Dell Technologies Microsoft Exchange 2019 Solution

Implementing Microsoft Exchange Server 2019 on Dell EMC PowerEdge R740xd2 Servers and Storage

July 2020

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Design Guide

Abstract

This design guide provides design guidance and validation that is required to implement Microsoft Exchange Server 2019 on Dell EMC PowerEdge R740xd2 servers.

Dell Technologies Solutions

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Executive summary

Microsoft Exchange Server 2019 is a leading enterprise messaging system that delivers email, calendar, and contacts to users on various devices through the Outlook client. Exchange Server 2019 provides reliable, scalable, enterprise-class email with compliance and e-discovery features integrated with Microsoft SharePoint and Skype for Business. Exchange Server 2019 supports people and organizations as their work habits evolve from communicating to collaborating. The Exchange 2019 database design reduces storage I/O requirements, optimizing Exchange for cost-effective, low-speed storage. An Exchange deployment must be correctly sized to meet not only specific message profile requirements, but also growth and high availability (HA) requirements.

Exchange Server is a messaging platform that provides email, scheduling, and tools for custom collaboration and messaging service applications. Exchange Server 2019 brings a new set of technologies, features, and services to Exchange Server. The Dell Technologies Global Solutions Engineering team has developed a pre-architected and validated solution for Exchange Server 2019 to help customers simplify implementation. We based our design on best practices obtained from the experience Microsoft and Dell Technologies gained by supporting hundreds of customers worldwide. This solution balances performance and cost, provides faster time to value, and increases return on investment.

Solution introduction

The pre-architected Dell Technologies Microsoft Exchange 2019 solution uses the Dell EMC PowerEdge R740xd2 server as a building block, which meets the requirements of the Microsoft Exchange Preferred Architecture (PA).

HA and site resilience are essential to ensure business continuity. Business growth also requires an easily scalable solution. We account for these requirements in our design for this solution.

The implementation that we describe addresses the following client requirements:

- 50,000 10 GB mailboxes

- 100 KB average message size

- 100 messages sent or received per day

The high-level goal is to implement these requirements within a single Database Availability Group (DAG) to offer a cost-effective design while keeping administration to a minimum. If larger implementations are required—such as more mailboxes, larger mailboxes, larger message size—you can scale up and scale out by deploying additional DAGs. However, to implement a more complex solution, Dell Technologies recommends that you engage with your Dell Technologies Consulting Services sales representative and provide the specific email requirements that your company needs.

We validated and verified the design by using the Microsoft Exchange Jetstress tool.

Document purpose

This guide describes design principles and components for the Dell Technologies Exchange 2019 Solution, which is suited for medium- to large-scale deployments. If your

requirements differ, contact your Dell Technologies sales representative. Exchange presales engineers can assist you in sizing your environment correctly.

The following sections in this white paper include:

- **Solution overview**—Provides a brief overview of the Dell Technologies Exchange 2019 solution

- **Solution components**—Introduces the Microsoft Exchange Server 2019 system components and the solution architecture

- **Design principles**—Explains the design principles including HA, application performance, and best practices

- **Comprehensive solution design**—Explains the comprehensive solution design and describes the core components of the solution

- **Solution sizing**—Describes solution sizing and important considerations

- **Sample implementation**—Describes a sample implementation and provides proof points from the Microsoft Exchange Jetstress verification of the reference implementation

- **Verification**—Provides an overview of the verification that ensures that the solution meets the design requirements

Audience

This guide is intended for IT managers, messaging administrators, and consultants interested in designing and deploying a medium- to large-scale Exchange 2019 solution on PowerEdge R740xd2 servers for various user profiles. Users are expected to have sufficient understanding and knowledge of Exchange 2019.

We value your feedback

Dell Technologies and the authors of this document welcome your feedback on the solution and the solution documentation. Contact the Dell Technologies Solutions team by email or provide your comments by completing our documentation survey.

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Note: For links to additional documentation for this solution, see the PowerEdge R740xd2 Documentation.

Solution overview

The first step in any solution is to discover and document the requirements. This step offers a road map that ensures that you remain focused on the result. Introducing features that are not within the scope of the requirements, while nice to have, might be detrimental to the result.

During this phase, start on the design path and document your requirements, as listed in the following table:

Table 1.   High-level Exchange requirements

Items	Requirements[1]
Version	2019
Total number of mailboxes in the environment	50,000 active mailboxes (with 0% additional growth)
Mailbox size and I/O requirement	Tier 1 – cached 10 GB mailbox and 0.07 IOPS per user
Mailbox User profile – Sent/Received	Tier 1–100 messages per day
Target average message size	Tier 1–100 KB
Number of Exchange mailbox servers per DAG	8 primary mailbox servers 8 secondary mailbox servers
Number of active mailboxes per server	6,250 active mailboxes per Exchange Server
Site resiliency model	Active/active
Number of copies	4
HA requirements	1 DAG
Disaster Recovery (DR) requirements	2 copies using DAG replication
Deleted items retention window ("dumpster")	30 days
Lagged database copies (passive)	None
Logs protection buffer	5 days
24 x 7 BDM configuration	Enabled
Other information	None

When you determine the high-level requirements, add these values to the Exchange Server Role Requirement Calculator. As of the publication of this guide, the latest version of the calculator for Exchange 2019 is v10.4. It is only available through Microsoft on Cumulative Update #5 as an .iso image file.

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[1] The requirements column shows the values that we used for our sample implementation.

This calculator provides the required information to size the solution correctly for the PowerEdge R740xd2 server in this sample implementation. The following figure shows a portion of the calculator:

Figure 1.   Exchange Server Role Requirements Calculator

Using the output from the calculator, the solution uses the PowerEdge R740xd2 server as the mailbox server. Each server comes with 26 drives installed, as shown in the following table:

Table 2.   Installed drives

Description	Notes
20 x 7200 RPM 3.5-inch NL-SAS hard drives	Installed in the front drive bays in RAID 0 configuration and used for storing the 190 TB of capacity necessary for the Exchange databases and transaction logs
2 x 2.5-inch 1.92 TB 6 Gb/s SSDs	Installed in the rear drive bays in RAID 1 configuration and used for installing the operating system, binaries, and other applications.
1 hard drive	Marked as Restore LUN
1 hard drive	Marked as Auto Reseed volume
2 drives	Unused and are available as spare disks

The solution uses a four-copy DAG layout (active/active) with 16 Exchange servers distributed equally between two sites—the Primary Datacenter and the Secondary Datacenter, as shown in the following figure:
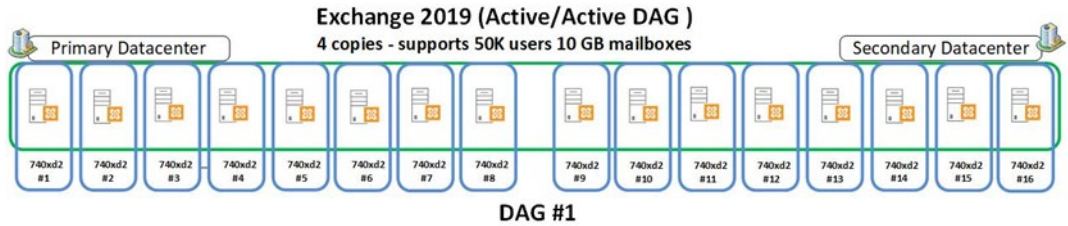
Figure 2.   Physical layout of DAG

The following figure shows the RAID LUN layout for the Exchange databases:
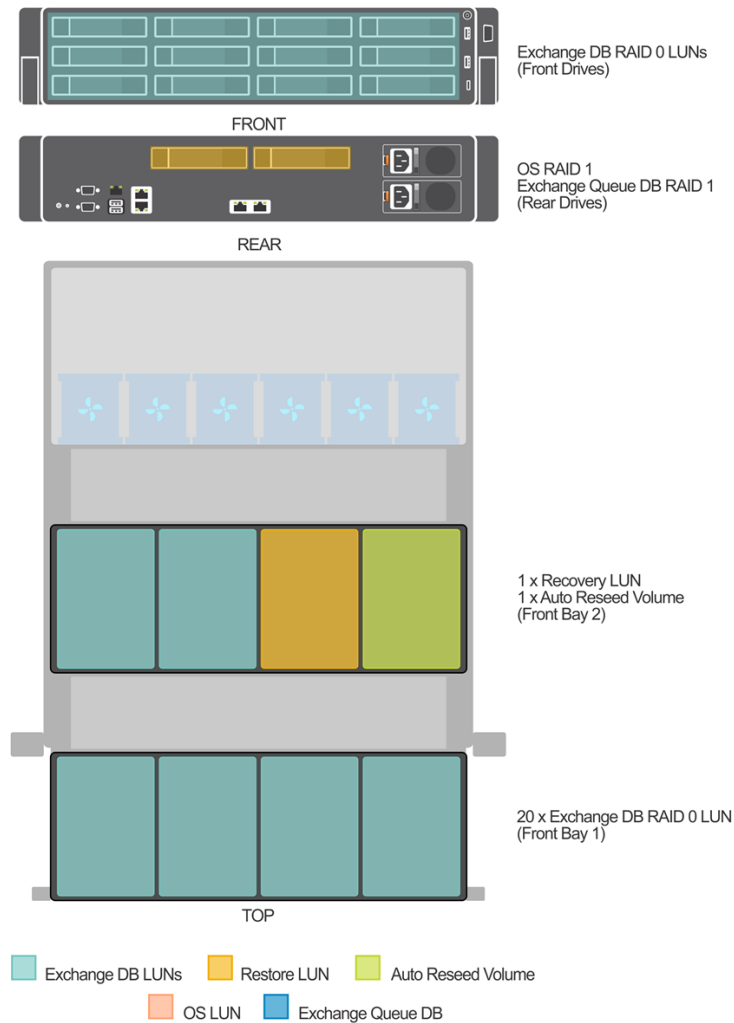
Figure 3.   RAID LUN layout of Exchange databases

RAID 0 was used with the 12 TB disks to maximize IOPS potential while using all the capacity of the devices. Microsoft recommends one physical disk per data or database group so that there is no impact to the entire server.

The following figure shows the external data center architecture:
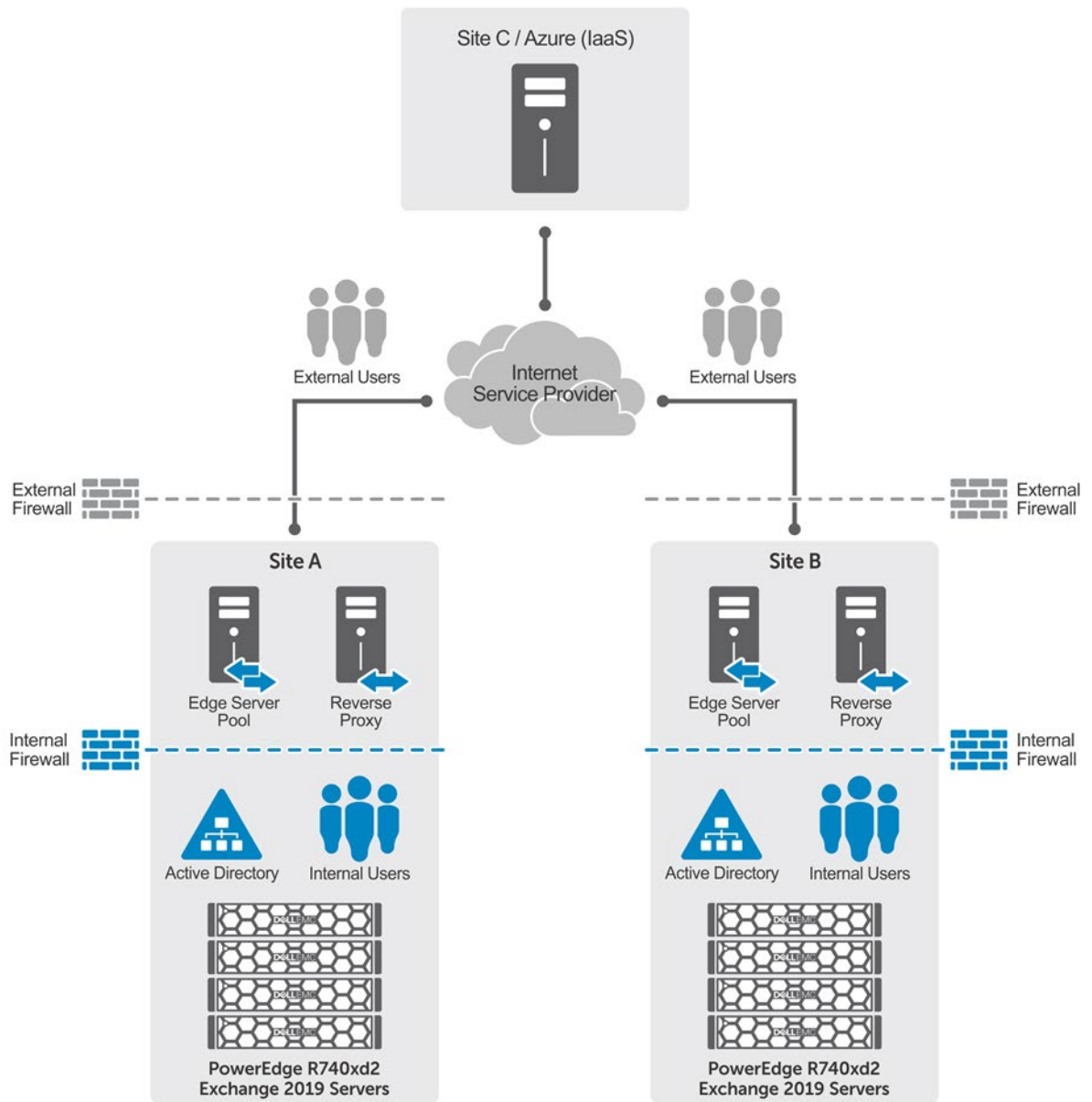
Figure 4.   External data center architecture for Exchange deployment

Solution components

Users today demand larger mailboxes and faster email operations. Microsoft Exchange supports low-cost and large-capacity storage, and has HA built in through the DAG. The PowerEdge R740xd2 server offers a balance between dense internal storage and compute capacity. The server makes an ideal Exchange building block for any medium-sized or large organization.

Exchange solutions built on the PowerEdge R740xd2 server can be easily scaled up or scaled out based on business needs.

Components for the Exchange Server 2019 solution also include Dell Technologies Networking products, ProDeploy services, and ProSupport services. Dell Technologies Professional Services for Exchange provide support for network integration, Active Directory, and data migration. Contact your sales and services representatives for more details.

Dell EMC PowerEdge server

PowerEdge servers are built to support the work of IT organizations. They are engineered to handle the most demanding business applications and are designed with features to better run workloads such as HPC, collaboration, database, ERP, business intelligence, and data warehousing.

As the foundation for a complete and adaptive IT solution, PowerEdge servers deliver exceptional performance and management advantages that power the business applications that our customers run most frequently.

Combined with the innovative OpenManage Systems Management portfolio and industry-leading workload solutions, PowerEdge servers provide technology that is intelligent, yet simple, giving you the power to do more in the most complex environments.

The latest generation of servers responds to customer needs in the following areas:

- **Memory capacity and scalability**—Larger memory footprints

- **Virtualization performance**—More processor cores and denser memory

- **Systems management**—Complete life cycle management by using iDRAC with Lifecycle Controller and monitoring and updating capabilities by using Dell EMC OpenManage Essentials

- **Energy efficiency**—Comprehensive optimization, including Dell Technologies OpenManage Power Center

- **Infrastructure flexibility**—Innovations like select network adapters, offering more and better I/O options

The PowerEdge R740xd2 server is a two-socket, 2U, rack server with a highly expandable memory, dense storage capacity, and fast I/O capabilities. It can readily handle data-intensive applications such as email, which require large storage capacity and I/O performance. This server delivers the performance and availability that is required for mission-critical email services.

The internal RAID controllers provide a range of RAID levels for improved storage reliability. The optional CacheCade feature boosts the database performance by caching frequently accessed data.

The various options that are available on the server and storage systems include the following:

- Up to two Intel Xeon Scalable processors with up to 22 cores each

- 16 DDR4 RDIMM slots, with up to 2666 MT/s and maximum of 1 TB

- Front drive bays with either:

  - Up to 24 x 3.5-inch SAS/ SATA (HDD) maximum 384 TB

  - Up to 16 x 3.5-inch SAS/SATA (HDD) plus up to 8 x 2.5-inch SAS/SATA (SSD) maximum 317.44 TB

- Rear drive bays with either:

  - Up to 2 x 3.5-inch SAS/ SATA (HDD) maximum 32 TB

  - Up to 2 x 2.5-inch SAS/SATA (SSD) drives maximum 15.36 TB

Note: Use a hybrid carrier to fit 2.5-inch drives in the 3.5-inch drive bay.

- Integrated RAID support through PERC H730P, H330, HBA330, Software RAID (SWRAID) S140

- External RAID support through PERC H840

- Choice of NIC technologies

- Dell EMC OpenManage portfolio of systems management solutions, including:

  - OpenManage Enterprise console

  - iDRAC9 with Lifecycle Controller

To optimize performance for this solution, we selected configurations based on guidance from Microsoft, as described in Recommended hardware configuration.

This solution uses a PowerEdge R740xd2 chassis configured with 3.5-inch drives, as shown in the following figure:

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Figure 5.   PowerEdge R740xd2 server with two front bays

The following figure shows the rear view:

Figure 6.   PowerEdge R740xd2 server rear view

For more information, see the Dell EMC PowerEdge R740xd2 Rack Server product page.

Recommended hardware configuration

The following table provides details about the server used in this solution:

Table 3.   Exchange server configuration

Microsoft Exchange server system	PowerEdge R740xd2 server with 3.5-in. HDD chassis
CPU	2 x Intel Xeon Gold 5120 @ 2.20 GHz with 14 cores
Memory	Up to 192 GB DDR4
NIC	NetXtreme BCM5720 Gigabit Ethernet PCIe
RAID controller	PERC H730P, PERC H330 Storport driver: 10.0.17763.1
Internal disks	2 x 2.5-in. SFF 1.92 TB 6 Gb/s SATA SSDs configured as a RAID 1 volume (operating system and application)

The following table provides details about the storage configuration:

Table 4.   **Storage subsystem configuration (internal storage)**

Storage subsystem	PowerEdge R740xd2 Internal 3.5-in. drives
Disks	24 x 12 TB 3.5-in. 12 Gbps 7.2 K RPM 512e FIPS SAS HDD with encryption/SED support Firmware – NM02
RAID controller	Dell EMC PowerEdge RAID Controller H730P (firmware version: 25.5.3.0005) Dell EMC PowerEdge RAID Controller H330 Adapter (firmware version: 25.5.5.0005)

Dell Technologies Networking

Dell Technologies Networking offers S-Series and N-Series high-density 100M/1G/10G/40 GbE top-of-rack (ToR) switches that are specially built for applications in high-performance data centers and computing environments. The S-Series S4048T-ON is a 10G BASE-T (RJ45) switch that uses a nonblocking switching architecture. It delivers line-rate L2 and L3 forwarding capacity within a conservative power budget. The compact S4048T-ON design provides industry-leading density of 48 dual-speed 1/10G BASE-T ports as well as six 40 GbE QSFP+ uplinks to conserve valuable rack space and simplify the migration to 40 Gbps in the data center core. Each 40 GbE QSFP+ uplink can also support four 10 GbE (SFP+) ports with a breakout cable. In addition, S4048T-ON switches offer several architectural features that optimize data center network flexibility, efficiency, and availability. They also include I/O panel to PSU airflow or PSU to I/O panel airflow for hot or cold aisle environments and redundant, hot-swappable power supplies and fans.

Microsoft Exchange Server 2019

Exchange Server 2019, the newest version of email server from Microsoft offers improved security, performance, manageability, and a better user experience.

There are two editions of Exchange Server 2019 with the following number of mounted databases on each edition:

- **Exchange Server 2019 Standard Edition**—Up to five mounted databases per server

- **Exchange Server 2019 Enterprise Edition**—Up to 100 mounted databases per server

Exchange 2019 provides the following key changes:

- Improved performance and reliability

- Faster and more intuitive search

- Faster failovers

- Indexing in database files

- SSDs for meta cache

- Up to 48 processor cores and 256 GB memory

- Improved Information Rights Management (IRM)

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- Simplified sharing

- Better out of office handling

Design principles

Email messages are mission critical for organizations and users. When designing an Exchange solution, ensure that you consider HA, DR, and Service Level Agreement (SLA). Today's users also demand larger mailboxes, making it necessary to build a solution that provides both sizable storage capacity and cost effectiveness.

Hardware- and application-level HA

Exchange 2019 has native HA and DR through DAGs. DAG replication requires multiple copies of the database and logs. Microsoft recommends a minimum of four copies of data—two in each data center— with one copy being a lagged copy to protect against data corruption. Note that DAG replication does not provide HA or DR for the other servers within the infrastructure.

Application HA requires that the infrastructure builds redundancy for each component. Using the built-in DAG, the solution can withstand server failures and site failures. This design is based on the building block architecture in which four servers are stacked across two data centers—two in Site A and two in Site B. For more details about the design for this solution, see Comprehensive solution design.

Exchange DAG also provides native data protection. This capability can be complemented by deploying a backup and recovery solution that is application-aware and can help perform item-level recovery of the application data.

A hardware or software load balancer must be deployed to balance the load of the client requests to the mailbox servers.

In a solution infrastructure, resources such as server, storage, network paths, and switches must be highly available. In addition to the multiple copies of the databases and logs, RAID 1 disks provide redundancy for the operating system, the Exchange binaries, and the queue database. Multiple network adapters and switches connecting to the Exchange infrastructure and the data center network build resiliency in network connectivity.

Application performance

In addition to HA, application performance is critical to guarantee a reliable user experience. The Microsoft Exchange Server Jetstress 2013 tool ensures that the storage solution is sized appropriately to meet the IOPS performance requirement provided by the Exchange calculator.

Note: Microsoft Exchange Server Jetstress 2013 is the official Microsoft tool to test the Microsoft Exchange Server 2013, Exchange Server 2016, and Exchange Server 2019 storage subsystems.

Best practices

Microsoft recommends disabling Logical Processor/Hyper Threading when deploying Exchange on physical servers and configuring the System Profile Settings to Performance in BIOS.

Microsoft PA recommends deploying Exchange on physical servers using the following recommended configurations:

- 2U, dual socket servers (maximum processor core count: 48)

- Maximum memory: 256 GB

- A battery-backed write cache controller

- 12 or more large form factor drive bays in the server chassis

When sizing the Exchange Storage subsystem, ensure that there are no I/O bottlenecks from an IOPS and disk latency perspective. The disk subsystem must be able to support both the capacity and I/O throughput demands of the application.

The following best practices improve the I/O subsystem performance:

- For the Exchange 2019 database, set the size of the elements in a RAID stripe to 256 KB or greater for best performance. The implementation outlined in this document is validated with a 512 K stripe size.

- Ensure that each server has a single RAID 1 disk pair for the operating system, Exchange binaries, and protocol/client logs. Another RAID 1 disk pair can store the transport database. You can configure the remaining storage as independent RAID 0 volumes.

- Format each disk that houses an Exchange database with Resilient File System (ReFS) with the integrity feature disabled. Configure the DAG so that AutoReseed formats the disk with ReFS.

- Ensure that the average database read latencies (Avg. Disk sec/Read) do not exceed 20 milliseconds. Exchange Server 2019 storage latencies are most often related to the number of disk drives available for a specific workload. You can use Windows Performance Monitor to monitor Exchange Server 2019 database counters.

Comprehensive solution design

Figure 4 provides a high-level diagram of the solution architecture. It shows a customer scenario that consists of two data centers (Site A and Site B) for Exchange server placement. A third data center (Site C) or cloud providers, such as Microsoft Azure IaaS, provide witness server placement with WAN links between Site A and Site B.

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The following figure shows the Site A data center architecture along with the infrastructure management services:
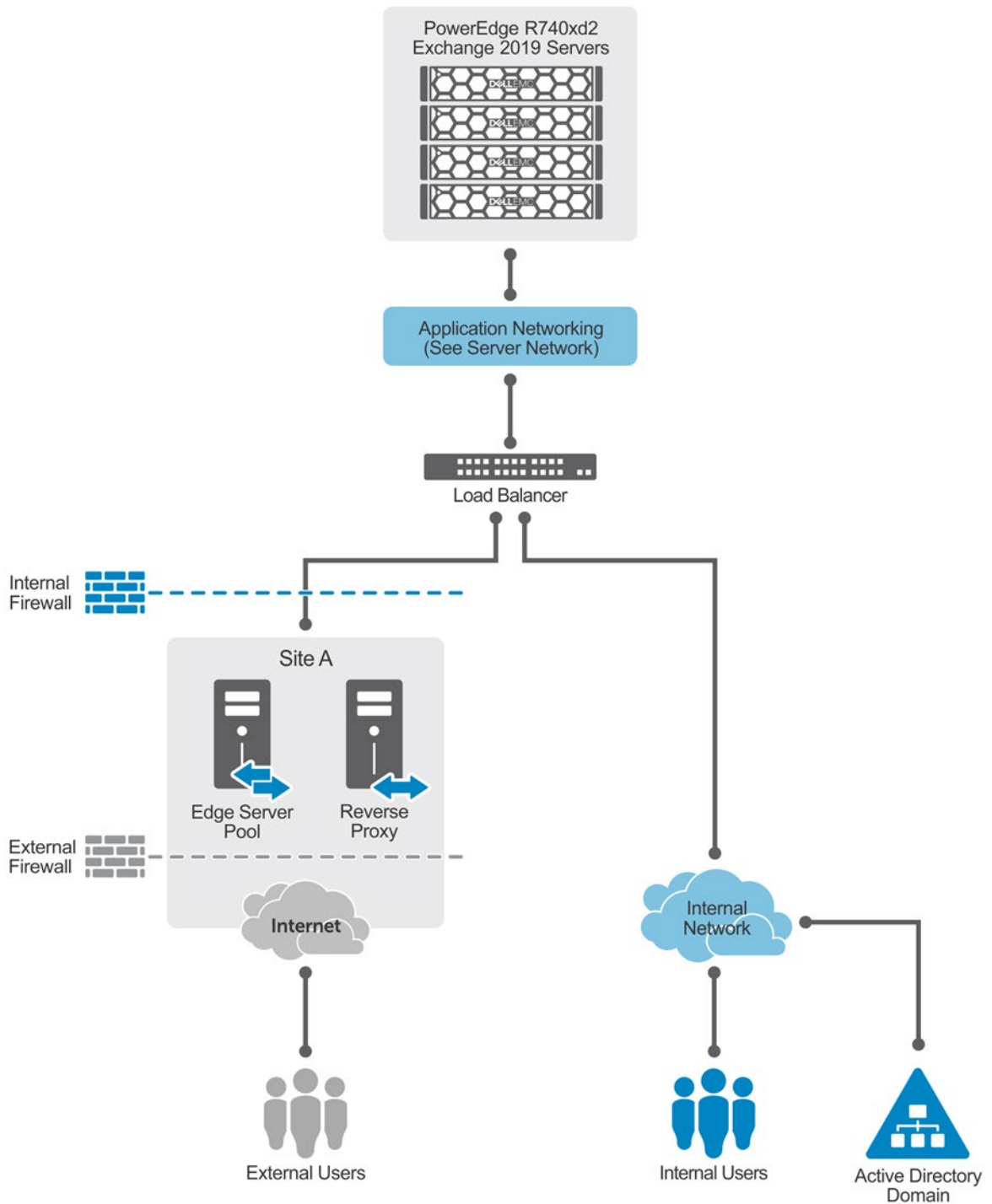

Figure 7.   Site A architecture for the Exchange deployment

Every data center that deployed Exchange servers has the same set of infrastructure components. The solution design consists of the following multiple infrastructure components:

- Server

  PowerEdge R740xd2 servers that are configured for Exchange deployment are connected to the internal data center network where all the other dependent infrastructure services are available.

- Storage

- Network

  The internal data center network is a routable network and connects users and the server infrastructure.

- Load balancer

  A hardware or software load balancer is configured to redirect the incoming client requests to the Exchange infrastructure.

- Firewall reverse proxy

External mailbox users connect to Exchange over the Internet and through an edge server pool configured at the site.

Core components

This solution uses the concept of building block architecture, which is a standardized configuration of the minimum server and storage resources sized to meet the requirements of a specific mailbox profile. The configuration for each member in the building block architecture is identical, as shown in the following figure:
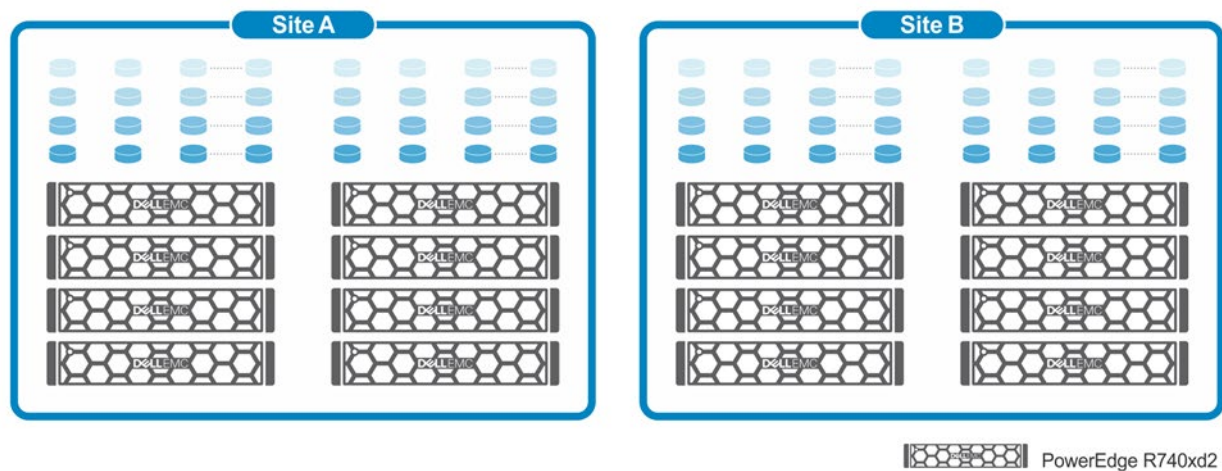

Figure 8.   Block architecture for the Exchange deployment

To support more mailboxes (of the same mailbox profile), increase the number of building blocks by deploying an additional DAG.

> **Note**: Figure 8 illustrates the building block architecture of the Exchange Server 2019 solution. It has a single DAG spanning across two sites with an active/active user distribution model. Each database has four copies across two sites (active and passive copies without any lagged database copies); the design is site resilient. However, the Microsoft PA recommends having a lagged database copy provide a recovery mechanism in the event of a database corruption.

For a site-resilient configuration, Dell Technologies recommends a four-copy DAG deployment with active/active distribution model. If there is a site failure, the database copies on the surviving site provide email services to users.

Exchange deployment depends on infrastructure services such as AD, Domain Name System (DNS), and load balancers. The connectivity between the Exchange infrastructure to these infrastructure services and users must be resilient and highly available. This solution employs Dell Technologies Networking 10 GbE Top-of-Rack (ToR) switches for network connectivity. The following figure shows the network architecture used in this solution:

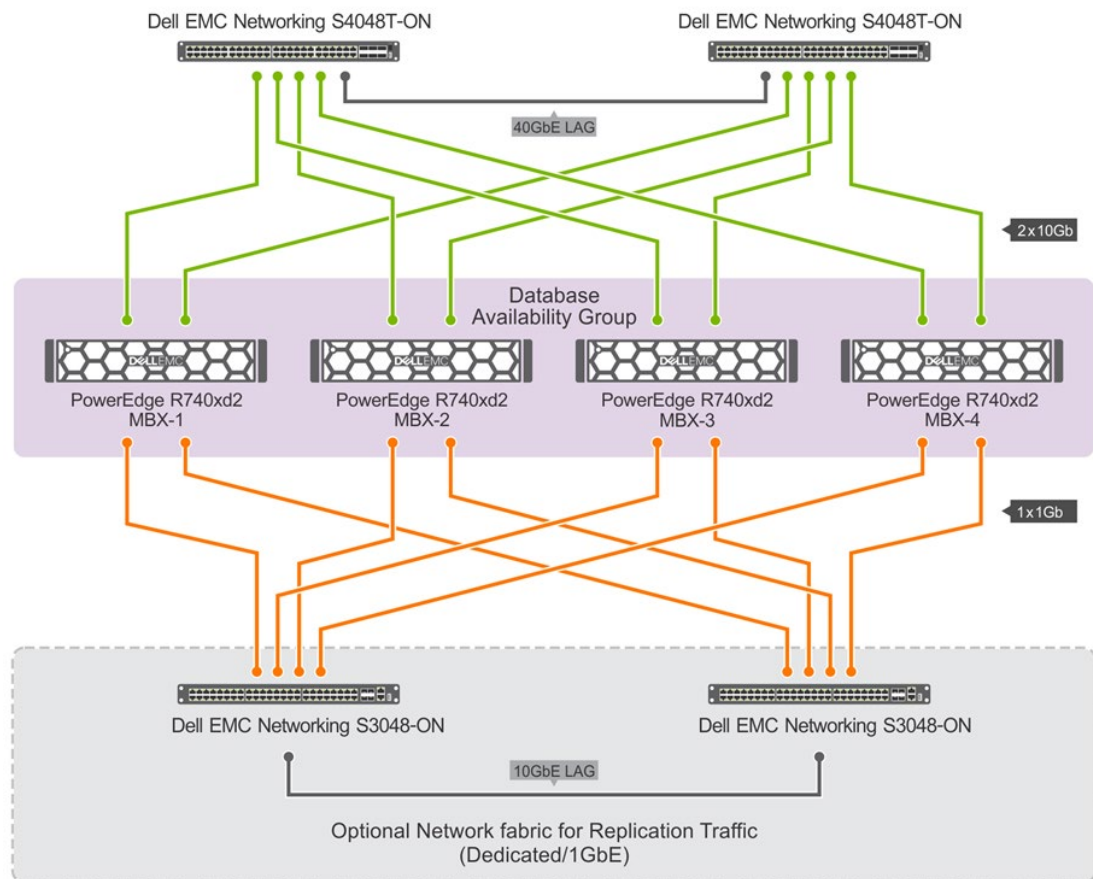**Figure 9. Detailed network architecture for the Exchange reference implementation**

As mentioned in Dell Technologies Networking, four 10 GbE network ports are available per server. These network ports are teamed to provide an aggregate network bandwidth of 40 Gbps per server. As shown in Figure 9, these network ports are connected to two separate ToR switches. These switches are connected with a 40 GbE LAG and

connected to the internal data center network by using 10 GbE ports. In the preceding figure, VLANs separate the MAPI and Replication traffic. However, this method is not cost effective as it requires two additional switches to support the server connectivity.

Optional components

Due to the consolidation of server roles in previous versions of Exchange, Exchange 2019 has only two server roles— Mailbox and Edge Transport. Similar to Exchange 2016, it is not mandatory to deploy the Edge Transport server in Exchange 2019. However, some organizations might require an Edge server based on business needs. In these cases, the Edge server must be placed at the perimeter network (DMZ). The purpose of deploying an Edge server is to provide an additional layer of security for inbound and outbound email messages and enable features such as address rewriting. Customers can choose the Edge server or third-party security appliances and services based on their needs.

Solution sizing

Each Exchange Server role has distinct system requirements and must be sized according to the role-specific demands and the mailbox profile. The mailbox profile in an Exchange deployment describes the mailbox characteristics for a mailbox size, such as the number of messages per user per day and the average size of a message. Exchange Server is a storage-intensive workload and allows various storage options, ranging from internal server storage to shared storage such as Storage Area Network (SAN). The two important sizing considerations are for the server and storage hardware.

Sizing considerations include the following:

- Determine the type of processor that is best suited for handling the Exchange Mailbox profile requirements.

- Decide the required size of memory and allocate the DIMMs to the processor memory channels to take advantage of full memory bandwidth.

- Select the appropriate host network adapters.

- Select the appropriate type of storage to achieve a balance between solution cost and performance. Storage sizing requires that you decide the type of RAID, type of disks, and number of disks—both from an IOPS and capacity perspective—and intelligently mapping Exchange databases to the storage subsystem according to the solution requirements.

Note: To calculate processor, memory, and storage sizing for a specific number and size of mailboxes and profiles, use the latest version of the Exchange Server Role Requirements Calculator. The calculator is bundled with the latest Exchange 2019 Cumulative Update.

Sizing provides the necessary capacity information for both server and storage hardware. Exchange Server 2019 infrastructure can be designed differently based on the size of the configuration, and the number of HA and DR copies required. The infrastructure and application architecture must be designed for scalability and HA. Customers also have various server form factor, storage, and disk options.

Solution for 50,000 mailboxes

The building block architecture can be used to attain an email solution that supports 50,000 active 10 GB mailboxes so that each user can send and receive 100 messages with an average message size of 100 KB per day. The average message size, messages sent/received per day, and the mailbox size are decisive factors while designing the email solution. Dell Technologies recommends that you use the latest version of Exchange Role Requirements Calculator for sizing your email solution. In this site resilient solution, a DAG with 16 members is used so that email services can be provided to 50,000 users in an active/active distribution model.

Table 3 and Table 4 provide details about the server and storage configuration, and the driver and firmware versions used in the tested solution.

Organizations that need a higher number of medium- to large-sized mailboxes can use higher compute and memory in the server configuration with higher capacity drives.

Sample implementation

This section describes a sample implementation for a large organization of 50,000 mailboxes. The customer profile represents many customers with similar needs. The design principles used in this sample implementation also pertain to larger or smaller implementations.

Email solution for a 50,000-employee organization

This sample implementation addresses an organization of 50,000 employees that is based in many locations. These locations are across different regions, including several main facilities and a dozen satellite offices as well as many remote workers. In this implementation, each employee can have a mailbox of 10 GB. This site resilient solution that is spread across two data centers (Site A and Site B) uses the active/active user distribution model. The following figure shows how the building block architecture hosts 50,000 mailboxes from which each user can send/receive 100 messages a day with an average message size of 100 KB:
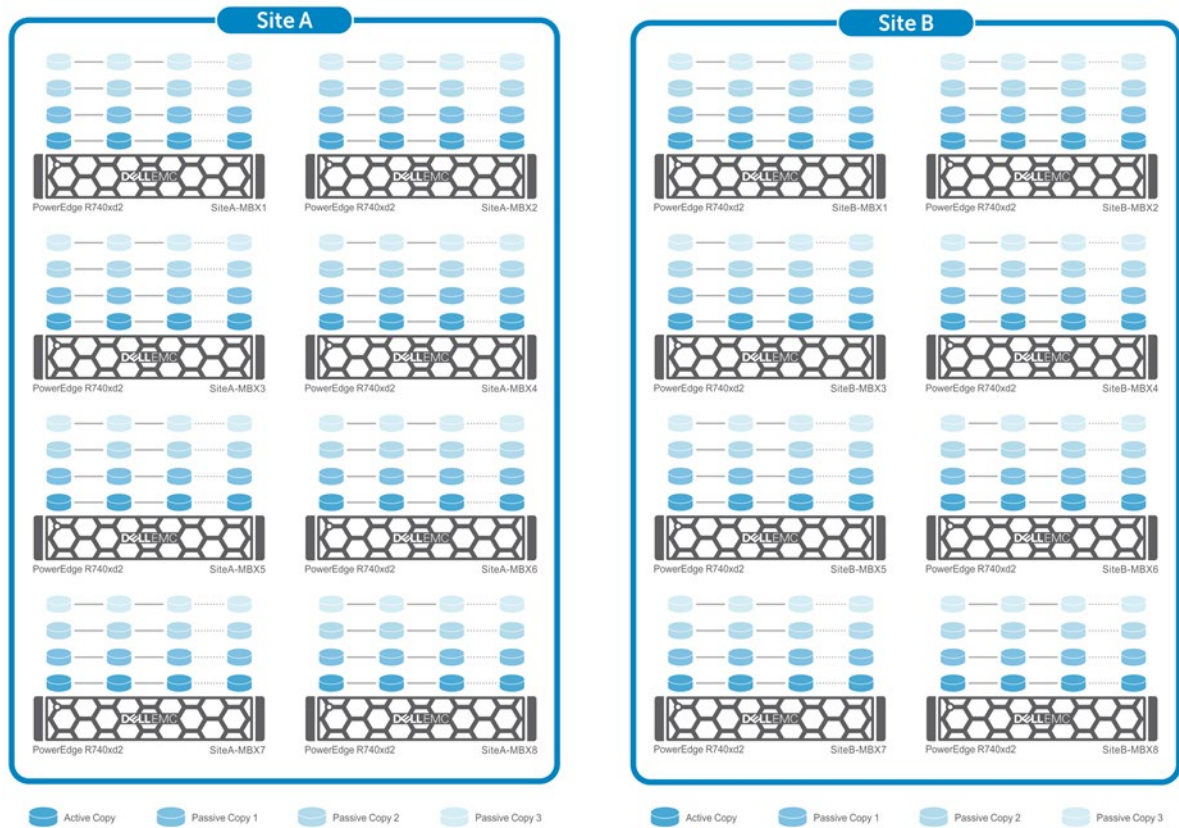
Figure 10.   Building block architecture to host 50,000 mailboxes

Table 3 and Table 4 provide details about the server and storage configuration, and the driver and firmware versions used in the tested solution.

Verification

This section provides proof points for performance and resource utilization by using the sample implementation of 50,000 users as an example.

Microsoft Exchange Jetstress verification

We verified the storage subsystem performance to ensure that the storage meets the performance expectations for the specified number of mailbox users and the mailbox profile. The Jetstress tool measures how well the storage subsystem performs, and whether the storage subsystem meets the sizing requirements of a specific Exchange mailbox profile. The Jetstress Disk Subsystem Throughput test measured how well the storage performed at peak load, while staying in the latency threshold established by Microsoft Exchange. This sample implementation describes the use of internal storage offered on each PowerEdge R740xd2 server in the solution infrastructure. Assuming that there is a site failure and a single-server failure in the surviving site, the sample implementation was validated for 7,188 active users served by one PowerEdge R740xd2 server.

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A PowerEdge R740xd2 server hosts 46 active databases in the server failure scenario, capable of supporting up to 7,188 active Exchange mailboxes. We ran the Jetstress test on each of these servers and observed the transactional I/O performance in terms of achieved average transactional IOPS. The overall results from the Jetstress Disk Subsystem Throughput test showed impressive performance, demonstrating faster data transfers and significant increase in IOPS per server. The results of the Disk Subsystem Throughput test confirmed that the storage can manage the peak load for the mailbox profile. The following table shows the mailbox profile for the implementation used for running the Jetstress Mailbox Profile test:

Table 5.   Exchange Jetstress verification results

Option	Value
Number of mailboxes	7,188
Mailbox size (GB)	10 GB
Target IOPS	578
Achieved IOPS	1099
Storage	24 x 12 TB NL-SAS drives in PowerEdge R740xd2 server
RAID type	RAID 0
Number of Exchange databases	46
Volume size	12 TB
I/O profile	100 messages per day (0.0804 tested)

Conclusion

The Microsoft Exchange solution with the PowerEdge R740xd2 server provides reliable and cost-effective email solutions. It is designed by following industry best practices. It is tested and validated to reduce design cycle time and implementation risks.

The PowerEdge R740xd2 server used in the sample implementation offers an excellent balance between performance and management. It is a highly efficient and cost-effective hardware building block for any medium-sized or large-sized organization. It delivers impressive storage capacity and IOPS performance in a dense 2U form-factor, making it ideal for Exchange deployments.

The building block design used in this solution offers a highly scalable architecture for Exchange deployments. The design requires minimum server and storage. A Dell EMC PowerEdge R740xd2 server, along with 24 LFF drives, provides sufficient compute resources and storage capacity for the Exchange requirements of most organizations. The solution can be scaled up and scaled out efficiently to meet different business sizes or needs.

Additional resources

Dell Support is focused on meeting customer requirements with proven services.

The following Dell Technologies links provide additional and relevant information:

- Dell Technologies Professional Services
- PowerEdge R740xd2 Rack Server
- Dell EMC PowerEdge RAID Controller (PERC) 9 User's Guide
- PowerEdge RAID Controller H730P Data Sheet

References

Microsoft documentation

The following Microsoft documentation provides additional and relevant information:

- Exchange 2019 preferred architecture
- Exchange Server storage configuration options