table A-33 provides an example of commands for the `cfgEmailAlert` group.

**Table A-33. testemail Configuration**

| Action                                                                | Command                                                                                            |
|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Enable the alert                                                      | <pre>racadm config -g cfgEmailAlert -o<br/>cfgEmailAlertEnable<br/>-i 1 1</pre>                    |
| Set the destination e-mail address                                    | <pre>racadm config -g cfgEmailAlert -o<br/>cfgEmailAlertAddress -i 1<br/>user1@mycompany.com</pre> |
| Set the custom message that is sent to the destination e-mail address | <pre>racadm config -g cfgEmailAlert -o<br/>cfgEmailAlertCustomMsg -i 1 "This is a<br/>test!"</pre> |
| Ensure the SNMP IP address is configured properly                     | <pre>racadm config -g cfgRemoteHosts -o<br/>cfgRhostsSmtpServerIpAddr -i<br/>192.168.0.152</pre>   |

**Table A-33. testemail Configuration (continued)**

| Action                                 | Command                                                                                                  |
|----------------------------------------|----------------------------------------------------------------------------------------------------------|
| View the current e-mail alert settings | <code>racadm getconfig -g cfgEmailAlert -i &lt;index&gt;</code><br>where <index> is a number from 1 to 4 |

## Options

Table A-34 describes the **testemail** subcommand options.

**Table A-34. testemail Subcommand Option**

| Option | Description                                                                           |
|--------|---------------------------------------------------------------------------------------|
| -i     | Specifies the index of the e-mail alert to test. The index for -i can be from 1 to 4. |

## Output

Success: Test e-mail sent successfully

Failure: Unable to send test e-mail

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

## testtrap

Table A-35 describes the **testtrap** subcommand.

**Table A-35. testtrap**

| Subcommand | Description                              |
|------------|------------------------------------------|
| testtrap   | Tests iDRAC6 SNMP trap-alerting feature. |

## Synopsis

```
racadm testtrap -i <index>
```

## Description

The **testtrap** subcommand tests iDRAC6 SNMP trap-alerting feature by sending a test trap from iDRAC6 to a specified destination trap listener on the network.

Before you execute the **testtrap** subcommand, ensure that the specified index in the RACADM **cfgIpmiPet** group is configured properly.

Table A-36 provides a list and associated commands for the **cfgIpmiPet** group.

**Table A-36. cfg e-mail Alert Commands**

| Action                                | Command                                                                                                           |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Enable the alert                      | <pre>racadm config -g cfgIpmiPet -o<br/>cfgIpmiPetAlertEnable -i 1 1</pre>                                        |
| Set the destination e-mail IP address | <pre>racadm config -g cfgIpmiPet -o<br/>cfgIpmiPetAlertDestIpAddr -i 1<br/>192.168.0.110</pre>                    |
| View the current test trap settings   | <pre>racadm getconfig -g cfgIpmiPet -i<br/>&lt;index&gt;</pre> <p>where &lt;index&gt; is a number from 1 to 4</p> |

## Input

Table A-37 describes the **testtrap** subcommand options.

**Table A-37. testtrap Subcommand Options**

| Option | Description                                                                                     |
|--------|-------------------------------------------------------------------------------------------------|
| -i     | Specifies the index of the trap configuration to use for the test Valid values are from 1 to 4. |

## Supported Interfaces

- Local RACADM
- Remote RACADM

- telnet/ssh RACADM

## **vmdisconnect**

### **Synopsis**

```
racadm vmdisconnect
```

### **Description**

The **vmdisconnect** subcommand allows a user to disconnect another user's virtual media session. Once disconnected, the Web interface will reflect the correct connection status.

The **vmdisconnect** subcommand enables iDRAC6 user to disconnect all active virtual media sessions. The active virtual media sessions can be displayed in iDRAC6 Web interface or by using the RACADM **getsysinfo** subcommand.

### **Supported Interfaces**

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

## **clearasrscreen**

### **Synopsis**

```
racadm clearasrscreen
```

### **Description**

Clear the last crash (ASR) screen. See "Configuring the Managed Server to Capture the Last Crash Screen" and "Disabling the Windows Automatic Reboot Option".

### **Supported Interfaces**

- Local RACADM

- Remote RACADM
- telnet/ssh RACADM

## localconredirdisable

### Synopsis

```
racadm localconredirdisable <option>
```

If *<option>* is set to 1, console redirection is disabled.

### Description

Disables console redirection to the management station.

### Legal Values

0 = Enable

1 = Disable

### Supported Interfaces

- Local RACADM

## fwupdate



**NOTE:** To use this command, you must have **Configure iDRAC6** permission.

Table A-38 describes the **fwupdate** subcommand.

**Table A-38. fwupdate**

| Subcommand | Definition                     |
|------------|--------------------------------|
| fwupdate   | Updates the firmware on iDRAC6 |

### Synopsis

```
racadm fwupdate -s
```

```
racadm fwupdate -g -u -a <TFTP_Server_IP_Address> [-d
<path>]
```

```
racadm fwupdate -r
```

## Description

The **fwupdate** subcommand allows users to update the firmware on iDRAC6. The user can:

- Check the firmware update process status
- Update iDRAC6 firmware from a TFTP server by providing an IP address and optional path
- Rollback to the standby firmware

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

## Input

Table A-39 describes the **fwupdate** subcommand options.



**NOTE:** The **-p** option is not supported with the remote or the Telnet/SSH console. The **-p** option is also not supported on Linux Operating Systems.

**Table A-39. fwupdate Subcommand Options**

| Option | Description                                                                                                                                                                                                                                                                                                                                                                        |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -u     | The <b>update</b> option performs a checksum of the firmware update file and starts the actual update process. This option may be used along with the <b>-g</b> or <b>-p</b> options. At the end of the update, iDRAC6 performs a soft reset.                                                                                                                                      |
| -s     | The <b>status</b> option returns the current status of where you are in the update process. This option is always used by itself.                                                                                                                                                                                                                                                  |
| -g     | The <b>get</b> option instructs the firmware to get the firmware update file from the TFTP server. The user must also specify the <b>-a</b> and <b>-d</b> options. In the absence of the <b>-a</b> option, the defaults are read from properties contained in the group <b>cfgRemoteHosts</b> , using properties <b>cfgRhostsFwUpdateIpAddr</b> and <b>cfgRhostsFwUpdatePath</b> . |
| -a     | The <b>IP Address</b> option specifies the TFTP server IP address.                                                                                                                                                                                                                                                                                                                 |

**Table A-39. fwupdate Subcommand Options (continued)**

| Option | Description                                                                                                                                                |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -d     | The <b>-d</b> , or <b>directory</b> , option specifies the directory on the TFTP server or on iDRAC6's host server where the firmware update file resides. |
| -r     | The <b>rollback</b> option is used to rollback to the standby firmware.                                                                                    |

## Output

Displays a message indicating which operation is being performed.

## Examples

- `racadm fwupdate -g -u -a 192.168.1.1 -d <path>`

In this example, the **-g** option tells the firmware to download the firmware update file from a location (specified by the **-d** option) on the TFTP server at a specific IP address (specified by the **-a** option). After the image file is downloaded from the TFTP server, the update process begins. When completed, iDRAC6 is reset.

- `racadm fwupdate -s`

This option reads the current status of the firmware update.

## krbkeytabupload



**NOTE:** To use this command, you must have **Configure iDRAC** permission.

Table A-40 describes the **krbkeytabupload** subcommand.

**Table A-40. krbkeytabupload**

| Subcommand                   | Description                     |
|------------------------------|---------------------------------|
| <code>krbkeytabupload</code> | Uploads a Kerberos keytab file. |

## Synopsis

```
racadm krbkeytabupload [-f <filename>]
```

<filename> is the name of the file including the path.

## Options

Table A-41 describes the `krbkeytabupload` subcommand options.

**Table A-41. krbkeytabupload Subcommand Options**

| Option          | Description                                                                                                                               |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-f</code> | Specifies the file name of the keytab to be uploaded. If the file is not specified, the keytab file in the current directory is selected. |

The `krbkeytabupload` command returns 0 when successful and returns a non-zero number when unsuccessful.

## Example

```
racadm krbkeytabupload -f c:\keytab\krbkeytab.tab
```

## Supported Interfaces

- Remote RACADM
- Local RACADM

## vmkey

### Synopsis

```
racadm vmkey reset
```

### Description

The `vmkey` subcommand resets the partition of the Virtual Flash to the default size of 256 MB and removes all data from it.

### Legal Values

`reset` = Resets the partition of the Virtual Flash to the default size of 256 MB and removes all data from it.

## Supported Interfaces

- Local RACADM
- Remote RACADM



- telnet/ssh RACADM

## version

### Synopsis

```
racadm version
```

### Description

Displays the RACADM version

### Supported Interfaces

- Remote RACADM
- Local RACADM
- ssh/telnet RACADM

## arp



**NOTE:** To use this command, you must have Administrator privilege.

Table A-42 describes the **arp** command.

**Table A-42. arp Command**

| Command | Definition                                                                            |
|---------|---------------------------------------------------------------------------------------|
| arp     | Displays the contents of the ARP table. ARP table entries cannot be added or deleted. |

### Synopsis

```
racadm arp
```

### Description

Display the Address Resolution Protocol (ARP) table.

## Example

| IP address  | HW type | Flags | HW address        | Mask | Device |
|-------------|---------|-------|-------------------|------|--------|
| 192.168.1.1 | 0x1     | 0x2   | 00:00:0C:07:AC:0F | *    | eth0   |

## Supported Interfaces

- Remote RACADM
- telnet/ssh RACADM

## coredump



**NOTE:** To use this command, you must have **Execute Debug Commands** permission.

Table A-43 describes the **coredump** subcommand.

**Table A-43. coredump**

| Subcommand | Definition                          |
|------------|-------------------------------------|
| coredump   | Displays the last iDRAC6 core dump. |

## Synopsis

```
racadm coredump
```

## Description

The **coredump** subcommand displays detailed information related to any recent critical issues that have occurred with iDRAC6. The **coredump** information can be used to diagnose these critical issues.

If available, the **coredump** information is persistent across iDRAC6 power cycles and will remain available until either of the following conditions occur:

- The **coredump** information is cleared with the **coredumpdelete** subcommand.
- Another critical condition occurs on iDRAC6. In this case, the **coredump** information will be relative to the last critical error that occurred.

See the **coredumpdelete** subcommand for more information about clearing the **coredump**.

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

## coredumpdelete



**NOTE:** To use this command, you must have **Clear Logs** or **Execute Debug Commands** permission.

Table A-44 describes the `coredumpdelete` subcommand.

**Table A-44.** `coredumpdelete`

| Subcommand                  | Definition                              |
|-----------------------------|-----------------------------------------|
| <code>coredumpdelete</code> | Deletes the core dump stored in iDRAC6. |

## Synopsis

```
racadm coredumpdelete
```

## Description

The `coredumpdelete` subcommand can be used to clear any currently resident `coredump` data stored in iDRAC6.



**NOTE:** If a `coredumpdelete` command is issued and a `coredump` is not currently stored in iDRAC6, the command will display a success message. This behavior is expected.

See the `coredump` subcommand for more information on viewing a `coredump`.

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

# ifconfig


 **NOTE:** To use this command, you must have **Execute Diagnostic Commands** or **Configure iDRAC6** permission.

Table A-45 describes the **ifconfig** subcommand.

**Table A-45. ifconfig**

| Subcommand | Definition                                            |
|------------|-------------------------------------------------------|
| ifconfig   | Displays the contents of the network interface table. |

## Synopsis

```
racadm ifconfig
```

## Example

```
$ racadm ifconfig
eth0 Link encap:Ethernet HWaddr 00:1D:09:FF:DA:23
 inet addr:10.35.155.136 Bcast:10.35.155.255 Mask:255.255.255.0
 UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
 RX packets:2550665 errors:0 dropped:0 overruns:0 frame:0
 TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
 collisions:0 txqueuelen:1000
 RX bytes:272532097 (259.9 MiB) TX bytes:0 (0.0 B)
```

## Supported Interfaces

- Remote RACADM
- telnet/ssh RACADM

# netstat


 **NOTE:** To use this command, you must have **Execute Diagnostic Commands** permission.

Table A-46 describes the **netstat** subcommand.

**Table A-46. netstat**

| Subcommand | Definition                                              |
|------------|---------------------------------------------------------|
| netstat    | Displays the routing table and the current connections. |

## Synopsis

```
racadm netstat
```

## Supported Interfaces

- Remote RACADM
- telnet/ssh RACADM

## ping



**NOTE:** To use this command, you must have **Execute Diagnostic Commands** or **Configure iDRAC6** permission.

Table A-47 describes the `ping` subcommand.

**Table A-47. ping**

| Subcommand | Definition                                                                                                                                                                                                                                              |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ping       | Verifies that the destination IP address is reachable from iDRAC6 with the current routing-table contents. A destination IP address is required. An ICMP echo packet is sent to the destination IP address based on the current routing-table contents. |

## Synopsis

```
racadm ping <ipaddress>
```

## Supported Interfaces

- Remote RACADM
- telnet/ssh RACADM

# ping6


 **NOTE:** To use this command, you must have **Execute Diagnostic Commands** or **Configure iDRAC6** permission.

Table A-48 describes the **ping6** subcommand.

**Table A-48. ping6**

| Subcommand | Definition                                                                                                                                                                                                                                                    |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ping6      | Verifies that the destination IPv6 address is reachable from iDRAC6 with the current routing-table contents. A destination IPv6 address is required. An ICMP echo packet is sent to the destination IPv6 address based on the current routing-table contents. |

## Synopsis

```
racadm ping6 <ipv6address>
```

## Supported Interfaces

- Remote RACADM
- telnet/ssh RACADM

# racdump


 **NOTE:** To use this command, you must have **Debug** permission.

Table A-49 describes the **racdump** subcommand.

**Table A-49. racdump**

| Subcommand | Definition                                      |
|------------|-------------------------------------------------|
| racdump    | Displays status and general iDRAC6 information. |

## Synopsis

```
racadm racdump
```

## Description

The **racdump** subcommand provides a single command to get dump, status, and general iDRAC6 board information.

The following information is displayed when the **racdump** subcommand is processed:

- General system/RAC information
- Coredump
- Session information
- Process information
- Firmware build information

## Supported Interfaces

- Remote RACADM
- telnet/ssh RACADM

## traceroute



**NOTE:** To use this command, you must have **Administrator** permission.

Table A-50 describes the **traceroute** subcommand.

**Table A-50. traceroute**

| Subcommand | Definition                                                                                                                 |
|------------|----------------------------------------------------------------------------------------------------------------------------|
| traceroute | Traces the network path of routers that packets take as they are forwarded from your system to a destination IPv4 address. |

## Synopsis

```
racadm traceroute <IPv4 address>
```

```
racadm traceroute 192.168.0.1
```

```
traceroute to 192.168.0.1 (192.168.0.1), 30 hops max,
40 byte packets
```

```
1 192.168.0.1 (192.168.0.1) 0.801 ms 0.246 ms 0.253 ms
```

## Description

Traces a route using IPv4 to a destination on the network.

## Supported Interfaces

- Remote RACADM
- telnet/ssh RACADM

## traceroute6



**NOTE:** To use this command, you must have **Administrator** permission.

Table A-51 describes the **traceroute6** subcommand.

**Table A-51. traceroute6**

| Subcommand  | Definition                                                                                                                 |
|-------------|----------------------------------------------------------------------------------------------------------------------------|
| traceroute6 | Traces the network path of routers that packets take as they are forwarded from your system to a destination IPv6 address. |

## Synopsis

```
racadm traceroute6 <IPv6 address>
```

```
racadm traceroute fd01::1
```

```
traceroute to fd01::1 (fd01::1) from fd01::3, 30 hops
max, 16 byte packets
```

```
1 fd01::1 (fd01::1) 14.324 ms 0.26 ms 0.244 ms
```

## Description

Traces a route using IPv6 to a destination on the network.

## Supported Interfaces

- Remote RACADM
- telnet/ssh RACADM



# remoteimage



**NOTE:** To use this command, you must have Administrator permission.

Table A-52 describes the **remoteimage** subcommand.

**Table A-52. remoteimage**

| Subcommand  | Definition                                                         |
|-------------|--------------------------------------------------------------------|
| remoteimage | Connects, disconnects, or deploys a media file on a remote server. |

## Synopsis

```
racadm remoteimage <options>
```

Options are:

-c ; connect image

-d ; disconnect image

-u <username>; username to access the network share

-p <password>; password to access the network share

-l <image\_location>; image location on the network share; use double quotes around the location

-s; display current status; -a is assumed if not specified

## Description

Connects, disconnects, or deploys a media file on a remote server.

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM

# sshpkauth

## Synopsis

racadm sshpkauth

## Upload

The upload mode allows you to upload a keyfile or to copy the key text on the command line. You cannot upload and copy a key at the same time.

## View

The view mode allows the user to view a key specified by the user or all keys.

## Delete

The delete mode allows the user to delete a key specified by the user or all keys.

## Description

Enables you to upload and manage up to 4 different SSH public keys *per user*. You can upload a key file or key text, view keys, or delete keys. This command has three mutually exclusive modes—upload, view, and delete that are determined by the options (see Table A-53) provided to the command.

## Options

**Table A-53. sshpkauth Subcommand Options**

| Option                 | Description                                                                                                                                   |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| -i <user index>        | Index for the user. <user index> must be between 2 to 16 on iDRAC6.                                                                           |
| -k [<key index>   all] | Index to assign the PK key being uploaded. "all" only works with the -v or -d options. <key index> must be between 1 to 4 or "all" on iDRAC6. |
| -t <PK Key Text>       | Key text for the SSH Public key.                                                                                                              |
| -f <filename>          | File containing the key text to upload. The -f option is not supported on telnet/ssh RACADM.                                                  |
| -v                     | View the key text for the index provided.                                                                                                     |
| -d                     | Delete the key for the index provided.                                                                                                        |

## Examples

Upload an invalid key to iDRAC6 User 2 in the first key space using a string:

```
$ racadm sshpkauth -i 2 -k 1 -t "This is invalid key
Text"
```

```
ERROR: Invalid SSH key
```

Upload a valid key to iDRAC6 User 2 in the first key space using a file:

```
$ racadm sshpkauth -i 2 -k 1 -f pkkey.key
```

```
PK SSH Authentication Key file successfully uploaded
to the RAC.
```

Get all keys for User 2 on iDRAC6:

```
$ racadm sshpkauth -v -i 2 -k all
```

```
***** User ID 2 *****
```

```
Key ID 1:
```

```
ssh-rsa
```

```
AAAAB3NzaC1yc2EAAAABIwAAAIEAzzy+k2nnpnKqVEXGXIZo0sbR6J
gA5YNbWs3ekoxXV
```

```
fe3yJVpVc/5zrrr7XrwKbJAJTqSw8Dg3iR4n3vUaP+lPHmUv5Mn55
Ea6LHUs1AXFqXmOd1Thd
```

```
wilU2VLw/iRH1ZymUFnut8ggbPQgqV2L8bsUaMqb5PooIIvV6hy4i
sCNJU= 1024-bit RSA, converted from OpenSSH by
```

```
xx_xx@xx.xx
```

```
Key ID 2:
```

```
SSH Key not available
```

```
Key ID 3:
```

```
SSH Key not available
```

```
Key ID 4:
```

```
SSH Key not available
```

## Supported Interfaces

- Local RACADM
- Remote RACADM
- telnet/ssh RACADM




# B

## iDRAC6 Enterprise Property Database Group and Object Definitions

iDRAC6 property database contains the configuration information for iDRAC6. Data is organized by associated object, and objects are organized by object group. The IDs for the groups and objects that the property database supports are listed in this section.

Use the group and object IDs with the RACADM utility to configure iDRAC6. The following sections describe each object and indicate whether the object is readable, writable, or both.

All string values are limited to displayable ASCII characters, except where otherwise noted.

 **CAUTION: Some groups and objects described in this chapter are not available with Dell™ OpenManage™ version 6.2 release. Support will be added for the Dell OpenManage version 6.3 release.**

### Displayable Characters

Displayable characters include the following set:

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNPOQRSTUVWXYZ

0123456789~`!@#\$\$%^&\* ()\_+ -= { } [ ] | \ : " ; ' < > , . ? /

## **idRacInfo**

This group contains display parameters to provide information about the specifics of iDRAC6 being queried.

One instance of the group is allowed. The following subsections describe the objects in this group.

### **idRacProductInfo (Read Only)**

#### **Legal Values**

String of up to 63 ASCII characters.

#### **Default**

Integrated Dell Remote Access Controller.

#### **Description**

A text string that identifies the product.

### **idRacDescriptionInfo (Read Only)**

#### **Legal Values**

String of up to 255 ASCII characters.

#### **Default**

This system component provides a complete set of remote management functions for Dell PowerEdge servers.

#### **Description**

A text description of the RAC type.

### **idRacVersionInfo (Read Only)**

#### **Legal Values**

String of up to 63 ASCII characters.

**Default**

None

**Description**

A string containing the current product firmware version.

**idRacBuildInfo (Read Only)****Legal Values**

String of up to 16 ASCII characters.

**Default**

The current RAC firmware build version. For example, 05.12.06.

**Description**

A string containing the current product build version.

**idRacName (Read Only)****Legal Values**

String of up to 15 ASCII characters.

**Default**

iDRAC

**Description**

A user assigned name to identify this controller.

**idRacType (Read Only)****Legal Values**

Product ID

**Default**

8

**Description**

Identifies the remote access controller type as iDRAC6.

## **cfgOobSnm**

This group contains parameters to configure the SNMP agent and trap capabilities of iDRAC6.

One instance of the group is allowed. The following subsections describe the objects in this group.

### **cfgOobSnmAgentCommunity (Read/Write)**

**Legal Values**

String. Maximum length = 31

**Default**

public

**Description**

Specifies the SNMP Community Name used for SNMP traps.

### **cfgOobSnmAgentEnable (Read/Write)**

**Legal Values**

1 (TRUE)

0 (FALSE)

**Default**

0

**Description**

Enables or disables the SNMP agent in the RAC.



# cfgLanNetworking

This group contains parameters to configure iDRAC6 NIC.

One instance of the group is allowed. All objects in this group will require iDRAC6 NIC to be reset, which may cause a brief loss in connectivity. Objects that change iDRAC6 NIC IP address settings will close all active user sessions and require users to reconnect using the updated IP address settings.



**NOTE:** For any network property changes on iDRAC6 to be successfully executed through RACADM, you must first enable iDRAC6 NIC.



**NOTE:** VLAN objects (cfgNicVlanEnable, cfgNicVlanId, and cfgNicVlanPriority) displayed using the local RACADM command "racadm getconfig -g cfgLanNetworking" or in the configuration file generated from the local RACADM command "racadm getconfig -f <file name>" are missing the leading "#" which is used to indicate the read-only nature of these objects.

## cfgNicIPv4Enable (Read/Write)

### Legal Values

1 (TRUE)

0 (FALSE)

### Default

1

### Description

Enables or disables iDRAC6 IPv4 stack.

## cfgDNSDomainNameFromDHCP (Read/Write)

### Legal Values

1 (TRUE)

0 (FALSE)

### Default

0

## Description

Specifies that iDRAC6 DNS domain name should be assigned from the network DHCP server.

## cfgDNSDomainName (Read/Write)

### Legal Values

String of up to 254 ASCII characters. At least one of the characters must be alphabetic. Characters are restricted to alphanumeric, hyphens, and periods.



**NOTE:** Microsoft® Active Directory® only supports Fully Qualified Domain Names (FQDN) of 64 characters or fewer length.

### Default

(blank)

## Description

The DNS domain name. This parameter is only valid if `cfgDNSDomainNameFromDHCP` is set to 0 (FALSE).

## cfgDNSRacName (Read/Write)

### Legal Values

String of up to 63 ASCII characters. At least one character must be alphabetic.



**NOTE:** Some DNS servers only register names of 31 characters or fewer.

### Default

*idrac-service tag*

## Description

Displays the RAC name, which is *idrac-service tag* by default. This parameter is only valid if `cfgDNSRegisterRac` is set to 1 (TRUE).

## **cfgDNSRegisterRac (Read/Write)**

### **Legal Values**

1 (TRUE)

0 (FALSE)

### **Default**

0

### **Description**

Registers iDRAC6 name on the DNS server.

## **cfgDNSServersFromDHCP (Read/Write)**

### **Legal Values**

1 (TRUE)

0 (FALSE)

### **Default**

0

### **Description**

Specifies that the DNS server IP addresses should be assigned from the DHCP server on the network.

## **cfgDNSServer1 (Read/Write)**

### **Legal Values**

A string representing a valid IP address. For example: 192.168.0.20.

### **Default**

0.0.0.0

### Description

Specifies the IP address for DNS server 1. This property is only valid if `cfgDNSServersFromDHCP` is set to 0 (FALSE).



**NOTE:** `cfgDNSServer1` and `cfgDNSServer2` may be set to identical values while swapping addresses.

### cfgDNSServer2 (Read/Write)

#### Legal Values

A string representing a valid IP address. For example: 192.168.0.20.

#### Default

0.0.0.0

### Description

Retrieves the IP address for DNS server 2. This parameter is only valid if `cfgDNSServersFromDHCP` is set to 0 (FALSE).



**NOTE:** `cfgDNSServer1` and `cfgDNSServer2` may be set to identical values while swapping addresses.

### cfgNicEnable (Read/Write)

#### Legal Values

1 (TRUE)

0 (FALSE)

#### Default

0

### Description

Enables or disables iDRAC6 network interface controller. If the NIC is disabled, the remote network interfaces to iDRAC6 will no longer be accessible, and iDRAC6 will only be available through the local RACADM interface.

## **cfgNicIpAddress (Read/Write)**



**NOTE:** This parameter is only configurable if the `cfgNicUseDhcp` parameter is set to 0 (FALSE).

### **Legal Values**

A string representing a valid IP address. For example: 192.168.0.20.

### **Default**

192.168.0.*n*

where *n* is 120 plus the server slot number.

### **Description**

Specifies the static IP address to assign to the RAC. This property is only valid if `cfgNicUseDhcp` is set to 0 (FALSE).

## **cfgNicNetmask (Read/Write)**



**NOTE:** This parameter is only configurable if the `cfgNicUseDhcp` parameter is set to 0 (FALSE).

### **Legal Values**

A string representing a valid subnet mask. For example: 255.255.255.0.

### **Default**

255.255.255.0

### **Description**

The subnet mask used for static assignment of iDRAC6 IP address. This property is only valid if `cfgNicUseDhcp` is set to 0 (FALSE).

## **cfgNicGateway (Read/Write)**



**NOTE:** This parameter is only configurable if the `cfgNicUseDhcp` parameter is set to 0 (FALSE).

### **Legal Values**

A string representing a valid gateway IP address. For example: 192.168.0.1.

**Default**

192.168.0.1

**Description**

The gateway IP address used for static assignment of the RAC IP address. This property is only valid if `cfgNicUseDhcp` is set to 0 (FALSE).

**cfgNicUseDhcp (Read/Write)****Legal Values**

1 (TRUE)

0 (FALSE)

**Default**

0

**Description**

Specifies whether DHCP is used to assign iDRAC6 IP address. If this property is set to 1 (TRUE), then iDRAC6 IP address, subnet mask, and gateway are assigned from the DHCP server on the network. If this property is set to 0 (FALSE), the static IP address, subnet mask, and gateway is assigned from the `cfgNicIpAddress`, `cfgNicNetmask`, and `cfgNicGateway` properties.

**cfgNicMacAddress (Read Only)****Legal Values**

A string representing the RAC NIC MAC address.

**Default**

The current MAC address of iDRAC6 NIC. For example, 00:12:67:52:51:A3.

**Description**

iDRAC6 NIC MAC address.

### **cfgNicVlanEnable (Read Only)**



**NOTE:** VLAN settings can be configured through CMC Web Interface. iDRAC6 displays only the current VLAN settings and you cannot modify the settings from iDRAC6.

#### **Legal Values**

1 (TRUE)

0 (FALSE)

#### **Default**

0

#### **Description**

Enables or disables the VLAN capabilities of iDRAC6 from CMC.

### **cfgNicVlanID (Read Only)**

#### **Legal Values**

1-4094

#### **Default**

1

#### **Description**

Specifies the VLAN ID for the network VLAN configuration in CMC. This property is only valid if **cfgNicVlanEnable** is set to 1 (enabled).

### **cfgNicVlanPriority (Read Only)**

#### **Legal Values**

0 – 7

#### **Default**

0

**Description**

Specifies the VLAN Priority for the network VLAN configuration in CMC. This property is only valid if `cfgNicVLANEnable` is set to 1 (enabled).

## **cfgIPv6URL**

This group specifies properties used to configure iDRAC6 IPv6 URL.

**cfgIPv6URLstring (Read Only)****Legal Values**

A string of up to 80 characters.

**Default**

<blank>

**Description**

iDRAC6 IPv6 URL.

## **cfgIPv6LanNetworking**

This group is used to configure the IPv6 over LAN networking capabilities.

**cfgIPv6Enable****Legal Values**

1 (TRUE)

0 (FALSE)

**Default**

0

**Description**

Enables or disables iDRAC6 IPv6 stack.



## **cfgIPv6Address1 (Read/Write)**

### **Legal Values**

A string representing a valid IPv6 entry.

### **Default**

::

### **Description**

An iDRAC6 IPv6 address.

## **cfgIPv6Gateway (Read/Write)**

### **Legal Values**

A string representing a valid IPv6 entry.

### **Default**

::

### **Description**

iDRAC6 gateway IPv6 address.

## **cfgIPv6PrefixLength (Read/Write)**

### **Legal Values**

1-128

### **Default**

0

### **Description**

The prefix length for iDRAC6 IPv6 address 1.

## **cfgIPv6AutoConfig (Read/Write)**

### **Legal Values**

1 (TRUE)

0 (FALSE)

### **Default**

0

### **Description**

Enables or disables the IPv6 AutoConfig option.

## **cfgIPv6LinkLocalAddress (Read Only)**

### **Legal Values**

A string representing a valid IPv6 entry.

### **Default**

::

### **Description**

iDRAC6 IPv6 link local address.

## **cfgIPv6Address2 (Read Only)**

### **Legal Values**

A string representing a valid IPv6 entry.

### **Default**

::

### **Description**

An iDRAC6 IPv6 address.

## **cfgIPv6DNSServersFromDHCP6 (Read/Write)**

### **Legal Values**

1 (TRUE)

0 (FALSE)

### **Default**

0

### **Description**

Specifies whether cfgIPv6DNSServer1 and cfgIPv6DNSServer2 are static or DHCP IPv6 addresses.

## **cfgIPv6DNSServer1 (Read/Write)**

### **Legal Values**

A string representing a valid IPv6 entry.

### **Default**

::

### **Description**

An IPv6 DNS server address.

## **cfgIPv6DNSServer2 (Read/Write)**

### **Legal Values**

A string representing a valid IPv6 entry.

### **Default**

::

### **Description**

An IPv6 DNS server address.

### **cfgIPv6Address3 (Read Only)**

#### **Legal Values**

String representing a valid IPv6 entry.

#### **Default**

<blank>

### **cfgIPv6Address4 (Read Only)**

#### **Legal Values**

String representing a valid IPv6 entry.

#### **Default**

<blank>

### **cfgIPv6Address5 (Read Only)**

#### **Legal Values**

String representing a valid IPv6 entry.

#### **Default**

<blank>

### **cfgIPv6Address6 (Read Only)**

#### **Legal Values**

String representing a valid IPv6 entry.

#### **Default**

<blank>

### **cfgIPv6Address7 (Read Only)**

#### **Legal Values**

String representing a valid IPv6 entry.

**Default**

<blank>

**cfgIPv6Address8 (Read Only)****Legal Values**

String representing a valid IPv6 entry.

**Default**

<blank>

**cfgIPv6Address9 (Read Only)****Legal Values**

String representing a valid IPv6 entry.

**Default**

<blank>

**cfgIPv6Address10 (Read Only)****Legal Values**

String representing a valid IPv6 entry.

**Default**

<blank>

**cfgIPv6Address11 (Read Only)****Legal Values**

String representing a valid IPv6 entry.

**Default**

<blank>

## **cfgIPv6Address12 (Read Only)**

### **Legal Values**

String representing a valid IPv6 entry.

### **Default**

<blank>

## **cfgIPv6Address13 (Read Only)**

### **Legal Values**

String representing a valid IPv6 entry.

### **Default**

<blank>

## **cfgIPv6Address14 (Read Only)**

### **Legal Values**

String representing a valid IPv6 entry.

### **Default**

<blank>

## **cfgIPv6Address15 (Read Only)**

### **Legal Values**

String representing a valid IPv6 entry.

### **Default**

<blank>

## **cfgUserAdmin**

This group provides configuration information about the users who are allowed to access the RAC through the available remote interfaces.

Up to 16 instances of the user group are allowed. Each instance represents the configuration for an individual user.

### **cfgUserAdminIndex (Read Only)**

#### **Legal Values**

This parameter is populated based on the existing instances.

#### **Default**

1 – 16

#### **Description**

The unique index of a user.

### **cfgUserAdminIpmiLanPrivilege (Read/Write)**

#### **Legal Values**

2 (User)

3 (Operator)

4 (Administrator)

15 (No access)

#### **Default**

4 (User 2)

15 (All others)

#### **Description**

The maximum privilege on the IPMI LAN channel.

### **cfgUserAdminPrivilege (Read/Write)**

#### **Legal Values**

0x00000000 to 0x000001ff, and 0x0

## Default

0x00000000

## Description

This property specifies the role-based authority privileges allowed for the user. The value is represented as a bit mask that allows for any combination of privilege values. Table B-1 describes the user privilege bit values that can be combined to create bit masks.

**Table B-1. Bit Masks for User Privileges**

| User Privilege                  | Privilege Bit Mask |
|---------------------------------|--------------------|
| Login to iDRAC6                 | 0x00000001         |
| Configure iDRAC6                | 0x00000002         |
| Configure Users                 | 0x00000004         |
| Clear Logs                      | 0x00000008         |
| Execute Server Control Commands | 0x00000010         |
| Access Console Redirection      | 0x00000020         |
| Access Virtual Media            | 0x00000040         |
| Test Alerts                     | 0x00000080         |
| Execute Debug Commands          | 0x00000100         |

## Examples

Table B-2 provides sample privilege bit masks for users with one or more privileges.

**Table B-2. Sample Bit Masks for User Privileges**

| User Privilege(s)                                                                       | Privilege Bit Mask |
|-----------------------------------------------------------------------------------------|--------------------|
| The user is not allowed to access iDRAC6.                                               | 0x00000000         |
| The user may only login to iDRAC6 and view iDRAC6 and server configuration information. | 0x00000001         |



**Table B-2. Sample Bit Masks for User Privileges (continued)**

| <b>User Privilege(s)</b>                                                         | <b>Privilege Bit Mask</b>                         |
|----------------------------------------------------------------------------------|---------------------------------------------------|
| The user may login to iDRAC6 and change configuration.                           | 0x00000001 + 0x00000002 = 0x00000003              |
| The user may login to RAC, access virtual media, and access console redirection. | 0x00000001 + 0x00000040 + 0x00000080 = 0x000000C1 |

### **cfgUserAdminUserName (Read/Write)**

#### **Legal Values**

String. Maximum length = 16

#### **Default**

(blank)

#### **Description**

The name of the user for this index. The user index is created by writing a string into this name field if the index is empty. Writing a string of double quotes ("" ) deletes the user at that index. You cannot change the name. You must delete and then recreate the name. The string must not contain / (forward slash), \ (backslash), . (period), @ (at symbol) or quotation marks.



**NOTE:** This property value must be unique among user names.

### **cfgUserAdminPassword (Write Only)**

#### **Legal Values**

A string of up to 20 ASCII characters.

#### **Default**

(blank)

#### **Description**

The password for this user. User passwords are encrypted and cannot be seen or displayed after the property is written.

## **cfgUserAdminEnable (Read/Write)**

### **Legal Values**

1 (TRUE)

0 (FALSE)

### **Default**

0

### **Description**

Enables or disables an individual user.

## **cfgUserAdminSolEnable (Read/Write)**

### **Legal Values**

1 (TRUE)

0 (FALSE)

### **Default**

0

### **Description**

Enables or disables Serial Over LAN (SOL) user access.

## **cfgEmailAlert**

This group contains parameters to configure the RAC e-mail alerting capabilities.

The following subsections describe the objects in this group. Up to four instances of this group are allowed.

## **cfgEmailAlertIndex (Read Only)**

### **Legal Values**

1-4

**Default**

This parameter is populated based on the existing instances.

**Description**

The unique index of an alert instance.

**cfgEmailAlertEnable (Read/Write)****Legal Values**

1 (TRUE)

0 (FALSE)

**Default**

0

**Description**

Specifies the destination e-mail address for e-mail alerts. For example, user1@company.com.

**cfgEmailAlertAddress (Read/Write)****Legal Values**

E-mail address format, with a maximum length of 64 ASCII characters.

**Default**

(blank)

**Description**

The e-mail address of the alert source.

**cfgEmailAlertCustomMsg (Read/Write)****Legal Values**

A string of up to 32 characters.

**Default**

(blank)

**Description**

Specifies a custom message that is sent with the alert.

## **cfgSessionManagement**

This group contains parameters to configure the number of sessions that can connect to iDRAC6.

One instance of the group is allowed. The following subsections describe the objects in this group.

### **cfgSsnMgtConsRedirMaxSessions (Read/Write)**

**Legal Values**

1 – 2

**Default**

2

**Description**

Specifies the maximum number of console redirection sessions allowed on iDRAC6.

### **cfgSsnMgtWebserverTimeout (Read/Write)**

**Legal Values**

60 – 10800

**Default**

1800

**Description**

Defines the Web server time-out. This property sets the amount of time in seconds that a connection is allowed to remain idle (there is no user input). The session is cancelled if the time limit set by this property is reached. Changes to this setting do not affect the current session; you must log out and log in again to make the new settings effective.

An expired Web server session logs out the current session.

**cfgSsnMgtSshIdleTimeout (Read/Write)****Legal Values**

0 (No time-out)

60 – 10800

**Default**

1800

**Description**

Defines the secure shell idle time-out. This property sets the amount of time in seconds that a connection is allowed to remain idle (there is no user input). The session is cancelled if the time limit set by this property is reached. Changes to this setting do not affect the current session; you must log out and log in again to make the new settings effective.

An expired secure shell session displays the following error message only after you press <Enter>:

```
Warning: Session no longer valid, may have timed out
```

After the message appears, the system returns you to the shell that generated the Secure Shell session.

**cfgSsnMgtTelnetTimeout (Read/Write)****Legal Values**

0 (No timeout)

60 – 10800

**Default**

1800

**Description**

Defines the Telnet idle time-out. This property sets the amount of time in seconds that a connection is allowed to remain idle (there is no user input). The session is cancelled if the time limit set by this property is reached. Changes to this setting do not affect the current session (you must log out and log in again to make the new settings effective).

An expired Telnet session displays the following error message only after you press <Enter>:

```
Warning: Session no longer valid, may have timed out
```

After the message appears, the system returns you to the shell that generated the Telnet session.

## cfgSerial

This group contains configuration parameters for iDRAC6 services.

One instance of the group is allowed. The following subsections describe the objects in this group.

**cfgSerialSshEnable (Read/Write)****Legal Values**

1 (TRUE)

0 (FALSE)

**Default**

1

**Description**

Enables or disables the secure shell (SSH) interface on iDRAC6.

## **cfgSerialTelnetEnable (Read/Write)**

### **Legal Values**

1 (TRUE)

0 (FALSE)

### **Default**

0

### **Description**

Enables or disables the Telnet console interface on iDRAC6.

## **cfgRemoteHosts**

This group provides properties that allow configuration of the SMTP server for e-mail alerts.

## **cfgRhostsSmtplibAddr (Read/Write)**

### **Legal Values**

A string representing a valid SMTP server IP address. For example:  
192.168.0.56.

### **Default**

0.0.0.0

### **Description**

The IP address of the network SMTP server. The SMTP server transmits e-mail alerts from the RAC if the alerts are configured and enabled.

## **cfgRhostsFwUpdateTftpEnable (Read/Write)**

### **Legal Values**

1 (TRUE)

0 (FALSE)

**Default**

1

**Description**

Enables or disables iDRAC6 firmware update from a network TFTP server.

**cfgRhostsFwUpdateIpAddr (Read/Write)****Legal Values**

A string representing a valid IP address.

**Default**

0.0.0.0

**Description**

Specifies the network TFTP server IP address that is used for TFTP iDRAC6 firmware update operations.

**cfgRhostsFwUpdatePath (Read/Write)****Legal Values**

A string with a maximum length of 255 ASCII characters.

**Default**

<blank>

**Description**

Specifies TFTP path where iDRAC6 firmware image file exists on the TFTP server. The TFTP path is relative to the TFTP root path on the TFTP server.



The server may still require you to specify the drive (for example, C:).

**cfgRhostsSyslogEnable (Read/Write)****Legal Values**

1 (TRUE)



0 (FALSE)

**Default**

0

**Description**

Enables or disables remote syslog.

**cfgRhostsSyslogPort (Read/Write)**

**Legal Values**

0 — 65535

**Default**

514

**Description**

Remote syslog port number.

**cfgRhostsSyslogServer1 (Read/Write)**

**Legal Values**

String from 0 to 511 characters.

**Default**

<blank>

**Description**

Name of remote syslog server.

**cfgRhostsSyslogServer2 (Read/Write)**

**Legal Values**

String from 0 to 511 characters.

**Default**

<blank>

**Description**

Name of remote syslog server.

**cfgRhostsSyslogServer3 (Read/Write)****Legal Values**

String from 0 to 511 characters.

**Default**

<blank>

**Description**

Name of remote syslog server.

## cfgUserDomain

This group is used to configure the Active Directory user domain names. A maximum of 40 domain names can be configured at any given time.

**cfgUserDomainIndex (Read Only)****Legal Values**

1 – 40

**Default**

<instance>

**Description**

Represents a specific domain.

## **cfgUserDomainName (Read/Write)**

### **Legal Values**

A string of up to 255 characters.

### **Default**

(blank)

### **Description**

Specifies the Active Directory user domain name.

## **cfgServerPower**

This group provides several power management features.

## **cfgServerPowerStatus (Read Only)**

### **Legal Values**

1 = TRUE

0 = FALSE

### **Default**

0

### **Description**

Represents the server power state, either ON or OFF.

## **cfgServerActualPowerConsumption (Read Only)**

### **Legal Values**

String of up to 32 characters.

### **Default**

(blank)

**Description**

Represents the power consumed by the server at the current time.

**cfgServerPeakPowerConsumption (Read Only)****Legal Values**

String of up to 32 characters.

**Default**

(blank)

**Description**

Represents the maximum power consumed by the server until the current time.

**cfgServerPeakPowerConsumptionTimestamp (Read Only)****Legal Values**

String of up to 32 characters.

**Default**

(blank)

**Description**

Time when the maximum power consumption was recorded.

**cfgServerPowerConsumptionClear (Write Only)****Legal Values**

0, 1

**Default**

0

**Description**

Resets the `cfgServerPeakPowerConsumption` property to 0 and the `cfgServerPeakPowerConsumptionTimestamp` property to the current iDRAC6 time.

**cfgServerPowerCapWatts (Read Only)****Legal Values**

String of up to 32 characters.

**Default**

(blank)

**Description**

Represents the server power threshold in Watts.

**cfgServerPowerCapBtuhr (Read Only)****Legal Values**

String of up to 32 characters.

**Default**

(blank)

**Description**

Represents the server power threshold in BTU/hr.

**cfgServerPowerCapPercent (Read Only)****Legal Values**

String of up to 32 characters.

**Default**

(blank)

**Description**

Represents the server power threshold in percentage.

## **cfgRacTuning**

This group is used to configure various iDRAC6 configuration properties, such as valid ports and security port restrictions.

### **cfgRacTuneHttpPort (Read/Write)**

**Legal Values**

10 – 65535

**Default**

80

**Description**

Specifies the port number to use for HTTP network communication with the RAC.

### **cfgRacTuneHttpsPort (Read/Write)**

**Legal Values**

10 – 65535

**Default**

443

**Description**

Specifies the port number to use for HTTPS network communication with iDRAC6.

### **cfgRacTuneIppRangeEnable**

**Legal Values**

1 (TRUE)

0 (FALSE)

**Default**

0

**Description**

Enables or disables the IP Address Range validation feature of iDRAC6.

**cfgRacTuneIpRangeAddr**

**Legal Values**

An IP address-formatted string. For example, 192.168.0.44.

**Default**

192.168.1.1

**Description**

Specifies the acceptable IP address bit pattern in positions determined by the 1's in the range mask property (**cfgRacTuneIpRangeMask**).

**cfgRacTuneIpRangeMask**

**Legal Values**

Standard IP mask values with left-justified bits.

**Default**

255.255.255.0

**Description**

An IP address-formatted string. For example, 255.255.255.0.

**cfgRacTuneIpBlkEnable**

**Legal Values**

1 (TRUE)

0 (FALSE)

**Default**

0

**Description**

Enables or disables the IP address blocking feature of the RAC.

**cfgRacTuneIpBlkFailCount**

**Legal Values**

2 – 16

**Default**

5

**Description**

The maximum number of login failures to occur within the window (cfgRacTuneIpBlkFailWindow) before login attempts from the IP address are rejected.

**cfgRacTuneIpBlkFailWindow**

**Legal Values**

10 – 65535

**Default**

60

**Description**

Defines the time span in seconds that the failed attempts are counted. When failure attempts age beyond this limit, they are dropped from the count.



## **cfgRacTuneIpBlkPenaltyTime**

### **Legal Values**

10 – 65535

### **Default**

300

### **Description**

Defines the time span in seconds that session requests from an IP address with excessive failures are rejected.

## **cfgRacTuneSshPort (Read/Write)**

### **Legal Values**

1 – 65535

### **Default**

22

### **Description**

Specifies the port number used for iDRAC6 SSH interface.

## **cfgRacTuneConRedirEnable (Read/Write)**

### **Legal Values**

1 (TRUE)

0 (FALSE)

### **Default**

1

### **Description**

Enables or disables console redirection.

## **cfgRacTuneTelnetPort (Read/Write)**

### **Legal Values**

1 – 65535

### **Default**

23

### **Description**

Specifies the port number used for iDRAC6 Telnet interface.

## **cfgRacTuneConRedirEncryptEnable (Read/Write)**

### **Legal Values**

1 (TRUE)

0 (FALSE)

### **Default**

1

### **Description**

Encrypts the video in a console redirection session.

## **cfgRacTuneConRedirPort (Read/Write)**

### **Legal Values**

1 – 65535

### **Default**

5900

**Description**

Specifies the port to be used for keyboard and mouse traffic during console redirection activity with iDRAC6.

**cfgRacTuneConRedirVideoPort (Read/Write)****Legal Values**

1 – 65535

**Default**

5901

**Description**

Specifies the port to be used for video traffic during console redirection activity with iDRAC6.



**NOTE:** This object requires an iDRAC6 reset before it becomes active.

**cfgRacTuneAsrEnable (Read/Write)****Legal Values**

0 (FALSE)

1 (TRUE)

**Default**

1

**Description**

Enables or disables iDRAC6 last-crash-screen capture feature.



**NOTE:** This object requires an iDRAC6 reset before it becomes active.

**cfgRacTuneWebserverEnable (Read/Write)****Legal Values**

0 (FALSE)

1 (TRUE)

**Default**

1

**Description**

Enables and disables iDRAC6 Web server. If this property is disabled, iDRAC6 will not be accessible using client Web browsers. This property has no effect on the Telnet/SSH or local RACADM interfaces.

**cfgRacTuneLocalServerVideo (Read/Write)****Legal Values**

1 (Enables)

0 (Disables)

**Default**

1

**Description**

Enables (switches ON) or disables (switches OFF) the local server video.

**cfgRacTuneDaylightOffset (Read/Write)****Legal Values**

0 – 60

**Default**

0

**Description**

Specifies the daylight savings offset (in minutes) to use for the RAC Time.

**cfgRacTuneTimezoneOffset (Read/Write)****Legal Values**

-720 – 780

**Default**

0

**Description**

Specifies the timezone offset (in minutes) from GMT/UTC to use for the RAC Time. Some common timezone offsets for timezones in the United States are shown below:

-480 (PST — Pacific Standard Time)

-420 (MST — Mountain Standard Time)

-360 (CST — Central Standard Time)

-300 (EST — Eastern Standard Time).

**cfgRacTuneLocalConfigDisable (Read/Write)****Legal Values**

0 (Enables)

1 (Disables)

**Default**

0

**Description**

Disables write access to iDRAC6 configuration data. The default is for access to be enabled.



**NOTE:** Access can be disabled using the local RACADM or iDRAC6 Web interface; however, once disabled, access can be re-enabled only through iDRAC6 Web interface.

**ifcRacManagedNodeOs**

This group contains properties that describe the managed server operating system.

One instance of the group is allowed. The following subsections describe the objects in this group.

## **ifcRacMnOsHostname (Read Only)**

### **Legal Values**

A string of up to 255 characters.

### **Default**

(blank)

### **Description**

The host name of the managed server.

## **ifcRacMnOsOsName (Read Only)**

### **Legal Values**

A string of up to 255 characters.

### **Default**

(blank)

### **Description**

The operating system name of the managed server.

## **cfgRacSecurity**

This group is used to configure settings related to iDRAC6 SSL certificate signing request (CSR) feature. The properties in this group must be configured before generating a CSR from iDRAC6.

See the RACADM `sslcsrngen` subcommand details for more information on generating certificate signing requests.

## **cfgSecCsrCommonName (Read/Write)**

### **Legal Values**

A string of up to 254 characters.

**Default****Description**

Specifies the CSR Common Name (CN).

**cfgSecCsrOrganizationName (Read/Write)****Legal Values**

A string of up to 254 characters.

**Default**

(blank)

**Description**

Specifies the CSR Organization Name (O).

**cfgSecCsrOrganizationUnit (Read/Write)****Legal Values**

A string of up to 254 characters.

**Default**

(blank)

**Description**

Specifies the CSR Organization Unit (OU).

**cfgSecCsrLocalityName (Read/Write)****Legal Values**

A string of up to 254 characters.

**Default**

(blank)

**Description**

Specifies the CSR Locality (L).

**cfgSecCsrStateName (Read/Write)****Legal Values**

A string of up to 254 characters.

**Default**

(blank)

**Description**

Specifies the CSR State Name (S).

**cfgSecCsrCountryCode (Read/Write)****Legal Values**

A two-character string.

**Default**

(blank)

**Description**

Specifies the CSR Country Code (CC).

**cfgSecCsrEmailAddr (Read/Write)****Legal Values**

A string of up to 254 characters.

**Default**

(blank)

**Description**

Specifies the CSR Email Address.



## **cfgSecCsrKeySize (Read/Write)**

### **Legal Values**

512

1024

2048

### **Default**

1024

### **Description**

Specifies the SSL asymmetric key size for the CSR.

## **cfgRacVirtual**

This group contains parameters to configure iDRAC6 virtual media feature. One instance of the group is allowed. The following subsections describe the objects in this group.

## **cfgRacVirMediaAttached (Read/Write)**

### **Legal Values**

0 = Detach

1 = Attach

2 = Auto Attach

### **Default**

0

### **Description**

This object is used to attach virtual devices to the system via the USB bus. When the devices are attached the server will recognize valid USB mass storage devices attached to the system. This is equivalent to attaching a local USB CDROM/floppy drive to a USB port on the system. When the devices

are attached you then can connect to the virtual devices remotely using iDRAC6 Web interface or the CLI. Setting this object to 0 will cause the devices to detach from the USB bus.

### **cfgVirMediaBootOnce (Read/Write)**

#### **Legal Values**

- 1 (Enabled)
- 0 (Disabled)

#### **Default**

0

#### **Description**

Enables or disables the virtual media boot-once feature of iDRAC6. If this property is enabled when the host server is rebooted, this feature will attempt to boot from the virtual media devices—if the appropriate media is installed in the device.

### **cfgVirMediaKeyEnable (Read/Write)**

#### **Legal Values**

- 1 (TRUE)
- 0 (FALSE)

#### **Default**

0

#### **Description**

Enables or disables the VFlash media key of iDRAC6.

### **cfgVirtualFloppyEmulation (Read/Write)**

#### **Legal Values**

- 1 (TRUE)

0 (FALSE)

**Default**

0

**Description**

When set to 0, the virtual floppy drive is recognized as a removable disk by Windows operating systems. Windows operating systems will assign a drive letter that is C: or higher during enumeration. When set to 1, the Virtual Floppy drive will be seen as a floppy drive by Windows operating systems. Windows operating systems will assign a drive letter of A: or B:.

**cfgSDWriteProtect (Read only)**

**Legal Values**

1 (TRUE)

0 (FALSE)

**Default**

0

## cfgIpmiLan

This group is used to configure the IPMI over LAN capabilities of the system.

**cfgIpmiLanEnable (Read/Write)**

**Legal Values**

1 (TRUE)

0 (FALSE)

**Default**

0

**Description**

Enables or disables the IPMI over LAN interface.

## **cfgIpmiLanPrivLimit (Read/Write)**

### **Legal Values**

- 2 (User)
- 3 (Operator)
- 4 (Administrator)

### **Default**

4

### **Description**

Specifies the maximum privilege level allowed for IPMI over LAN access.

## **cfgIpmiLanAlertEnable (Read/Write)**

### **Legal Values**

- 1 (TRUE)
- 0 (FALSE)

### **Default**

0

### **Description**

Enables or disables global e-mail alerting. This property overrides all individual e-mail alerting enable/disable properties.

## **cfgIpmiEncryptionKey (Read/Write)**

### **Legal Values**

A string of even number of hexadecimal digits from 0 to 40 characters with no spaces.

### **Default**

0000000000000000000000000000000000000000000000000000000000000000

**Description**

The IPMI encryption key.

**cfgIpmiPetCommunityName (Read/Write)****Legal Values**

A string of up to 18 characters

**Default**

public

**Description**

The SNMP community name for traps.

**cfgIpmiPetIpv6**

This group is used to configure IPv6 platform event traps on the managed server.

**cfgIpmiPetIPv6Index (Read Only)****Legal Values**

1 – 4

**Default**

<index value>

**Description**

Unique identifier for the index corresponding to the trap.

**cfgIpmiPetIPv6AlertDestIpAddr****Legal Values**

String representing a valid IPv6 address.

**Default**

<blank>

**Description**

Configures the IPv6 alert destination IP address for the trap.

**cfgIpmiPetIPv6AlertEnable (Read/Write)****Legal Values**

1 (TRUE)

0 (FALSE)

**Default**

0

**Description**

Enables or disables the IPv6 alert destination for the trap.

## **cfgIpmiPef**

This group is used to configure the platform event filters available on the managed server.

The event filters can be used to control policies related to actions that are triggered when critical events occur on the managed server.

**cfgIpmiPefName (Read Only)****Legal Values**

A string of up to 255 characters.

**Default**

The name of the index filter.

**Description**

Specifies the name of the platform event filter.

## **cfgIpmiPefIndex (Read/Write)**

### **Legal Values**

1 – 9

### **Default**

The index value of a platform event filter object.

### **Description**

Specifies the index of a specific platform event filter.

## **cfgIpmiPefAction (Read/Write)**

### **Legal Values**

0 (None)

1 (Power Down)

2 (Reset)

3 (Power Cycle)

### **Default**

0

### **Description**

Specifies the action that is performed on the managed server when the alert is triggered.

## **cfgIpmiPefEnable (Read/Write)**

### **Legal Values**

1 (TRUE)

0 (FALSE)

### **Default**

1

**Description**

Enables or disables a specific platform event filter.

## **cfgIpmiPet**

This group is used to configure platform event traps on the managed server.

**cfgIpmiPetIndex (Read Only)****Legal Values**

1 – 4

**Default**

The index value of a specific platform event trap.

**Description**

Unique identifier for the index corresponding to the trap.

**cfgIpmiPetAlertDestIpAddr (Read/Write)****Legal Values**

A string representing a valid IPv4 address. For example, 192.168.0.67.

**Default**

0.0.0.0

**Description**

Specifies the destination IPv4 address for the trap receiver on the network. The trap receiver receives an SNMP trap when an event is triggered on the managed server.

**cfgIpmiPetAlertEnable (Read/Write)****Legal Values**

1 (TRUE)

0 (FALSE)



**Default**

0

**Description**

Enables or disables a specific trap.

## cfgSmartCard

This group specifies properties used to support access to iDRAC6 using a smart card.

**cfgSmartCardLogonEnable (Read/Write)****Legal Values**

0 (Disabled)

1 (Enabled)

**Default**

0

**Description**

Enables or disables support for access to iDRAC6 using a smart card.

## cfgActiveDirectory

This group contains parameters to configure iDRAC6 Active Directory feature.

**cfgADSSOEnable (Read/Write)****Legal Values**

1 (TRUE)

0 (FALSE)

**Default**

0

**Description**

Enables or disables Active Directory single sign-on authentication on iDRAC6.

**cfgADRRacDomain (Read/Write)****Legal Values**

Any printable text string with no white space. Length is limited to 254 characters.

**Default**

(blank)

**Description**

Active Directory Domain in which the DRAC resides.

**cfgADRRacName (Read/Write)****Legal Values**

Any printable text string with no white space. Length is limited to 254 characters.

**Default**

(blank)

**Description**

Name of iDRAC6 as recorded in the Active Directory forest.

**cfgADREnable (Read/Write)****Legal Values**

1 (TRUE)

0 (FALSE)

**Default**

0

**Description**

Enables or disables Active Directory user authentication on iDRAC6. If this property is disabled, local iDRAC6 authentication is used for user logins instead.

**cfgADAuthTimeout (Read/Write)**

**NOTE:** To modify this property, you must have **Configure iDRAC** permission.

**Legal Values**

15 – 300

**Default**

120

**Description**

Specifies the number of seconds to wait for Active Directory authentication requests to complete before timing out.

**cfgADDomainController1 (Read/Write)****Legal Values**

Valid IP address or a fully qualified domain name (FQDN). The maximum number of characters is 254.

**Default**

No default value

**Description**

iDRAC6 uses the value you specify to search the LDAP server for user names.

## **cfgADDomainController2 (Read/Write)**

### **Legal Values**

Valid IP address or a fully qualified domain name (FQDN). The maximum number of characters is 254.

### **Default**

No default value.

### **Description**

iDRAC6 uses the value you specify to search the LDAP server for user names.

## **cfgADDomainController3 (Read/Write)**

### **Legal Values**

Valid IP address or a fully qualified domain name (FQDN). The maximum number of characters is 254.

### **Default**

No default value.

### **Description**

iDRAC6 uses the value you specify to search the LDAP server for user names.

## **cfgADGlobalCatalog1 (Read/Write)**

### **Legal Values**

Valid IP address or a fully qualified domain name (FQDN). The maximum number of characters is 254.

### **Default**

No default value.

### **Description**

iDRAC6 uses the value you specify to search the Global Catalog server for user names.

## **cfgADGlobalCatalog2 (Read/Write)**

### **Legal Values**

Valid IP address or a fully qualified domain name (FQDN). The maximum number of characters is 254.

### **Default**

No default value.

### **Description**

iDRAC6 uses the value you specify to search the Global Catalog server for user names.

## **cfgADGlobalCatalog3 (Read/Write)**

### **Legal Values**

Valid IP address or a fully qualified domain name (FQDN). The maximum number of characters is 254.

### **Default**

No default value.

### **Description**

iDRAC6 uses the value you specify to search the Global Catalog server for user names.

## **cfgADType (Read/Write)**

### **Legal Values**

- 1 = Enables Active Directory with the extended schema.
- 2 = Enables Active Directory with the standard schema.

### **Default**

1

**Description**

Determines the schema type to use with Active Directory.

**cfgADCertValidationEnable (Read/Write)****Legal Values**

1 (TRUE)

0 (FALSE)

**Default**

<blank>

**Description**

Enables or disables Active Directory certificate validation.

**cfgADDcSRVLookupEnable (Read/Write)****Legal Values**

1 (TRUE)—use DNS to look up domain controllers

0 (FALSE)—use pre-configured domain controllers

**Default**

0

**Definition**

Configures iDRAC6 to use pre-configured domain controllers or to use DNS to find the domain controller. If using pre-configured domain controllers, then the domain controllers to use are specified under `cfgAdDomainController1`, `cfgAdDomainController2`, and `cfgAdDomainController3`. iDRAC6 does not fail over to the specified domain controllers when DNS lookup fails or none of the servers returned by the DNS lookup works.

## **cfgADDcSRVLookupbyUserdomain (Read/Write)**

### **Legal Values**

1 (TRUE)—use user domain as the search domain to look up DCs. The user domain is chosen from the user domain list or entered by the login user.

0 (FALSE)—use the configured search domain *cfgADDcSrvLookupDomainName* to look up DCs.

### **Default**

1

### **Example**

If there exists a user "userid" who has an active directory domain "MyDomain", then:

If this option is enabled, the user would enter "MyDomain/userid" for the user field when logging in. If this option is disabled, then *cfgADDcSRVLookupDomainName* must be configured to contain the value "MyDomain". The user would then type "userid" for the user field when logging in.

### **Definition**

Chooses the way the user domain is looked up for Active Directory.

## **cfgADDcSRVLookupDomainName (Read/Write)**

### **Legal Values**

String. Maximum length = 254

### **Default**

Null

### **Definition**

This is the Active Directory Domain to use when *cfgAddcSrvLookupbyUserDomain* is set to 0.

## **cfgADGcSRVLookupEnable (Read/Write)**

### **Legal Values**

0(FALSE)—use pre-configured Global Catalog Servers (GCS)

1(TRUE)—use DNS to look up GCS

### **Default**

0

### **Definition**

Determines how the global catalog server is looked up. If using pre-configured global catalog servers, then iDRAC6 uses the values `cfgAdGlobalCatalog1`, `cfgAdGlobalCatalog2`, and `cfgAdGlobalCatalog3`.

## **cfgADGcRootDomain (Read/Write)**

### **Legal Values**

String. Maximum length = 254

### **Default**

Null

### **Example**

If your domain is "ROOTDOMAIN.sub1", then this value is set to "ROOTDOMAIN".

### **Description**

The name of the Active Directory root domain used for DNS look up, to locate Global Catalog servers.

## **cfgLDAP**

This group allows you to configure settings related to the Lightweight Directory Access Protocol (LDAP).



## **cfgLdapEnable (Read/Write)**

### **Legal Values**

1 (TRUE)—Enable LDAP Services

0 (FALSE)—Disable LDAP Services

### **Default**

0

### **Description**

Turns LDAP service on or off.

## **cfgLdapServer (Read/Write)**

### **Legal Values**

String. Maximum length = 1024

### **Default**

Null

### **Description**

Configures the address of the LDAP Server.

## **cfgLdapPort (Read/Write)**

### **Legal Values**

1 - 65535

### **Default**

636

### **Description**

Port of LDAP over SSL. Non-SSL port is not supported.

## **cfgLdapBasedn (Read/Write)**

### **Legal Values**

String. Maximum length = 254

### **Default**

Null

### **Description**

The Domain Name of the branch of the directory where all searches should start from.

## **cfgLdapUserAttribute (Read/Write)**

### **Legal Values**

String. Maximum length = 254

### **Default**

Null.

*uid* if not configured.

### **Description**

Specifies the user attribute to search for. If not configured, the default is to use *uid*. It is recommended to be unique within the chosen baseDN, otherwise a search filter must be configured to ensure the uniqueness of the login user. If the user DN cannot be uniquely identified, login fails with an error.

## **cfgLdapGroupAttribute (Read/Write).**

### **Legal Values**

String. Maximum length = 254

### **Default**

Null

**Description**

Specify which LDAP attribute is used to check for group membership. This should be an attribute of the group class. If not specified, then iDRAC6 uses the *member* and *unique member* attributes.

**cfgLdapGroupAttributesDN (Read/Write)****Legal Values**

1 (TRUE)—Use the *userDN* from the LDAP Server

0 (FALSE)—Use the *userDN* provided by the login user

**Default**

1

**Description**

When it is set to 1, iDRAC6 compares the userDN retrieved from the directory to compare to the members of the group; if it is set to 0, the user name provided by the login user is used to compare to the members of the group. This does not impact the search algorithm for the bind. iDRAC6 always searches the *userDN* and uses the *userDN* to bind.

**cfgLdapBinddn (Read/Write)****Legal Values**

String. Maximum length = 254

**Default**

Null

**Description**

The distinguished name of a user used to bind to the server when searching for the login user's DN. If not provided, an anonymous bind is used. This is optional but is required if anonymous bind is not supported.

## **cfgLdapBindpassword (Write only)**

### **Legal Values**

String. Maximum length = 254

### **Default**

Null

### **Description**

A bind password to use in conjunction with the bind DN. The bind password is sensitive data, and should be properly protected. This is optional but is required if anonymous bind is not supported.

## **cfgLdapSearchFilter (Read/Write)**

### **Legal Values**

String. Maximum length = 254

### **Default**

(objectclass=\*)

Searches for all objects in tree.

### **Description**

A valid LDAP search filter. This is used if the user attribute cannot uniquely identify the login user within the chosen *baseDN*. The "search filter" only applies to *userDN* search and not the group membership search.

## **cfgLDAPCertValidationEnable (Read/Write)**

### **Legal Values**

1 (TRUE)—iDRAC6 uses the CA certificate to validate the LDAP server certificate during SSL handshake

0 (FALSE)—iDRAC6 skips the certificate validation step of SSL handshake

**Default**

1—Enabled

**Description**

Controls certificate validation during SSL handshake.

## **cfgLdapRoleGroup**

This group allows the user to configure role groups for LDAP. This group is indexed from 1 to 5.

### **cfgLdapRoleGroupIndex (Read Only)**

**Legal Values**

An integer between 1 and 5

**Default**

<instance>

**Description**

This is the index value of the Role Group Object.

### **cfgLdapRoleGroupDN (Read/Write)**

**Legal Values**

String. Maximum length = 1024

**Default**

Null

**Description**

This is the Domain Name of the group in this index.

## **cfgLdapRoleGroupPrivilege (Read/Write)**

### **Legal Values**

0x00000000 to 0x000001ff

### **Default**

0x000

### **Description**

A bit-mask defining the privileges associated with this particular group.

## **cfgStandardSchema**

This group contains parameters to configure the Active Directory standard schema settings.

## **cfgSSADRoleGroupIndex (Read Only)**

### **Legal Values**

1 – 5

### **Description**

Index of the Role Group as recorded in the Active Directory.

## **cfgSSADRoleGroupName (Read/Write)**

### **Legal Values**

Any printable text string with no white space. Length is limited to 254 characters.

### **Default**

<blank>

### **Description**

Name of the Role Group as recorded in the Active Directory forest.

## **cfgSSADRoleGroupDomain (Read/Write)**

### **Legal Values**

Any printable text string with no white space. Length is limited to 254 characters.

### **Default**

<blank>

### **Description**

Active Directory Domain in which the Role Group resides.

## **cfgSSADRoleGroupPrivilege (Read/Write)**

### **Legal Values**

0x00000000 to 0x000001ff

### **Default**

<blank>

### **Description**

Use the bit mask numbers in Table B-3 to set role-based authority privileges for a Role Group.

**Table B-3. Bit Masks for Role Group Privileges**

| <b>Role Group Privilege</b>     | <b>Bit Mask</b> |
|---------------------------------|-----------------|
| Login to iDRAC6                 | 0x00000001      |
| Configure iDRAC6                | 0x00000002      |
| Configure Users                 | 0x00000004      |
| Clear Logs                      | 0x00000008      |
| Execute Server Control Commands | 0x00000010      |
| Access Console Redirection      | 0x00000020      |
| Access Virtual Media            | 0x00000040      |

**Table B-3. Bit Masks for Role Group Privileges**

| <b>Role Group Privilege</b> | <b>Bit Mask</b> |
|-----------------------------|-----------------|
| Test Alerts                 | 0x00000080      |
| Execute Debug Commands      | 0x00000100      |

## **cfgIpmiSol**

This group is used to configure the Serial Over LAN (SOL) capabilities of the system.

### **cfgIpmiSolEnable (Read/Write)**

#### **Legal Values**

0 (FALSE)

1 (TRUE)

#### **Default**

1

#### **Description**

Enables or disables SOL.

### **cfgIpmiSolBaudRate (Read/Write)**

#### **Legal Values**

9600, 19200, 57600, 115200

#### **Default**

115200

#### **Description**

The baud rate for serial communication over LAN.



## **cfgIpmiSolMinPrivilege (Read/Write)**

### **Legal Values**

2 (User)

3 (Operator)

4 (Administrator)

### **Default**

4

### **Description**

Specifies the minimum privilege level required for SOL access.

## **cfgIpmiSolAccumulateInterval (Read/Write)**

### **Legal Values**

1 – 255

### **Default**

10

### **Description**

Specifies the typical amount of time that iDRAC6 waits before transmitting a partial SOL character data packet. This value is 1-based 5ms increments.

## **cfgIpmiSolSendThreshold (Read/Write)**

### **Legal Values**

1 – 255

### **Default**

255

**Description**

The SOL threshold limit value. Specifies the maximum number of bytes to buffer before sending an SOL data packet.

# Index

## A

- Active Directory
  - adding DRAC 5 users, 138
  - configuring access to the DRAC 5, 131
  - logging in to the DRAC 5, 156
  - managing certificates, 110
  - objects, 128
  - schema extensions, 127
  - using with extended schema, 127
  - using with standard schema, 144
  - using with the DRAC 5, 125
- ActiveX
  - console redirection plug-in, 218
- alert management. *See* PEF
- arp command, diagnostics
  - console, 345
- ASR
  - auto recovery timer, 80
  - configuring, 118
- Auto Discovery, 323
- Automated System Recovery, *See* ASR

## B

- boot once, enabling, 241
- bootable image file
  - creating, 306

## C

- Certificate Signing Request. *See* CSR
- certificates
  - Active Directory, 110
  - exporting the root CA certificate, 154
  - SSL and digital, 104
  - uploading a server certificate, 108
  - viewing a server certificate, 109
- chassis LCD panel, 39
- Chassis Management Controller.
  - See* CMC
- CMC
  - about, 27
  - configuring iDRAC6 during initialization, 41
  - IP address, locating, 45
- CMC Web interface, 38
  - configuring iDRAC6 network properties, 45
  - locating iDRAC6 IP address, 347
- community string, SNMP, 451
- configuration file
  - creating, 273
- configuring
  - task overview, 41-44
- configuring Local iDRAC6 users
  - for Smart Card logon, 170

- configuring multiple iDRACs with RACADM, 277

- configuring Smart Card Login, 169

- console redirection
  - configuring, 214
  - opening a session, 216
  - using, 191, 211

- CSR
  - about, 105
  - generating, 107

## D

- diagnostics console, 344
- digital signature, verify, 55-58
- Distributed Management Task Force (DMTF), 287
- documents you may need, 33
- DOS update utility, 60
- DRAC 5
  - configuring, 140, 147

## E

- e-mail alerts
  - configuring with RACADM, 264
  - configuring with the web interface, 94
- extended schema
  - using with Active Directory, 127

## F

- Firefox
  - tab behavior, 85
- firewall, opening ports, 32
- firmware
  - recovering with CMC, 58, 120
  - updating, 53
  - updating with the web interface, 120
- frequently asked questions
  - using console redirection, 225
  - using the DRAC 5 with Active Directory, 163
  - using Virtual Media, 245

## G

- gettracelog command,
  - diagnostics console, 345
- group permissions
  - table of, 103

## I

- iDRAC
  - creating a configuration file, 273
  - log, viewing, 342
  - recovering firmware, 121
  - securing communications, 104
  - updating the firmware, 53
- iDRAC configuration utility
  - configuring LAN user, 322
- iDRAC KVM

- displaying OSCAR, 316
  - iDRAC service ports, 32
  - iDRAC6
    - configuring standard schema
      - Active Directory, 159
    - resetting to factory defaults, 325
    - SSH, 76
  - iDRAC6 configuration utility, 38
    - configuring IPMI, 317
    - configuring network
      - properties, 317
    - configuring virtual media, 321
    - starting, 316
  - iDRAC6 firmware rollback, 122
  - iDRAC6 web interface, 38, 58
  - ifconfig command, diagnostics
    - console, 345
  - iKVM
    - disabling during console
      - redirection, 223
    - viewing status of the local
      - console, 226
  - instrumentation
    - server, 79
  - Internet Explorer
    - configuring, 66
  - IP address
    - CMC, locating, 45
  - IP blocking
    - configuring with RACADM, 268
    - configuring with the web
      - interface, 89
    - enabling, 269
  - IP filtering
    - configuring with RACADM, 265
    - configuring with the web
      - interface, 89
  - IPMI, 40
    - configuring LAN properties, 86
    - configuring with iDRAC6
      - configuration utility, 317
    - configuring with RACADM, 261
    - configuring with the web
      - interface, 96
  - iVMCLI, 39
  - iVMCLI utility
    - about, 305
    - deploying the operating
      - system, 307
    - operating system shell
      - options, 313
    - parameters, 310
    - return codes, 313
    - syntax, 310
    - using, 308
  - ivmdeploy script, 307
- J**
- Java
    - console redirection plug-in, 73, 218
- K**
- key, verify, 56, 58

## L

- last crash screen
  - capturing on the managed server, 80
  - viewing, 332
- Lifecycle Controller User Guide, 322
- local RACADM, 39
- localization, browser setup, 70
- logs
  - iDRAC, 342
  - post codes, 332
  - server, 79
- lost administrative password, 325

## M

- Manageability Access Point. See *MAP*
- managed server
  - capturing the last crash screen, 80
  - configuring, 79
- management
  - storage, 79
- management station
  - configuring, 65-74
  - configuring for console redirection, 213
  - installing the software, 78
  - network requirements, 65
- MAP

- navigating

- Media Redirection
  - wizard, 242-243

- mouse pointer
  - synchronizing, 223

- Mozilla Firefox
  - disabling whitelist, 72
  - supported versions, 72

## N

- netstat command, diagnostics
  - console, 345
- network properties
  - configuring manually, 260
  - configuring with CMC Web interface, 45
  - configuring with iDRAC6
    - configuration utility, 317
  - configuring with RACADM, 260
  - configuring with the Web interface, 86

## O

- On Screen Configuration and Reporting. See *OSCAR*
- OpenSSH, SSH client for Linux, 76
- operating system
  - installing (manual method), 244
  - installing (scripted method), 305
- OSCAR

displaying, 316

## P

password

changing, 102

lost, 325

PEF

configuring with RACADM, 263

configuring with the web interface, 93

PET

configuring with RACADM, 264

configuring with the web interface, 92, 94, 264

filterable platform events table, 92

ping command, diagnostics

console, 345

ping6, 345

Platform Event Filter. See *PEF*

Platform Event Trap. See *PET*

platforms

supported, 31

ports

table of, 32

post codes, viewing, 332

power management

using SM-CLP, 293

using the web interface, 345

property database groups

cfgActiveDirectory, 455

cfgEmailAlert, 424

cfgIpmiLan, 449

cfgIpmiPef, 451-452

cfgIpmiPet, 454

cfgIpmiSerial, 455

cfgIpmiSol, 470

cfgLanNetworking, 407

cfgRacSecurity, 444

cfgRacTuning, 436

cfgRacVirtual, 447

cfgSerial, 428

cfgSessionManagement, 426

cfgUserAdmin, 420

idRacInfo, 404

ifcRacManagedNodesOs, 443

proxy server, web browser

configuration, 69

public key, verify, 56, 58

PuTTY, Windows SSH client, 76

## R

RACADM

configuring e-mail alerts, 264

configuring IP blocking, 268

configuring IP filtering, 265

configuring IPMI, 261

configuring multiple iDRACS, 277

configuring network properties, 260

configuring PEF, 263

configuring PET, 264

configuring SOL, 262

- configuring SSH service, 270
- configuring telnet service, 270
- installing and removing, 73
- subcommands, 353
- supported interfaces, 252
- using, 249

## RACADM subcommands

- arp, 391
- clrraclog, 250, 373
- clrsel, 250, 375
- config, 80, 250, 354
- coredump, 392
- coredumpdelete, 393
- fwupdate, 387
- getconfig, 226, 250, 273, 356
- getniccfg, 250, 367
- getraclog, 250, 372
- getractime, 250, 364
- getsels, 374
- getssninfo, 250, 358
- getsvctag, 250, 368
- getsysinfo, 250, 360
- gettracelog, 251, 376
- help, 353
- ifconfig, 394
- netstat, 394
- ping, 395-396
- racdump, 396
- racreset, 251, 369
- racresetcfg, 251, 370
- serveraction, 251, 371
- setniccfg, 251, 365
- sslcertdownload, 251, 380
- sslcertupload, 251, 379
- sslcertview, 251, 381

- sslcsrgen, 252, 377
- testemail, 252, 383
- testtrap, 252, 384
- traceroute, 397
- traceroute6, 398
- version, 391

- reboot option
  - disabling, 81

- remote access connections
  - supported, 32

- resetting iDRAC6 to
  - defaults, 325

## S

- safety, 327

- screen resolutions, support, 213

- scripts
  - ivmdeploy, 307

- secure shell. *See* SSH

- Secure Sockets Layer (SSL)
  - importing the firmware certificate, 155

- secure sockets layer. *See* SSL

- security
  - using SSL and digital certificates, 104

- See* RACADM

- SEL
  - managing with iDRAC6 configuration utility, 325



- managing with the iDRAC6 configuration utility, 325
    - managing with the web interface, 331
  - server
    - instrumentation, 79
    - logs, 79
  - server certificate
    - uploading, 108
    - viewing, 109
  - server features, integrated
    - instrumentation, 79
    - logs, 79
  - Server Management Command Line Protocol. See *SM-CLP*
  - server storage management, 79
  - services
    - configuring with the web interface, 118
  - signature, verify, 55-58
  - Simple Network Management Protocol. See *SNMP*
  - Single Sign-On, 157
  - Smart Card Authentication, 170
  - Smart Card Logon, 169
  - SM-CLP*, 40
    - features, 289
    - navigating the MAP
    - output formats, 293
    - power management, 293
    - syntax, 289
    - targets, 292
    - using the show verb, 292
  - snap-in
    - installing the Dell extension, 137
  - SNMP**
    - community string, 451
    - testing trap alert, 260
  - SOL**
    - configuring with RACADM, 262
    - configuring with the web interface, 96
  - SSH**
    - client installation, 74
    - configuring iDRAC service with RACADM, 270
    - configuring service with the web interface, 118
    - OpenSSH software for Linux, 76
    - PuTTY client for Windows, 76
  - SSL**
    - about, 105
  - standard schema
    - using with Active Directory, 144
  - supported CIM profiles, 300
  - system health, viewing, 330
  - System Services Configuration Unified Server Configurator, 322
- T**
- telnet
    - backspace configuration, 75
    - client installation, 74

- configuring iDRAC service with the web interface, 118
- configuring iDRAC6 service with RACADM, 270
- TFTP server, installing, 77
- traceroute, 345
- traceroute6, 345
- Trivial File Transfer Protocol, see *TFTP*
- troubleshooting
  - indications, 328
- trusted domains list, adding iDRAC, 69
- Two-factor-authentication TFA, 169

## U

- Unified Server Configurator, 322
  - System Services, 322
- Update Packages
  - verifying the digital signature, 55-58
- USB flash drive emulation type, 321
- user configuration, 101
- users
  - adding and configuring with the web interface, 97
  - configuring LAN user with iDRAC6 configuration utility, 322

- Using iDRAC6 with LDAP Directory Service, 159
- using RACADM to configure iDRAC6 Users, 100-101
- utilities
  - dd, 306
  - iVMCLI, 305
  - video viewer, 219

## V

- verify
  - digital signature, 55-58
  - public key, 56, 58
- video viewer
  - using, 219
- virtual media
  - about, 237
  - booting, 243
  - command line, 308
  - configuring with iDRAC6
    - configuration utility, 321
  - configuring with the web interface, 239
  - installing the operating system, 244
  - running, 241
- VLAN, 86

## W

- web browser
  - configuring, 66

- proxy server configuration, 69
- supported, 31
- web interface
  - accessing, 84
  - browser configuration, 66
  - configuring ASR service, 118
  - configuring e-mail alerts, 94
  - configuring iDRAC services, 118
  - configuring IP blocking, 89
  - configuring IP filtering, 89
  - configuring IPMI LAN properties, 86, 96
  - configuring network properties, 86
  - configuring PEF, 93
  - configuring PET, 92, 94, 264
  - configuring SOL, 96
  - configuring telnet service, 118
  - configuring the SSH service, 118
  - configuring the web server service, 118
  - logging in, 84
  - logging out, 85
  - updating firmware, 120
- web server, iDRAC
  - configuring with the web interface, 118

