



# Platform Management Communications Infrastructure (PMCI):

## Technology Overview

Patrick Caporale, Lenovo  
PMCI Co-Chair, DMTF  
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- This information is a summary of the information that will appear in the specifications. See the specifications for further details



## Agenda

- PMCI Working Group
- Platform Management Subsystem
- PMCI Protocol Stack
- Management Component Transport Protocol (MCTP)
- Network Controller Sideband Interface (NC-SI)
- Platform Level Data Model (PLDM)
- PMCI Test Tools

### Goals of this Presentation

- Provide an overview of PMCI technologies and standards
- Discuss management challenges addressed by PMCI technologies

# PMCI Working Group

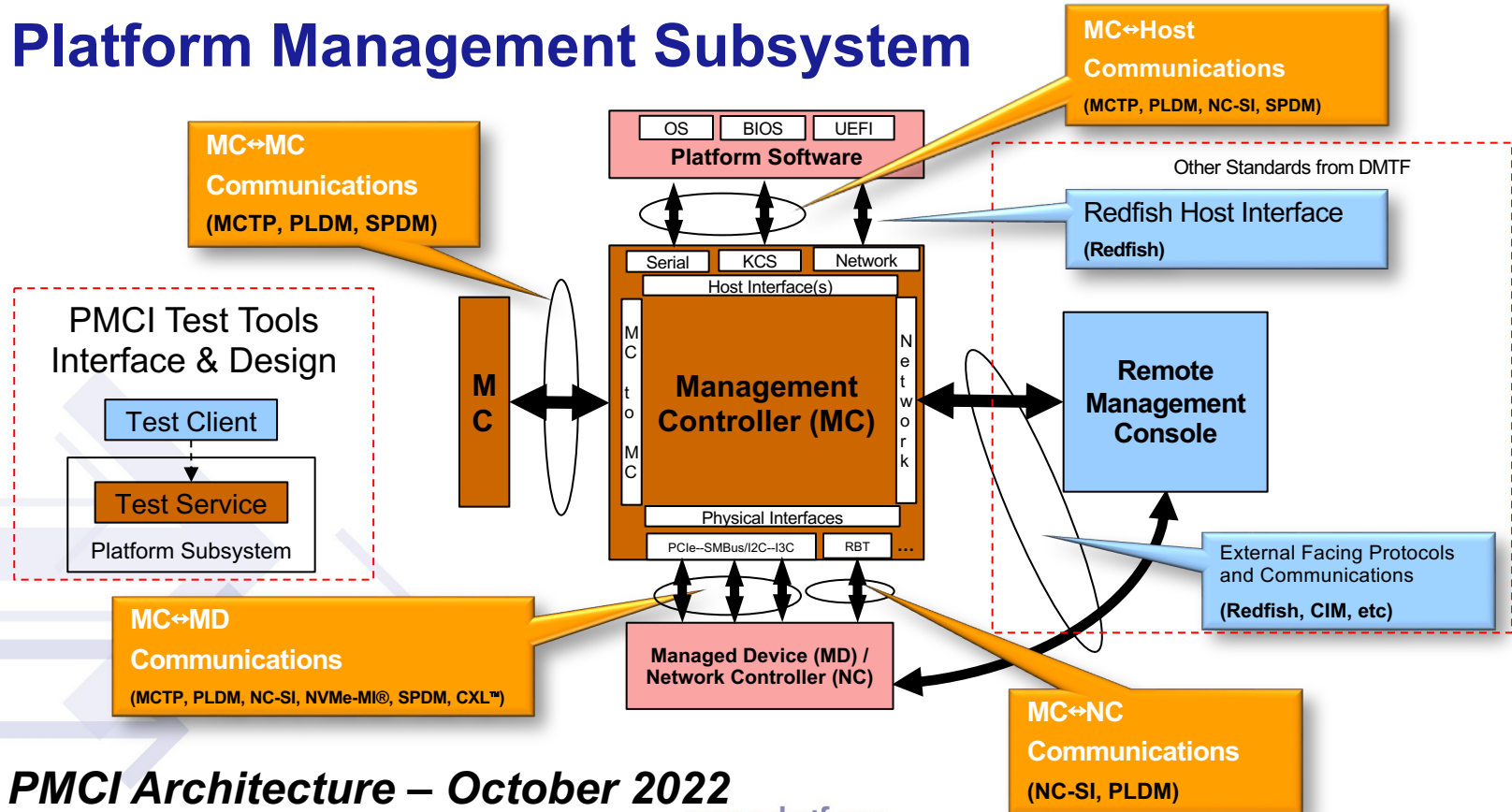
- Platform Management Communications Infrastructure
- PMCI suite of standards provide 'inside-the-box' communication and function interfaces between components within the platform management subsystem
  - Management Controller (MC) to Management Controller
  - Management Controller to Network Device (NC)
  - Management Controller to Managed Device (MD)
  - Host Interface to Management Controller
- Formed in 2005, initial standards released in 2007
  - Creates specifications for MCTP, PLDM, and NC-SI
- Over a decade of implementations within server and desktop provides

**PMCI technologies and interfaces are complementary and enabling to DMTF external facing data models/remote management protocols**

***Provides a Scalable Architecture for Modern Platforms***

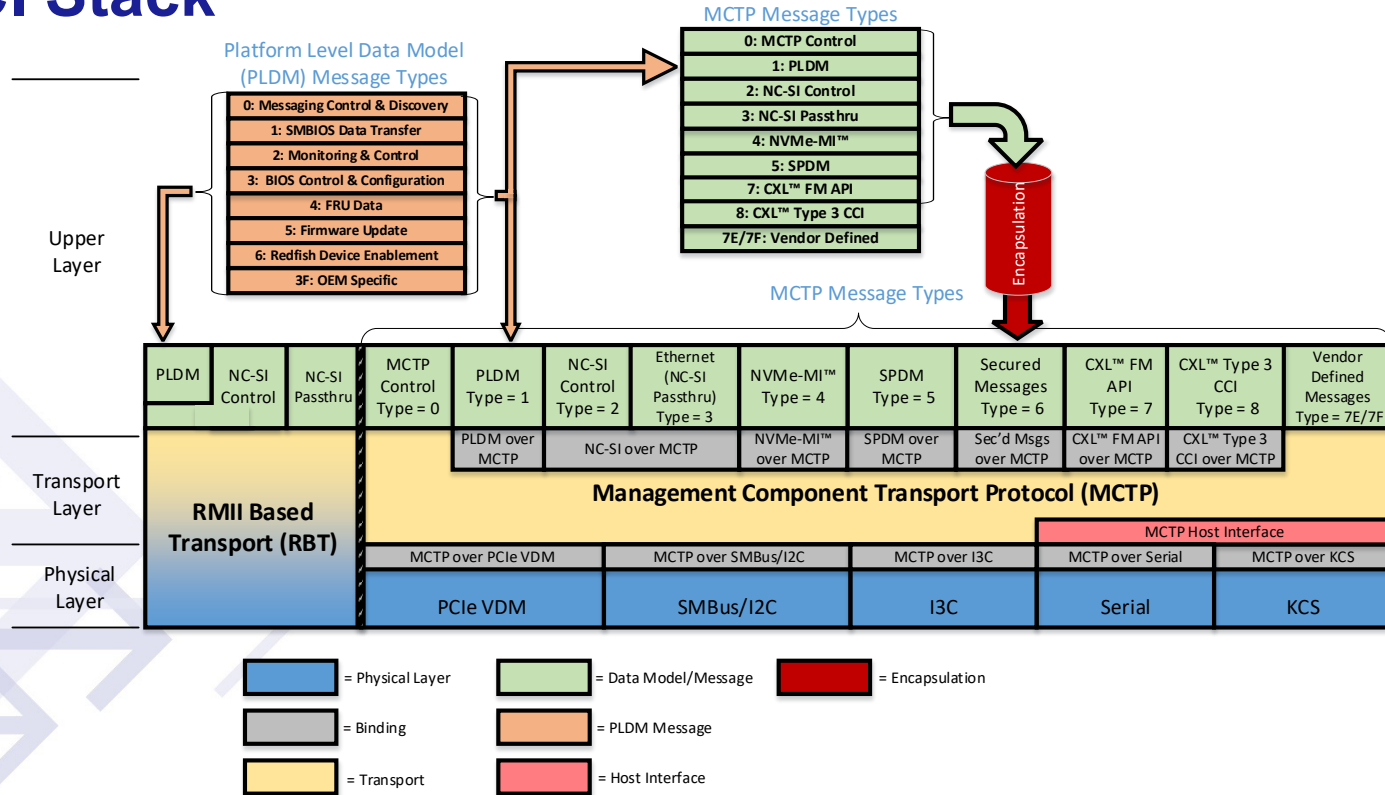


# Platform Management Subsystem



PMCI Architecture – October 2022

# PMCI Stack





# Management Component Transport Protocol (MCTP)

- Base transport for “inside-the-box” communication
- Suitable for use with multiple media: SMBus/I2C, PCIe, I3C, 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-MI™, SPDM, CXL™ FM API/CCI Type 3

**MCTP Base Specification = DSP0236**

**Additional MCTP specifications at [www.dmtf.org/standards/pmci](http://www.dmtf.org/standards/pmci)**



# Network Controller Sideband Interface (NC-SI)

- A common interoperable sideband interface and protocol:
  - Used to transfer management traffic between a management controller (MC) and network controller (NC).
  - Can be transported via MCTP or RBT
- NC-SI Communications
  - Pass-through Management Traffic
  - NC-SI Command/Response Packets
    - Command (Response) sent by MC (NC) to NC (MC).
    - Request/Response Semantics.
    - Functions: Control, Configuration, Status, Statistics, etc.
  - NC-SI Notification Packets
    - Generated and sent by NC to MC.
    - Functions: OS/Link Status Change, NC Soft Reset.

**NC-SI Base Specification = DSP0222**

**Additional NC-SI specifications at [www.dmtf.org/standards/pmci](http://www.dmtf.org/standards/pmci)**





## RMII-Based Transport (RBT)

- NC-SI Binding over Reduced Media Independent Interface™ (RMII)
  - Physical-level interface is based on RMII
  - Media-level interface is based on Ethernet
- Defines hardware arbitration scheme
  - Enables sharing a single RMII-based NC-SI bus
  - Prevents two or more NC-SI packages from transmitting at the same time

**RBT defined within NC-SI Specification = DSP0222**

## 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, firmware update, etc.
  - Redfish enablement for managed devices (RDE)
- Defines low level data representations and commands
- Provides transport independent Request/Response Model
- NIC Model Reference available
- Supports a subtype to distinguish types of PLDM Messages
  - Allows messages to be grouped based on the functions
  - Allows the discovery of the functionality supported

**PLDM Base Specification = DSP0240**

**Additional PLDM specifications at [www.dmtf.org/standards/pmci](http://www.dmtf.org/standards/pmci)**

## PMCI Test Tools

- Defines messages, data objects, and sequences for testing implementations
  - Data can be used to assess conformance of a device vendor firmware
- Defines roles for a Test Service and Test Client
  - Test Service runs in the platform subsystem's control plane
  - Test Client runs external to the platform subsystem
  - Test Client connects securely to the Test Service via TLS

**PMCI Test Tools Interface & Design Specification = DSP0280**

## Summary

- Platform Management Communications Infrastructure (PMCI) WG defines:
  - “Inside the box” communication/functional interfaces between components
- PMCI interfaces complementary/enabling to external facing data models and protocols
- Management Component Transport Protocol (MCTP):
  - Transport for internal communications & carry multiple message types
- Network Controller Sideband Interface (NC-SI)
  - An interface to transfer management traffic between MC & NC
- Platform-Level Data Model (PLDM)
  - An interface/data model for low-level management data/functions
  - Extensible request/response style transport independent messaging
- PMCI Test Tools
  - Ability to assess PMCI conformance of a device vendor firmware

**PMCI specifications at [www.dmtf.org/standards/pmci](http://www.dmtf.org/standards/pmci)**



## Acknowledgement

**Thanks to all the contributors and participants of the PMCI Working Group!**



**For more information,  
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**Learn about the PMCI working group at  
[dmtof.org/standards/pmci](http://dmtof.org/standards/pmci)**

**Thank you!**