Technical Guide



Platform Delivery

Prepared for

**[Type Customer Name Here]**

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Contributors

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Revision and Signoff Sheet

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1. Overview

The purpose of this document is to detail all aspects of the Platform Delivery capability design and implementation as it relates to the <CUSTOMERNAME> - <PROJECTNAME> project. This document is for use by the <PROJECTNAME> project manager, <DELIVERYORG> technical specialists and <CUSTOMERNAME> IS and IT teams.

This document includes the design of features to support the Platform Delivery capability design including:

BitLocker is an optional component that may need to be deleted

* Supported platforms to deploy the customer reference image
* Supported platform configuration
* Deployment workflow configuration
* BitLocker configuration

1. Technical Design

This section outlines the design options, customer decisions and configuration for the capability.

The design will identify the appropriate hardware, software, configurations, customers, and external services that are required to successfully implement and operate a platform delivery capability.

The design comprises of three key areas:

* Core infrastructure dependencies – all dependent services required for capability to operate.
* External prerequisites – all external prerequisites for System Center Configuration Manager.
* Design – details each of the features of the capability, including decisions and configuration parameters as discussed and captured through the design workshop for this capability.

The table below identifies key decisions that impact the overall implementation and ownership of the capability:

| Decision | Justification | Impact |
| --- | --- | --- |
| New Device and Refresh Device scenarios will be supported in the production environment. | These are the fundamental deployment scenarios required and must be tested as part of the pilot | Minimal – These deployment scenarios will meet the need for the organization. |
| Replace Computer scenario will not be supported as part of the project. | Time constraints do not allow the configuring of the Replace Device deployment scenario. | User State Migration can be completed as a separate customer task – the System Center Configuration Manager design will include the location and content scoping for state migration points to assist with this process. |
| The project will not support the migration of user data, applications, and settings for the Refresh scenario | Time constraints do not allow configuring the Replace Device deployment scenario to upgrade to a new Operating System | Minimal – In-Place upgrades should be used instead of Refresh Device to migrate user settings, data, and compatible applications. |
| Default user state migration process included with Refresh and In-Place Upgrade scenarios will be supported in the production environment. | Time constraints will only allow the use of the default user state migration processes in the Refresh Device and In-Place Upgrade scenario. | Minimal – Default process in In-Place upgrade migrates everything.  Default process in Refresh Device does not capture all data and user state therefore users need to be made away that as part of the pilot certain data and user state will not be preserved.  This can be developed and added prior to a full deployment. |
| Multicast network distribution will not be supported in the production environment. | Due to added complexity of setting up multicast for network distribution of the customer reference image is out of scope of the pilot. | Minimal – Unicast and Offline distribution are adequate for the project deployment target |
| UEFI/BIOS changes are not included as part of the platform delivery capability. | Due to added complexity of making changes to devices UEFI/BIOS firmware it is out of scope. | Minimal – Devices will utilize features based on their current configuration.  This can be rectified during a production deployment if required.  **Note:** Migrating Machines from BIOS to UEFI currently requires manual intervention |
| BitLocker to Go will not be implemented in the production environment. | Time constraints do not allow the configuration of BitLocker To Go. | Medium – Special care must be given during the pilot in scenarios where users transfer sensitive information on to removable media.  USB drives can be manually encrypted as a mitigation strategy. |

Table 1: Platform Delivery Design Decisions

When considering the Platform Delivery capability design, the process is separated into several key areas:

Delete any features from the list below if Platform Delivery capability <FEATURE> is not being implemented in the customer environment.

* Platform components:
* Supported platforms
* Boot image requirements
* Boot image configuration
* Network distribution configuration
* Platform configuration:
* Utility, runtime, and business apps to be included in the deployment process
* Device driver targeting
* Supported models
* User state migration scope
* BitLocker configuration
* Deployment workflow configuration:
* Supported models
* Supported images
* Supported deployment scenarios
* Device naming
* Device tattooing
* Supported firmware
* Support upgrade paths
  1. Core Infrastructure Dependencies

This section identifies services required for the capability to operate. This includes the following mandatory services:

| Component | Description |
| --- | --- |
| Environment | The refers to the computing environment in which the image and applications will be deployed. This environment consists of the infrastructure, software, tools, applications, and source files that will be used to successfully deploy the image and related utility, runtime, and business applications to pilot devices. |
| Networking | DNS, DHCP and PXE are required for network initiation of the deployment |
| Active Directory Domain Services | Active Directory Domain Services is required authentication and authorization of the device to the domain during image deployment process. |
| Active Directory Schema | If BitLocker is enabled, the Active Directory schema must support the escrow of recovery data from the client to Active Directory. |
| Update Management Capability | An update management capability is required to ensure devices are kept up to date with required security and feature improvements |
| Image Creation Capability | A working image creation capability in the customer environment is required to provide the reference image which is a required input in the development of the deployment workflow. |
| Pilot Devices | The pilot devices refer to the clients that will be deployed through the Platform Delivery capability. These devices must meet the minimum requirements to run the customer reference image and may require additional hardware requirements to enable additional features e.g. Secure Boot, Credential Guard, Device Guard. |

Table 2: Infrastructure Dependencies

The following service map illustrates the infrastructure dependencies required for the Platform Delivery capability component:

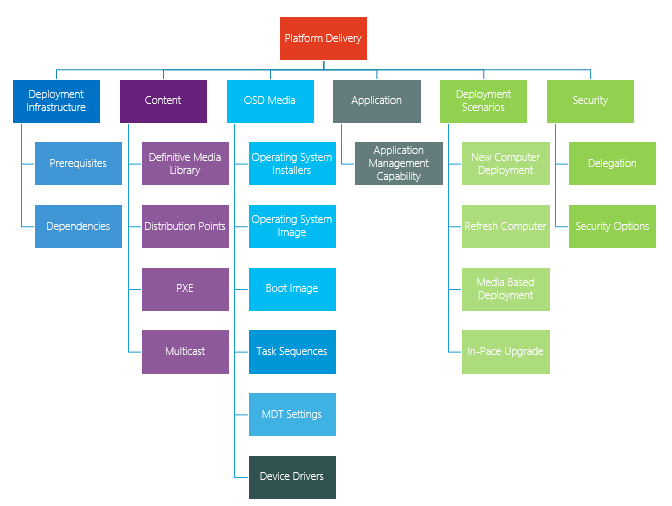


Figure 1: Service Map for Platform Delivery capability.

* 1. Environment Prerequisites

This section details prerequisites for the Platform Delivery capability and provides context for the design decisions documented in subsequent sections.

| Item | Description |
| --- | --- |
| Zero Touch Infrastructure (Primary and Remote site) | The Zero Touch Operating System Deployment infrastructure refers to the server systems that contain the supported deployment solution components. System Center Configuration Manager may require PXE enabled Distribution Points at the primary location and a branch office location |
| Internet Connectivity | Internet connectivity is required to download several software prerequisites including:   * Microsoft Deployment Toolkit 2013 Update 2 * Windows Assessment and Deployment Kit for Windows 10 RTM * Device Drivers for the 3 supported device models included in scope |

Table 3: Environment Prerequisites of Platform Delivery capability.

This section should be changed and/or completed to detail the prerequisite design decisions specified by the customer. Update this section as required

The following table describes how the infrastructure considerations and prerequisites are addressed:

| Component | Prerequisite Met | Description of service required |
| --- | --- | --- |
| Internet Connectivity | <YES/NO> | Internet connectivity required |

Table 4: Platform Delivery Capability Infrastructure Considerations and Prerequisites

* 1. Configuration

This section details decisions related to the configuration of the device, before a user can log in and start using the device. The scope of the project provides for the deployment of up to three unique device types (make and model), using the reference image(s) created by the customer for a supported Operating System.

The table below provides a list of all design decisions related to the implementation in the customer production environment.

| Design Decision | Design Options | Decision | Justification |
| --- | --- | --- | --- |
| Utility Applications | Not applicable – design options addressed in Application Delivery Service | Obtain Application Name & Version from Application Management Capability and enter in this section | Applications selected as output from the Application Management Capability. |
| Runtime Applications | Not applicable – design options addressed in Application Delivery Service | Obtain Application Name & Version from Application Management Capability and enter in this section | Applications selected as output from the Application Management Capability. |
| Business Applications | Not applicable – design options addressed in Application Delivery Service | Obtain Application Name & Version from Application Management Capability and enter in this section | Applications selected as output from the Application Management Capability. |
| Device Drivers | * Driver Packages **(Default)** * Auto-Apply Drivers | **Driver Packages** | Driver packages will be used to target specific drivers to devices during image deployment. |
| Supported Models | 3 customer models | **<1- Make & Model>**  **<2- Make & Model>**  **<3- Make & Model>** | Customer selected devices that meet the hardware requirements to run the operating system. |
| User State Migration | * Refresh scenario – Retain user data through hard-link migration **(Default)** * In-Place Upgrade Scenario – Retain all data, settings, and applications **(Default)** | **Refresh Existing Device – Retain data through hard link migration (Default)**  **In-Place Upgrade Scenario – Retain all data, settings, and apps** | Default user state migration is included in scope of the pilot for refresh and in-place upgrade scenarios.  No other scenarios are supported. |
| Target OU Location for Deployed Devices | * Dependent on customer environment | **<OUNAME>**  **<OULOCATION>** | Devices must be deployed to a standardized location in the production environment. |
| BitLocker | * Enable (Default) * Do not enable | **Enable** | BitLocker will be enabled to provide full volume encryption to protect data on operating system volumes as well as other fixed and removable data volumes |
| General BitLocker Configuration | * Encryption and Cypher Strength * AES 256-bit **(Default)** * Enable standard user PIN & password change **(Default)** * Apply BitLocker before deployment **(Default)** * Full Encryption * Encrypt used disk space only **(Default)** | **AES 256-bit encryption**  **Enable standard user PIN & password change**  **Apply BitLocker before deployment**  **Encrypt used disk space only** | To reduce the time required to encrypt volumes, BitLocker will be configured to initiate the encryption of the volumes prior to the installed of the supported Operating System and will be configured to only encrypt used disk space rather than the entire volume. With the possible difference between used disk space and full volume encryption being hundreds of gigabytes this can drastically reduce encryption time. |
| BitLocker Drive Encryption Options | * Encrypt Operating System Drive * Encrypt Fixed Data Drive * Encrypt Removable Data Drive (out of scope) | **Encrypt Operating System Drive**  **Encrypt Fixed Data Drive** | To ensure all corporate data at rest is encrypted, all fixed drives will be protected with BitLocker Drive Encryption. |

Table 5: Design decisions for Configuration

* 1. Workflow

This section details decisions related to the workflow used to deploy the customer reference image to a device and covers the key inputs that are required to customize the workflow. The scope of the project provides for the creation of task sequences to support both a new/refresh device scenario and the new Windows 10 in-place upgrade scenario, if a Windows 10 Customer Reference Image is available. These task sequences will be used to deploy the reference image(s) created from by the customer and applications created in the Application Delivery Service.

The table below provides a list of all design decisions related to the implementation in the customer production environment.

| Design Decision | Design Options | Decision | Justification |
| --- | --- | --- | --- |
| New & Refresh Task Sequence | * Supported by all device models **(Default)** * Supported by selected device models | **Supported by all device models** | This task sequence supports all device models. See Appendix A – Hardware Design for further information on hardware types |
| New & Refresh Task Sequence - Image | * <CUSTOMERNAME> reference image **(Default)** | **<CUSTOMERNAME> reference image** | Task sequences will be created to support all images created in the Image Creation Service. |
| New & Refresh Task Sequence – Deployment Scenarios supported | * New Device deployment for new devices * Refresh deployment from existing OS * Refresh deployment from previous Windows version | **New Device deployment for new devices**  **Refresh deployment from Existing OS** | The project supports the deployment of a customer reference image to new devices and the refresh of existing devices. |
| New & Refresh Task Sequence – Pre-Flight Activity – Computer Name | * Existing Device – Use Existing Device Name **(Default)** * Existing Device – Use Asset Tag in Firmware * Existing Device – Customer Selected Naming Convention * New Computer Name Use Asset Tag in Firmware **(Default)** * New Device Name – Customer Selected Naming Convention | **Existing Device – Use Existing Device Name**  **New Computer Name Use Asset Tag in Firmware** | To simplify the device naming process while deploying the reference image, the existing device name will be used when refreshing existing devices.  New devices will use the Asset Tag in the firmware to set the devices name. This can be pre-populated with a customer specific naming convention if required. |
| New & Refresh Task Sequence – Pre-Flight Activity – Tattoo | * Tattoo Task Sequence Name and Build Version into device registry **(Default)** * Do not tattoo | **Tattoo Task Sequence Name and Build Version into device registry** | Devices will be tattooed during the deployment process to allow future identification of the task sequence and version that was used to deploy the device. |
| New & Refresh Task Sequence – Pre-Flight Activity – Firmware Configuration | * Use existing device firmware configuration **(Default)** * All devices UEFI * All devices BIOS | **Use existing device firmware configuration** | A mixture of BIOS and UEFI devices exist in the production environment, and this configuration will be maintained for the pilot. Changing the firmware configuration is a manual process and is out of scope for the project |
| In-Place Upgrade Task Sequence – Supported Devices | * Supported by all device models **(Default)** * Supported by selected device models | **Supported by all device models** | This task sequence supports all device models. See Appendix A – Hardware Design for further information on hardware types |
| In-Place Upgrade Task Sequence – Pre-Flight Activity – Supported Upgrade Path | * In-Place Upgrade from Windows 8.1 * In-Place Upgrade from Windows 8 * In-Place Upgrade from Windows 7 | **In-place Upgrade from Windows X** | In-Place upgrades will be supported from Windows X as it is the primary source OS in the environment |

Table 6: Design decisions for Workflow

* 1. Platform

This section details decisions related to the platform that will be used to deploy the customer reference image and covers the key inputs that are required to configure the platform. The scope of the project provides for the use of System Center Configuration Manager to provide the platform delivery capability to in-scope devices, and to design the capability to support the production environment.

The table below provides a list of all design decisions related to the implementation in the customer production environment.

| Design Decision | Design Options | Decision | | | Justification |
| --- | --- | --- | --- | --- | --- |
| State Migration Point | * Not included **(Default)** * Included in design for future state migration capability | | **Not included** | No user state migration requirement exists in the environment | | |
| Microsoft Deployment Toolkit Integration | * Integrated **(Default)** * Not Integrated | | **Integrated** | Extends features and functionality of the platform delivery capability with System Center Configuration Manager | | |
| Naming Convention - Applications | * (Vendor) (Application Name) (Version) (Service Pack) (Internal Version) * Customer chosen application name | | **(Vendor) (Application Name) (Version) (Service Pack) (Internal Version)** | This naming convention will be used as no existing naming convention is defined. | | |
| Naming Convention – Driver Packages | * (Brand) (Model) – (OS Edition) – (OS Architecture) **(Default)** * Customer chosen driver package name | | **(Brand) (Model) – (OS Edition) – (OS Architecture)** | This naming convention will be used as no existing naming convention is defined. | | |
| Naming Convention – Task Sequence | * (Deploy/Upgrade) – (OS Edition) – (OS Architecture) **(Default)** * Customer chosen task sequence name | | **(Deploy/Upgrade) – (OS Edition) – (OS Architecture)** | This naming convention will be used as no existing naming convention is defined. | | |

Table 7: Design decisions for Platform

1. Technical Implementation

This section details the implementation of the Platform Delivery capability developed for the production environment and the steps to install, configure, and operate the required component that will deliver this capability.

The following high-level activities are needed:

| Section | Activity |
| --- | --- |
| 3.2 | Configure Deployment Assets |
| 3.3 | Configure ZTI Task Sequences |
| 3.4 | Deploy ZTI Task Sequences |

Table 8: List of tasks to prepare for the Platform Delivery capability

* 1. Implementation Activities and Tasks

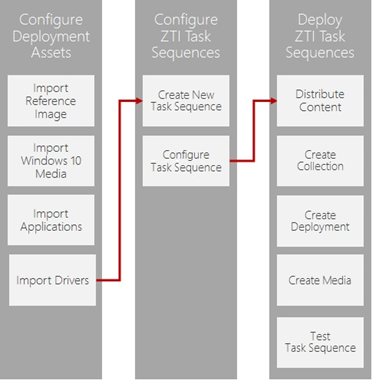


Figure 2: Platform Delivery capability component implementation steps

* 1. Configure Deployment Assets

The deployment assets that are imported are required for use in the task sequences that will be created to support the New Device, Refresh, and In-place Upgrade scenarios. This can be performed using the steps below.

| Task | Rationale | Implementation Guidance |
| --- | --- | --- |
| Import Reference image | A customer reference image supported by System Center Configuration Manager is required for using the New Device and Refresh scenarios | * Refer to <https://technet.microsoft.com/en-us/library/mt627939.aspx#BKMK_AddOSImages> |
| (Optional) Import Windows 10 Media | Windows 10 Media is required for using the in-Place Upgrade scenario | * Refer to <https://technet.microsoft.com/en-us/library/mt627933.aspx> |
| Import Applications | Create new applications for utility, runtime and business applications that require installation during the deployment process. | * Refer to <https://technet.microsoft.com/en-us/library/mt627959.aspx> |
| Import Drivers | To be utilized in the image deployment process, drivers for the 5 models in scope of the project must be imported into System Center Configuration Manager. | * Refer to <https://technet.microsoft.com/en-us/library/mt627934.aspx#BKMK_ImportDrivers> |

Table 9: Implementation – Configure Deployment Assets

* 1. Configure ZTI Task Sequences

The Task Sequences to support the New Device, Refresh and In-place Upgrade scenarios need to be created. This can be performed using the steps below.

| Task | Rationale | Implementation Guidance |
| --- | --- | --- |
| Repeat this process for all Task Sequences that are required | | |
| Create New Task Sequence | To implement the automation, a task sequence must be created. This will house most the automation and serves as the instruction set that will be used by the Platform Delivery capability. | * Different task sequence templates are required for New/Refresh Device scenario and the In-Place Upgrade scenario * Refer to **Error! Hyperlink reference not valid.**<https://technet.microsoft.com/en-us/library/mt627917.aspx#BKMK_CreateTaskSequence> |
| Configure Task Sequence | To utilize the configuration that has been implemented, several items need to be modify in the task sequence. This will allow us to target updates and drivers that are required by the task sequence and the image build process. | * Configure the New Device & Refresh Device task sequence with the following: * Customer reference image * Utility, runtime, and business applications * Driver packages * Configure the In-Place Upgrade task sequence with the following: * Windows 10 source media * Pre-OS installation runtime and business application uninstallations * Utility, runtime, and business applications * Driver packages * Refer to <https://technet.microsoft.com/en-us/library/mt627917.aspx#BKMK_ModifyTaskSequence> |

Table 10: Implementation – Configure ZTI Task Sequences

* 1. Deploy ZTI Task Sequences

The Task Sequences to support the New Device, Refresh and In-place Upgrade scenarios need to be configured for deployment. This can be performed using the steps below.

| Task | Rationale | Implementation Guidance |
| --- | --- | --- |
| Distribute Content to Distribution Points | Once the assets have been imported they need to be distributed to all required distribution points. | * Refer to <https://technet.microsoft.com/en-us/library/mt627917.aspx#BKMK_DistributeTS> |
| Create Collection | A collection will need to be created to define devices that the reference image will be deployed to | * Refer to <https://technet.microsoft.com/en-us/library/mt629371.aspx> |
| Create Deployment | A deployment is created to link the new task sequences to the collection created in the previous step. Once the deployment is created the image can be deployed to the device. | * Refer to <https://technet.microsoft.com/en-us/library/mt627917.aspx#BKMK_DeployTS> |
| Create Media | Once the task sequence is completed, media can be created within the administrative console to perform media based deployments | * Refer to <https://technet.microsoft.com/en-us/library/mt627921.aspx> |
| Test Task Sequence | Test the task sequence to ensure it functions as expected. | * Refer to the test plan to perform testing on the ZTI Task Sequence |

Table 11: Implementation – Deploy ZTI Task Sequences

1. Test Plan

This section details the test plan for the Platform Delivery capability component developed for the production environment.

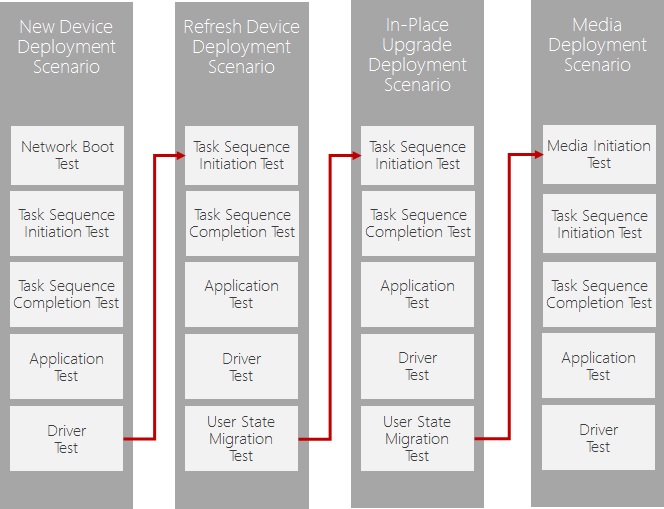


Figure 3: Platform Delivery Capability Test Scenario

The following sections define the description of how testing should start, pause, and stop for each test scenario. These are key quality metrics to be used in ensuring the items under test are ready to progress to the next stage in the testing process.

* 1. New Device Deployment

List of tasks we need to perform a new device deployment:

|  |  |  |
| --- | --- | --- |
| Task ID | Description | Pass / Fail |
| 1 | Device can network boot and connect to deployment system | Choose an item. |
| 2 | Wizard is automated and new device task sequence commences | Choose an item. |
| 3 | Deployment completes with no errors or warnings | Choose an item. |
| 6 | Applications are installed and function as expected | Choose an item. |
| 7 | Device drivers installed as expected | Choose an item. |

Table 12: New Device Deployment Test Criteria

* 1. Refresh Device Deployment

List of tasks we need to perform a refresh device deployment:

|  |  |  |
| --- | --- | --- |
| Task ID | Description | Pass / Fail |
| 1 | Wizard is automated and refresh device task sequence commences | Choose an item. |
| 2 | Deployment completes with no errors or warnings | Choose an item. |
| 3 | Applications are installed and function as expected | Choose an item. |
| 4 | Device drivers installed as expected | Choose an item. |
| 5 | Default USMT user data and state is retained | Choose an item. |

Table 13: Refresh Device Deployment Test Criteria

* 1. In-Place Upgrade Deployment

List of tasks we need to perform an In-Place Upgrade

|  |  |  |
| --- | --- | --- |
| Task ID | Description | Pass / Fail |
| 1 | Wizard is automated and in-place upgrade task sequence commences | Choose an item. |
| 2 | Deployment Wizard works as expected and initiates In-Place Upgrade scenario | Choose an item. |
| 3 | Deployment completes with no errors or warnings | Choose an item. |
| 6 | Applications are installed and function as expected | Choose an item. |
| 7 | Device drivers are installed and function as expected | Choose an item. |
| 8 | All user data and state is retained | Choose an item. |

Table 14: In-Place Upgrade Deployment Test Criteria

* 1. Media Based Deployment

List of tasks we need to perform a media based deployment:

|  |  |  |
| --- | --- | --- |
| Task ID | Description | Pass / Fail |
| 1 | Device can boot from media and connect to deployment system | Choose an item. |
| 2 | Wizard is automated and task sequence commences | Choose an item. |
| 3 | Deployment completes with no errors or warnings | Choose an item. |
| 6 | Applications are installed and function as expected | Choose an item. |
| 7 | Device drivers installed as expected | Choose an item. |

Table 15: New Device Deployment Test Criteria

1. Component Operation

This section details the operation of the service as implemented in the production environment.

The environment must be prepared to support the Platform Delivery capability component in the production environment, which can be performed using the steps below.

|  |  |  |
| --- | --- | --- |
| Scenario | Outcome | Tasks |
| Review current update level of System Center Configuration Manager | Ensure System Center Configuration Manager can continue to support the most recent releases of Operating Systems. new feature updates have been released the latest release must be installed | * If more recent updates are available, initiate a controlled process to install the updates. |
| Update MDT deployment assets | Ensure MDT can continue deploying Windows 10 after MDT or Configuration Manager are upgraded or updated respectively. | * If MDT is updated in a LTI or ZTI environment the MDT deployment assets will need to be updated accordingly e.g. MDT boot images, MDT Files package, USMT Files package. |
| In-place upgrade - updated Windows 10 source media | Ensure that the latest build of Windows 10 is available to be installed | * With new builds set to come out on a frequent basis in future. It will be important to ensure Windows 10 source media is updated on MDT or Configuration Manager for in-Place upgrades |
| Updated Drivers | To ensure devices function as efficiently as possible | * Some devices will have device drivers that are released on a regular basis. Driver packages must be updated to reflect the updated device drivers. |

1. Hardware Design

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No | Type | Make | Model | Firmware Type | Firmware Version | TPM Supported? | TPM Version | Virtualization Support | Biometric Support |
| 1 | Desktop / Laptop / Tablet | E.g. Surface | E.g. Pro 3 | UEFI / BIOS | E.g. 2.3.1 | Y/N | E.g. 2.0 | Yes/No | None/Fingerprint Reader/IR Camera |
| 2 |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  |