PLDM for Firmware Update DSP0267 Version 1.1.0 New Features

Work In Progress – July 2018

PMCI Workgroup

Disclaimer

- The information in this presentation represents a snapshot of work in progress within the DMTF.
- This information is subject to change without notice. The standard specifications remain the normative reference for all information.
- For additional information, see the Distributed Management Task Force (DMTF) website.

PLDM Firmware Update Version 1.1.0 - Scope

Add three new features to the specification

1) Support firmware update of downstream devices

2) Support the ability to activate firmware independent of file transfer

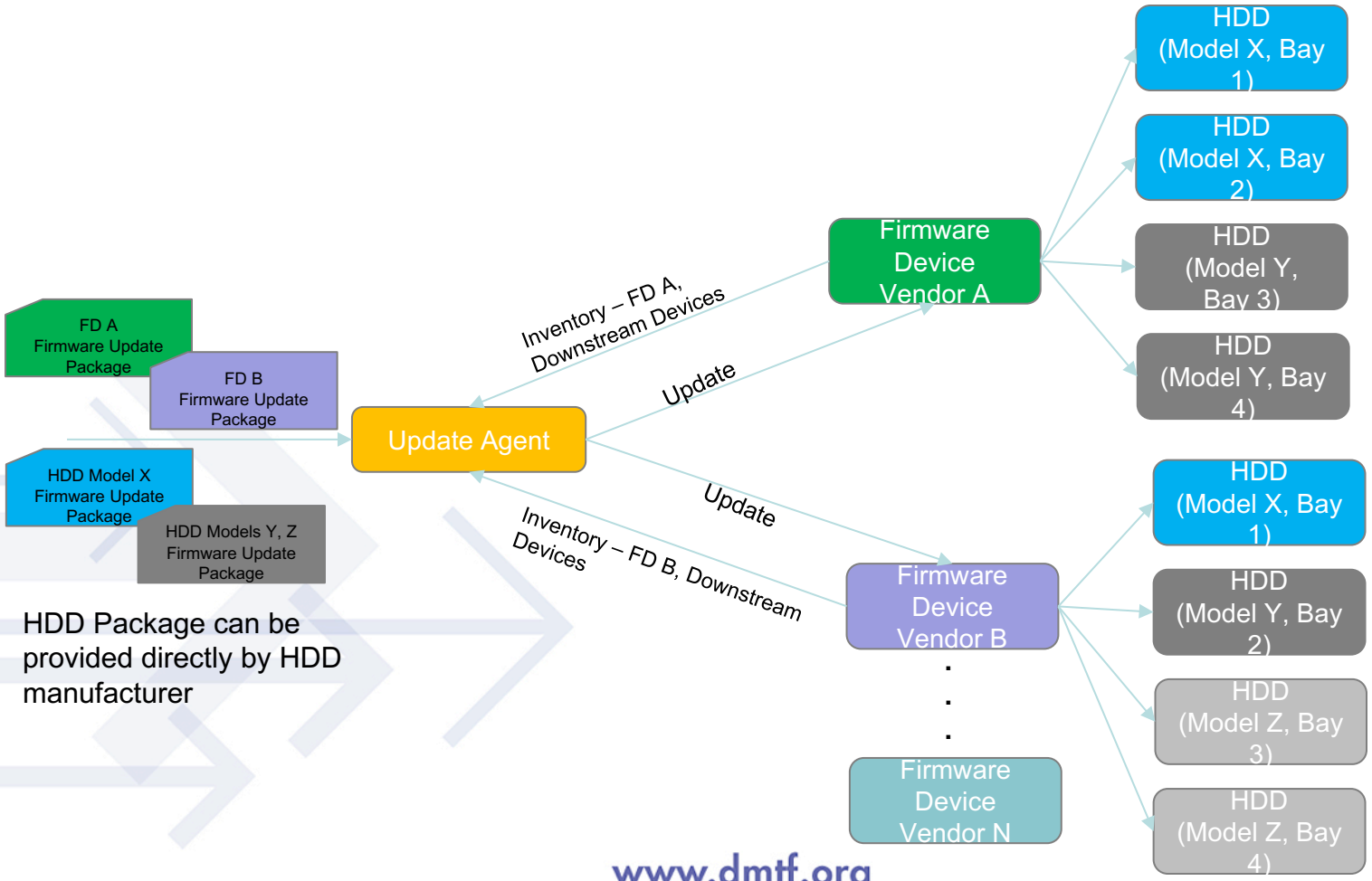
3) Enhance the current list of error codes

PLDM Firmware Update Version 1.1.0

- New Feature - Firmware update of downstream devices
  - Support Configurations such as RAID controllers with drives/expanders attached
  - Must enable the ability to have the FD proxy the download with no requirement for the FD to store the entire image prior to sending it to the downstream device
  - UA must have the ability to update the FD separately from the downstream device or the ability to update the downstream device without updating the FD
  - The PLDM update package must be able to provide identifiers only for a downstream device without listing identifiers for the FD which will proxy the download. The UA will discover the identifiers of a downstream device via an FD, and the FD will report whether it is capable of updating the firmware on the downstream device.
  - Enable the optional ability to update downstream devices as a group (parallel download)

PLDM Firmware Update Version 1.1.0

- Enable firmware update of devices downstream of PLDM terminus endpoint



HDD Package can be provided directly by HDD manufacturer

Downstream Device Support – Specification Proposal

- Expand header structure to create new Downstream Component Image
  - Must provide new descriptors for downstream devices in both the header and in the inventory commands
- Expand state machine to include downstream devices
  - Recommend that this be a separate flow from the primary firmware device to maintain backward compatibility
  - Existing commands must be leveraged in a manner that remains backward compatible
  - Does not require FD to store entire image before transmitting to downstream device
    - If error occurs during update, the existing 'Component Update Failure Retry Capability' flag would be applicable
    - An FD can re-request firmware data for the downstream device similar to the existing capability in the spec
- Create new inventory commands for downstream devices
  - New commands should be created to maintain backward compatibility
  - Inventory commands retained some reserved command numbers in 1.0 spec which would be leveraged for this new feature

PLDM Firmware Update Version 1.1.0

- New Feature - Ability to activate firmware independent of file transfer
  - Support capability to flash and then at a later time execute an activate command
  - This command can be used directly with an FD, or with a downstream device
    - Exactly when the command is to be issued is out of scope for the spec as a higher level entity (above the UA) may be responsible for determining when a activation from an idle state should occur. This command simply allows the UA to send a PLDM request to ask the FD to activate a pending image.

Activation After Transfer – Specification Proposal

- Create new activation command
  - Recommend new command that can be sent in IDLE state to maintain backward compatibility.

PLDM Firmware Update Version 1.1.0

- New Feature - Enhance the current list of error codes
  - Add or enhance error codes in the specification to support firmware update use cases
    - On Transfer of Image - Invalid Parameter, Image is corrupt, Generic failure, etc
    - On Verification of Image – Image Incomplete, Update not allowed, etc
  - Support error codes for both FD and downstream device update transfers

Error Code Enhancement – Specification Proposal

- Assign additional error codes to reserved values in responses
  - PLDM responses within the update process can provide a Result Code
    - A range of codes were reserved in the 1.0.0 specification
  - Define additional error reasons, generic and/or specific, in 1.1.0 using the reserved values