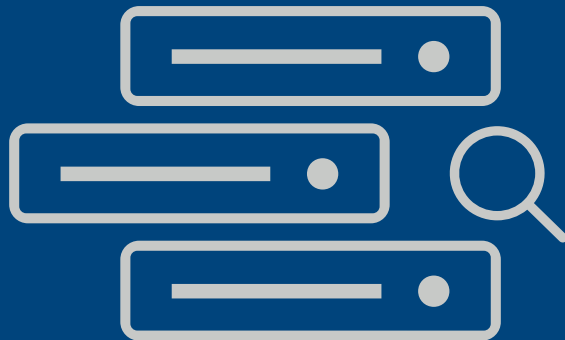# Guidebook for IT Process framework for updating BIOS/Drivers/Firmware

Purpose:

This document provides guidelines to IT administrators and management to remotely update BIOS, drivers, and firmware. It also provides IT best practice process framework to test, validate, and deploy updates remotely in a test and production environment.

While this document outlines best practices at the time of publishing, Dell Technologies is constantly evaluating better ways of enabling customers to efficiently manage Dell endpoints.

Basic workflow of IT Process for updating BIOS/Drivers/Firmware

IT Deployment Process Framework:
This workflow outlines the testing, validation, deployment process, outcome of each stage, and team members involved at each stage of the process.

Teams Structure:
- IT Engineering*
- IT Validation*
- Transition Managers*
- IT Operations*

* All such roles can also be performed by an **IT Admin**, especially in small businesses.

Stage 1 and 2 works in parallel

1 TESTING

Lead
IT Engineering

Overview:
Manual and remote installation on test environment units.

2 STAGING

Lead
IT Engineering
+
IT Operations

Overview:
Determine the tool for updates based on use case, update type, and strategy

3 VALIDATION

Lead
IT Validation
+
IT Engineering

Overview:
Regression testing and validation plan based on simulated end-user experience and performance benchmarks.

4 TRANSITION

Lead
Transition Team
+
IT Engineering

Overview:
User Acceptance Testing by IT beta internal users globally on production units. This stage ensures successful deployment and monitoring of remote updates.

5 DEPLOYMENT

Lead
IT Operations
+
IT Engineering
+
IT Validation

Overview:
Staggered deployment, monitoring incidents, deployment rate.
Stop deployment for any red flags, unfavorable trend, or end-users' escalations to review with IT Engineering.

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Stage 1

TESTING

Lead

IT Engineering

Overview:
Manual installation and remote installation on test environment units.

Requirements:
- Multiple systems per model.
- Latest BIOS, drivers, or/and firmware to be delivered to end users.

Steps:
1. Run a manual installation test and check for any yellow bangs in device manager and basic functionality.
2. Determine the IT device management tool of choice by following the first three steps in the next stage.
3. Run a remote installation test using the selected IT device management tool on the test environment units.
4. Document the findings and test plan.

Result:
- Understanding the points that can be automated.
- Understanding the points that require user interaction.
- The developed test plan is shared with IT validation team for rigorous testing.

Stage 2

STAGING

Lead

IT Engineering

+

IT Operations

Overview:
Determine the IT device management tool of choice based on use case, update type, and strategy.

Requirements:
- IT Management Console • Purpose of the update • End-user impact

Steps:
1. Determine and document the type of update:
   - Single update—Delivering update to one model to fix a recognized challenge.
   - Targeted updates—Delivering updates to select models to fix a recognized challenge.
   - Regular cadence updates—Delivering updates with a set frequency to maintain overall fleet health.
2. Determine and document the update strategy:
   - **Optional update** — Requires users to start the installation.
   - **Mandatory update** — Updates are silently pushed to the end-user system.
     Note: You must consider the end-user impact, issue severity, security need if any, end user job function/business criticality (manufacturing line, customer facing, legal team, or executives), and features the update offers.
3. Select and set up the IT device management tool based on use case, type of update, and update strategy by referring to the "*Dell Update Strategies Administrator Guide*" at **www.dell.com/support**.
4. Document steps to use the IT device management tool and share it with IT operations.
5. Make the updates available for the IT validation team for the rigorous testing.

Result:
- All parameters are configured per use case, type of update, and update strategy.
- IT device management tool is ready for use.
- Documented steps to use the IT device management are shared with IT Operations.
- Driver, BIOS, or/and firmware updates are made available to the IT validation team.

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Stage 3

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VALIDATION

Lead

IT Validation

+

IT Engineering

Overview:
Regression testing and validation plan based on simulated end-user experience and performance benchmarks.

Requirements:
- Multiple test environment and simulated production environment units.
- Benchmark tools such as PCMARK, CrystalDiskMark 6 and 7, Windows ADK, and so on.

Steps:
1. Review the test plan developed by IT engineering and update, if required.
2. Proceed with the test plan and compare the following before and after the update:
   - Validating update
     - Verify the update version and the version that is displayed in Device Manager.
     - Confirm the expected outcome—functionality, user experience, and so on.
     - Verify overall PC performance using a benchmark tool such as PCMARK tool, boot time, disk performance, battery life, and so on.
   - Functionality and experience testing—Productivity, communication/collaboration, security, and other essential applications.

Result:
- Quantified end user experience through benchmark and actual experience testing is shared with IT engineering.
- Any risks, issues, and feedback are documented and shared with IT engineering.

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Stage 4

TRANSITION / UAT

Lead

Transition Team

+

IT Engineering

Overview:

User Acceptance Testing (UAT) by IT beta users globally on production units. This stage validates remote updates in a controlled production environment. It also includes monitoring and reporting any end user impact post updates. The feedback is shared with IT validation and IT engineering teams.

Requirements:

Global UAT users

Steps:

1. IT Engineering shares the plan with the set of tasks to be followed by the Transition team to create a UAT test use case and the expected results.
2. IT Engineering delivers the update to the transition / UAT team devices.
3. IT transition team shares the tasks and the due date to UAT testers and gathers feedback.
4. IT transition shares feedback with IT engineering (pass or fail) and opens an investigation, if needed.
   Note: You must document even minor errors and workarounds or permanent fixes, and provide the information to IT Operations, to leverage as needed, during deployment.
5. IT transition arranges a review to collect inputs and results from engineering/validation/UAT for key stakeholders' Go or No-Go decision.

Result:

- Understanding of the end-user experience post the updates and validation of updates on a larger scale with at least three end-users from global regions per model.
- Review is completed with a go-decision to move to the fifth stage-Deployment.

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Stage 5

DEPLOYMENT

Lead

IT Operations

+

IT Engineering

+

IT Validation

Overview:
Staggered deployment, monitoring incidents, deployment rate. Stop deployment for any red flags, unfavorable trend, or end-users' escalations to review with IT Engineering.

Requirements:
Documented steps to use the selected IT device management tool

Note: You must also consider the risk severity—high risk versus low risk update.

Steps:
1. Pilot deployment for all applicable devices used by IT technicians globally and monitor the success and failure rate.
2. Plan timeline for a target deployment completion date for devices in scope.
3. Proceed with production deployment with approximately 1% of install base and monitor the success and failure rate.
4. Monitor incident rate and stop deployment for abnormal increase or escalations post update and review with IT Validation/Engineering.

   High risk — Follow approximately 10% increment of the install base the following week and monitor success.

   Low risk — Follow a typical 4 ring structure of 10%, 20%, 30%, 40% deployment standard.

   Note: If a new release is required to address the issue, you must restart the process from the first stage.
5. Continue increasing in increment till deployment rate reaches approximately 90% and higher.

Result:
- Successful deployment with a target of 90% compliance rate is achieved.
- Favorable results are seen in incident rate/volume reductions and/or increased customer satisfaction.

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