BMC Requirements for Internal Component Communications

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BMC-Component Communications

- Required for the management of OCP Platforms

- Goal is to enable standards-based intercommunications between different types of OCP platform components

- DMTF provides a common foundation for manageability

- OCP can leverage and adopt existing and emerging DMTF standards
DMTF Standards for OCP Platform Management Communications

- Network Controller Sideband Interface (NC-SI)
- Management Component Transport Protocol (MCTP)
- Platform Level Data Model (PLDM)
- Secure Protocol Data Model (SPDM)

Are DMTF standards for internal facing interfaces and protocols for platform management subsystem communications.
DMTF PMCI Working Group

- Platform Management Communications Infrastructure (PMCI)
  - PMCI suite of standards provide “Inside the box” communication and functional interfaces between components within the platform management subsystem
  - Creates specifications for MCTP, PLDM, NC-SI, and SPDM

- Applicability to OCP
  - OCP Platforms Management
  - OCP Device Management
  - Security...

- OCP NIC 3.0 Design Specification leverages multiple PMCI standards including:
  - DSP0236 - MCTP Base Specification
  - DSP0222 - Network Controller Sideband Interface (NC-SI) Specification
  - DSP0267 - Platform Level Data Model (PLDM) for Firmware Update Specification
  - DSP0248 - Platform Level Data Model (PLDM) for Platform Monitoring and Control Specification
Management Component Transport Protocol (MCTP)

- Base transport for “inside-the-box” communication

- Suitable for use with multiple media: SMBus, PCIe, etc.

- Suitable for all computer platform types

- Supports logical addressing based on Endpoint IDs

- Provides simple message fragmentation/reassembly

- Built-in capability discovery and supports path transmission unit discovery

- Carries multiple message types: MCTP Control, PLDM, NC-SI, NVMe, SPDM
Platform Level Data Model (PLDM)

- An effective interface & data model for efficient access to
  - Low-level platform inventory, BIOS, and config data
  - Platform monitoring/control, alerting, event log, etc.

- Defines low level data representations and commands

- Provides transport independent Request/Response Model

- Supports a subtype to distinguish types of PLDM Msgs
  - Allows messages to be grouped based on the functions
  - Allows the discovery of the functionality supported

- PLDM specs: Base, IDs & Codes, SMBIOS data transfer, BIOS control and configuration, Platform Monitoring and Control, FRU, Firmware Update, and Redfish Device Enablement (RDE)
Network Controller Sideband Interface (NC-SI)

- A common interoperable sideband interface and protocol to transfer management traffic between a Baseboard Management Controller (BMC) & network controller (NC)

- Supports Multiple Types of Management Traffic

- Pass-Thru Management Traffic enables BMC-Network communication via NC

- NC-SI Command/Response Packets
  - Command (Response) sent by BMC (NC) to NC (BMC)
  - Request/Response Semantics
  - Functions: Control, Configuration, Status, Statistics,…

- NC-SI Notification Packets
  - Generated and sent by NC to MC
  - Functions: OS/Link Status Change; NC Soft Reset
Security Protocol Data Model (SPDM)

• Specifies a method for:
  • Managed device authentication
  • Firmware measurement
  • Certificate retrieval

• Defines the formats for both request and response messages

• Enables end-to-end security between platform components

• Provides the ability to send secured messages:
  • A generic record format used for encryption
  • Message authentication of application data
PMCI Stack