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Lifecycle Operations using Ethernet Virtualization Profiles

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Disclaimer

- The information in this presentation represents a snapshot of work in progress within the DMTF.
- This information is subject to change. The Standard Specifications remain the normative reference for all information.
- For additional information, see the Distributed Management Task Force (DMTF) Web site.



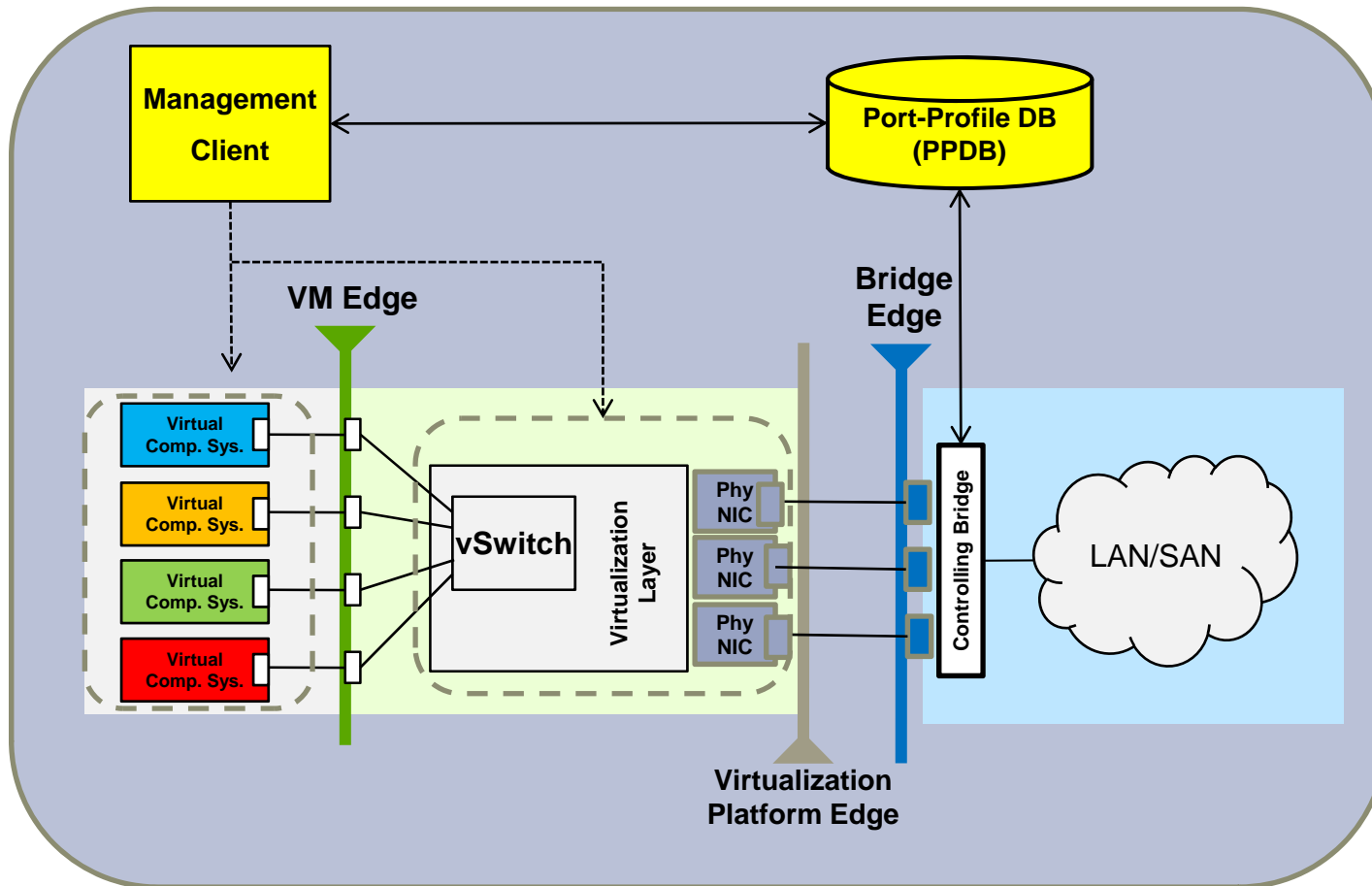
The DMTF was formed to lead the development, adoption and unification of management standards and initiatives for desktop, enterprise and internet environments



Outline

- IOV Virtual Networking Eco-System
- Use Cases
- Conceptual Models for Use Cases 1 and 2
- CIM Connectivity Models for Use Cases 1 and 2
- DMTF Ethernet Virtualization Profiles
- Life Cycle Operations for Use Case 1

IOV Networking Eco-System

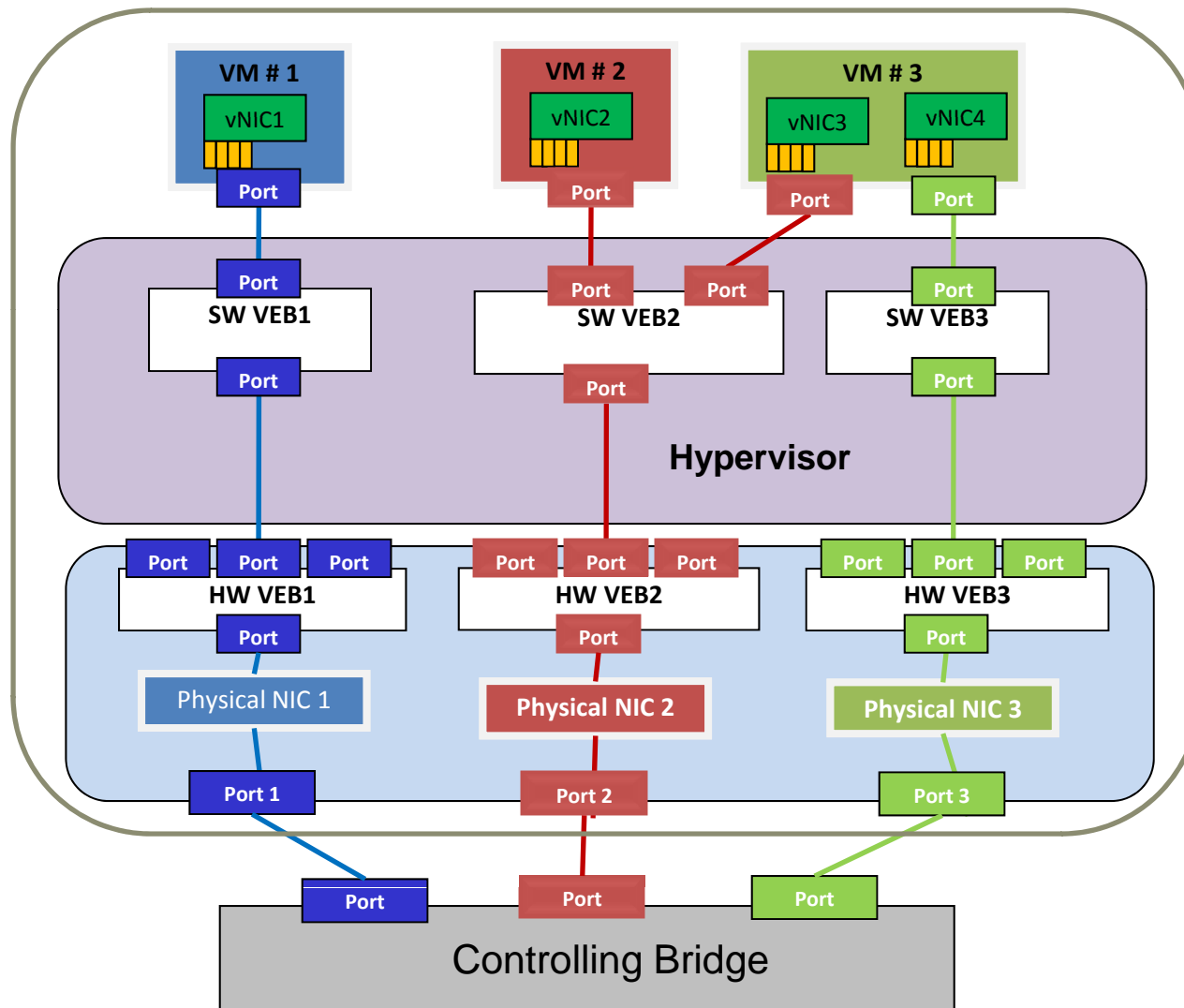


Use Cases

1. VEB Model for emulated mode:
 - VM (vNIC), Software VEB and Hardware VEB
2. VEB Model for Pass through mode:
 - VM(vNIC), Hardware VEB
3. Both Cases 1 and 2
4. VEPA Model for emulated mode:
 - VM (vNIC), Software VEPA, Hardware VEPA
5. VEPA Model for Pass through:
 - VM(vNIC), Hardware VEPA
6. Both Cases 4 and 5

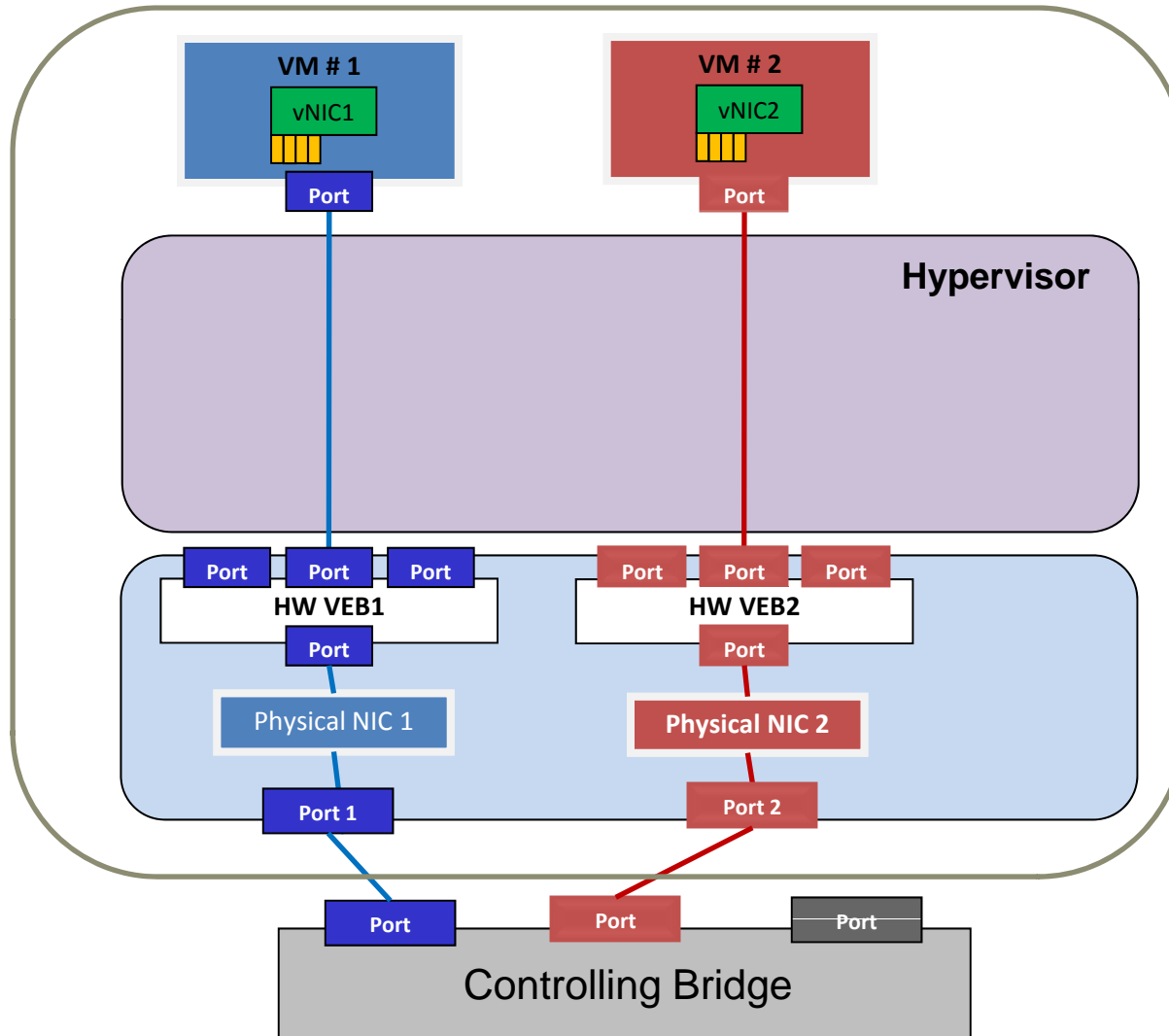
Data and Control Model: Use Case 1

Server Virtualization Platform

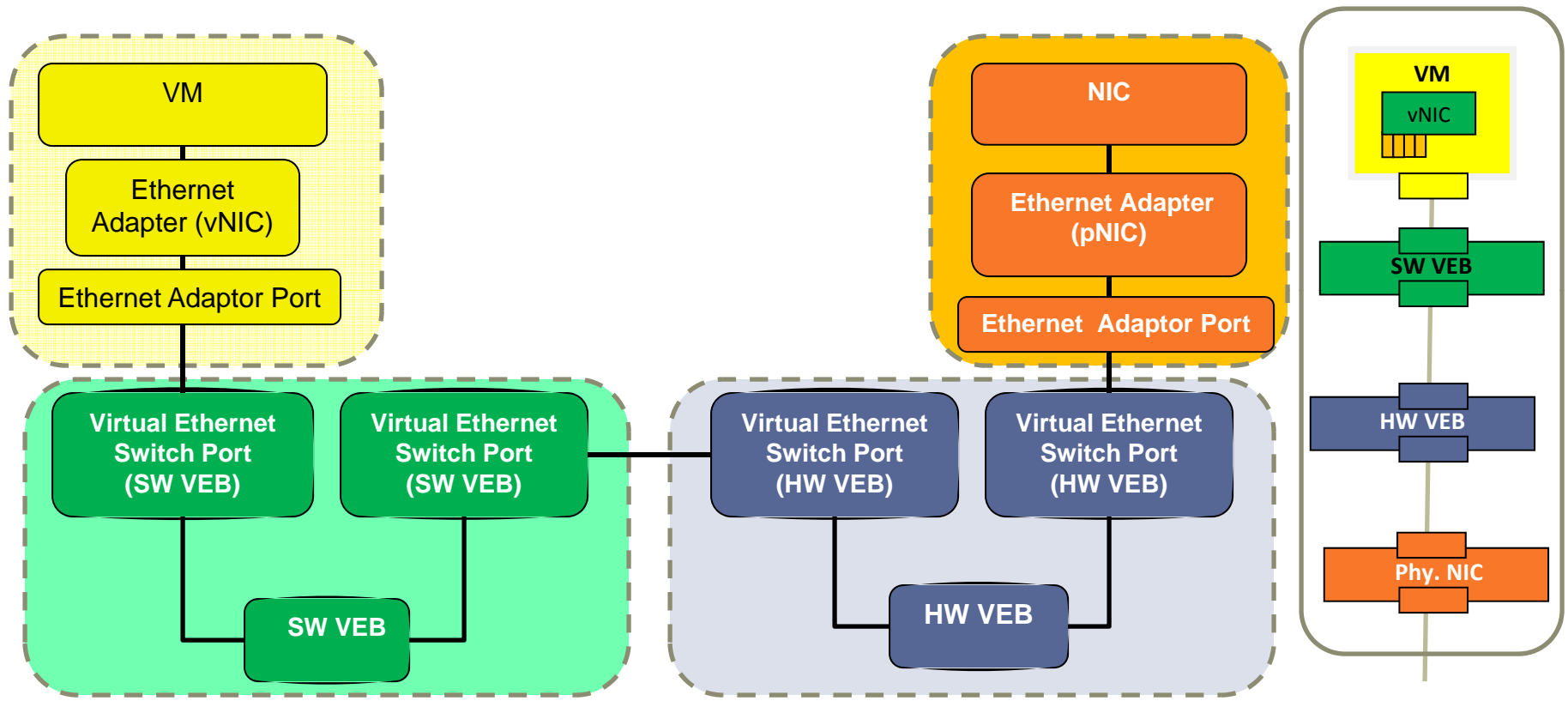


Data Model: Use Case 2

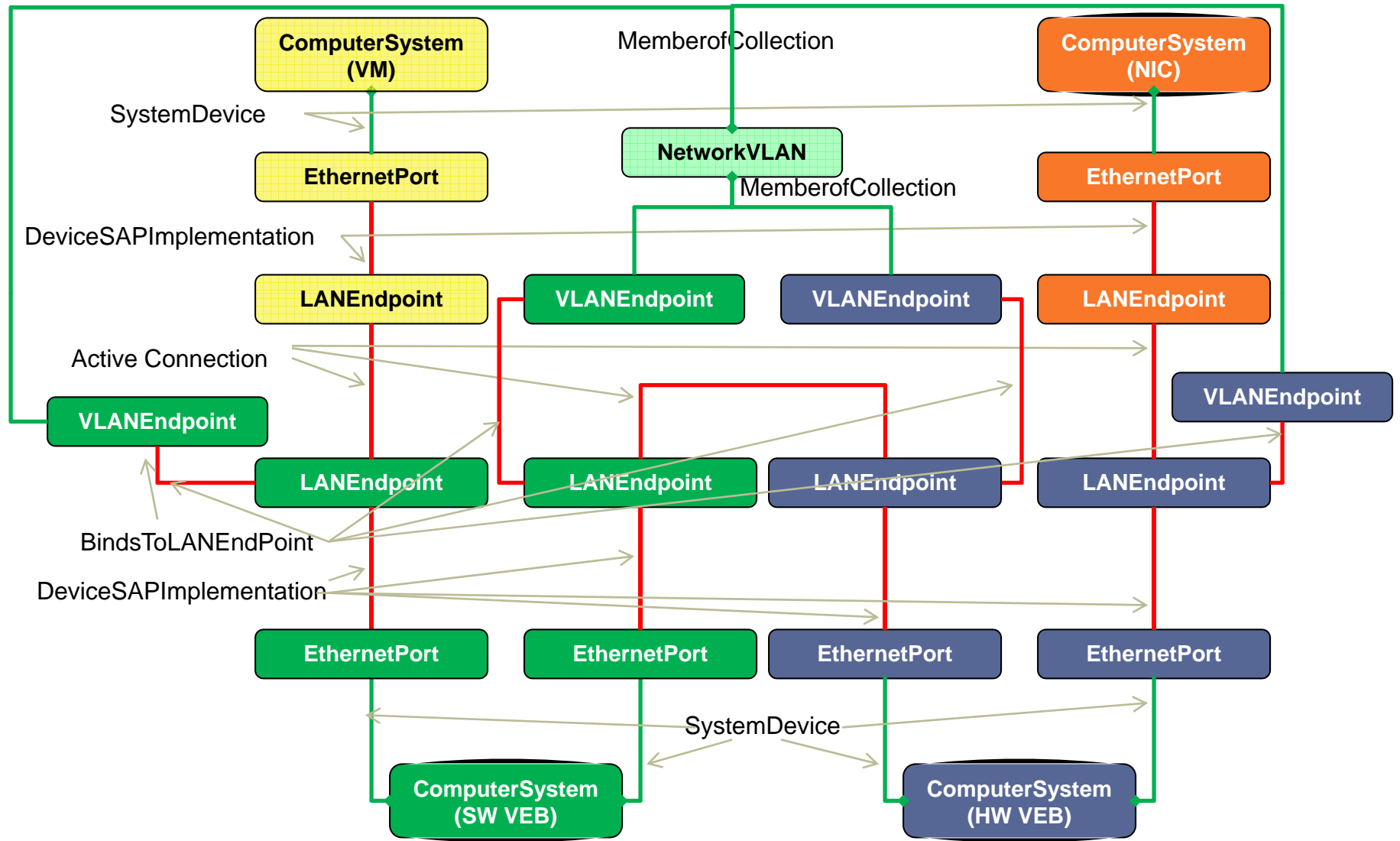
Server Virtualization Platform



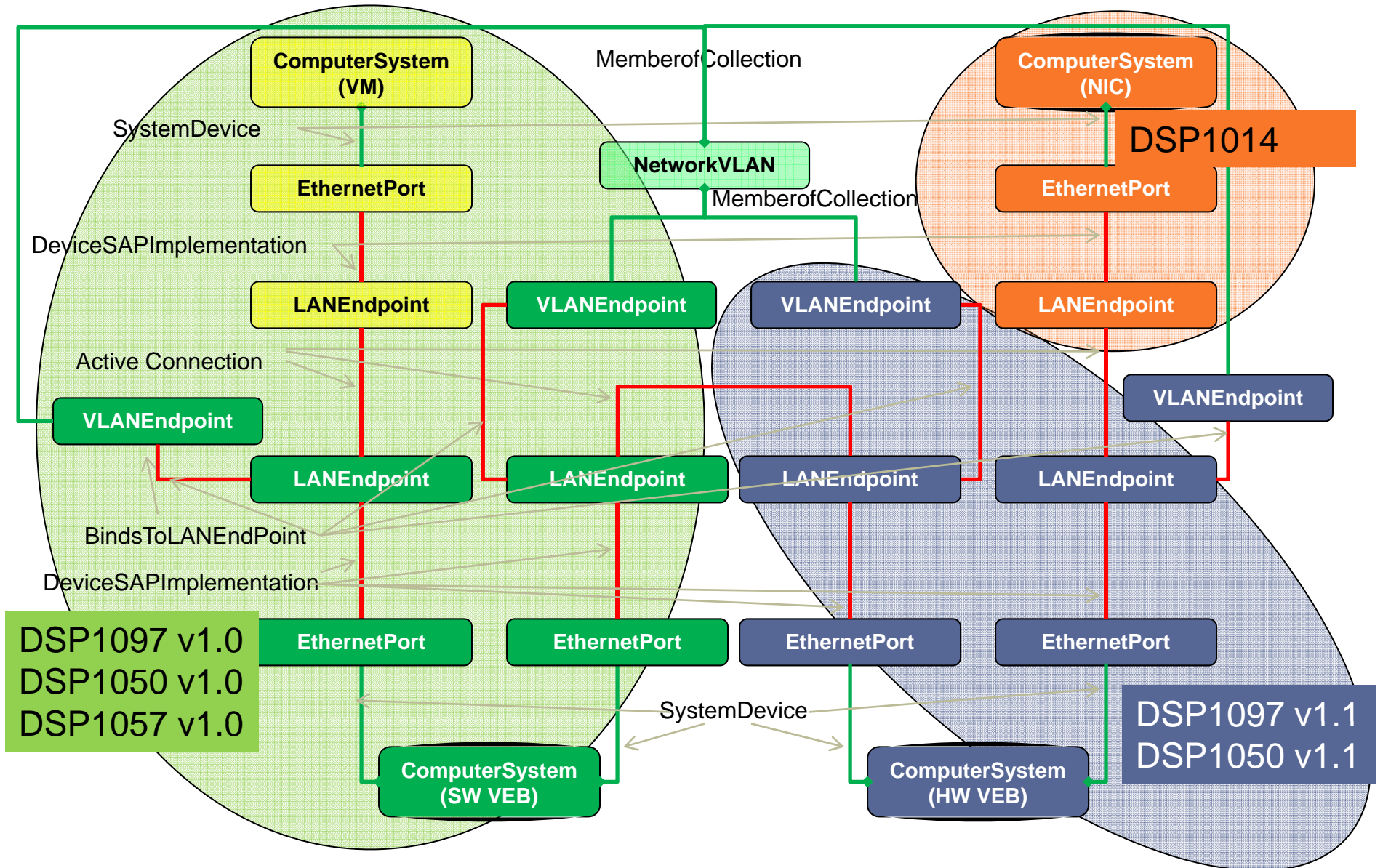
Conceptual Model: Use Case 1



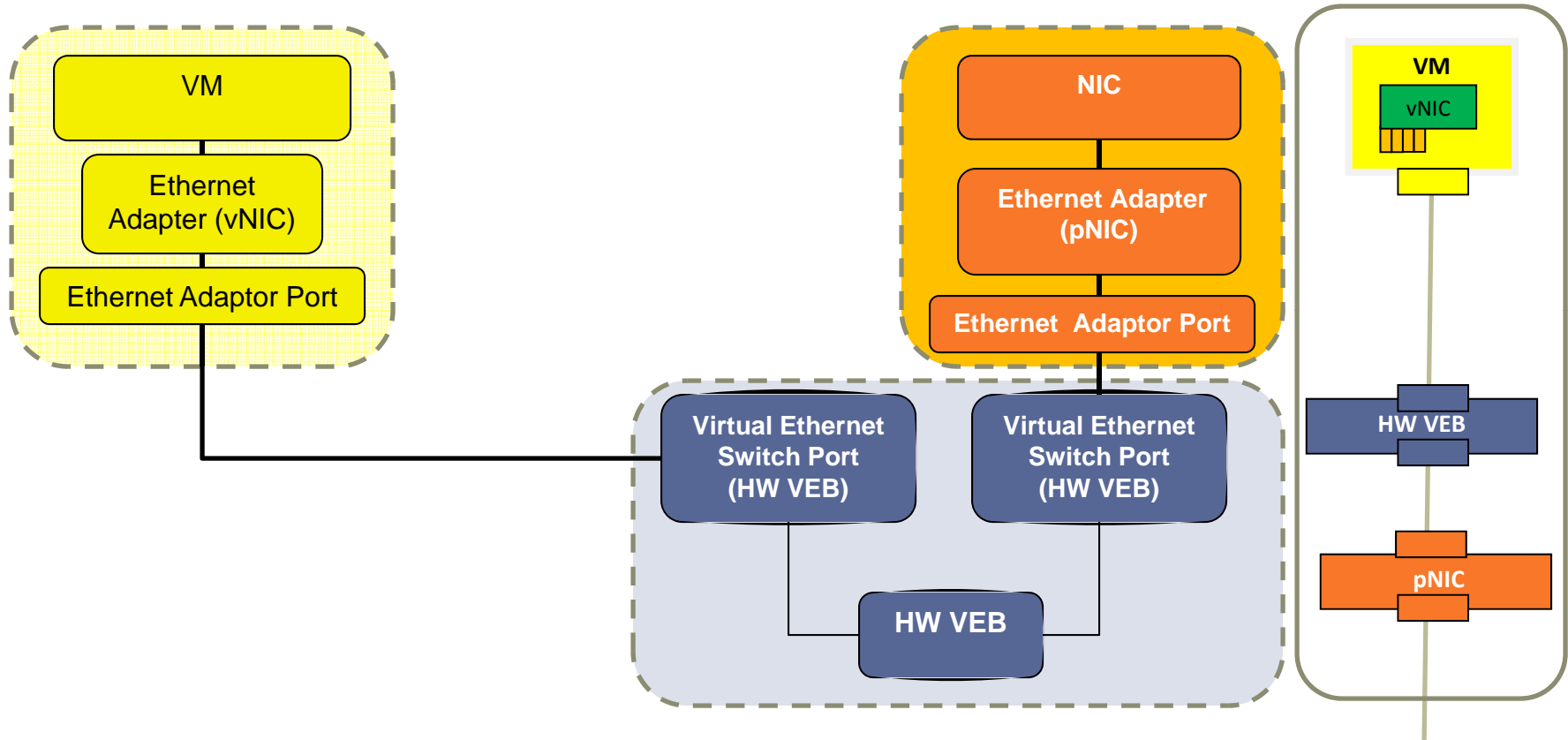
CIM Connectivity Model: Use Case 1



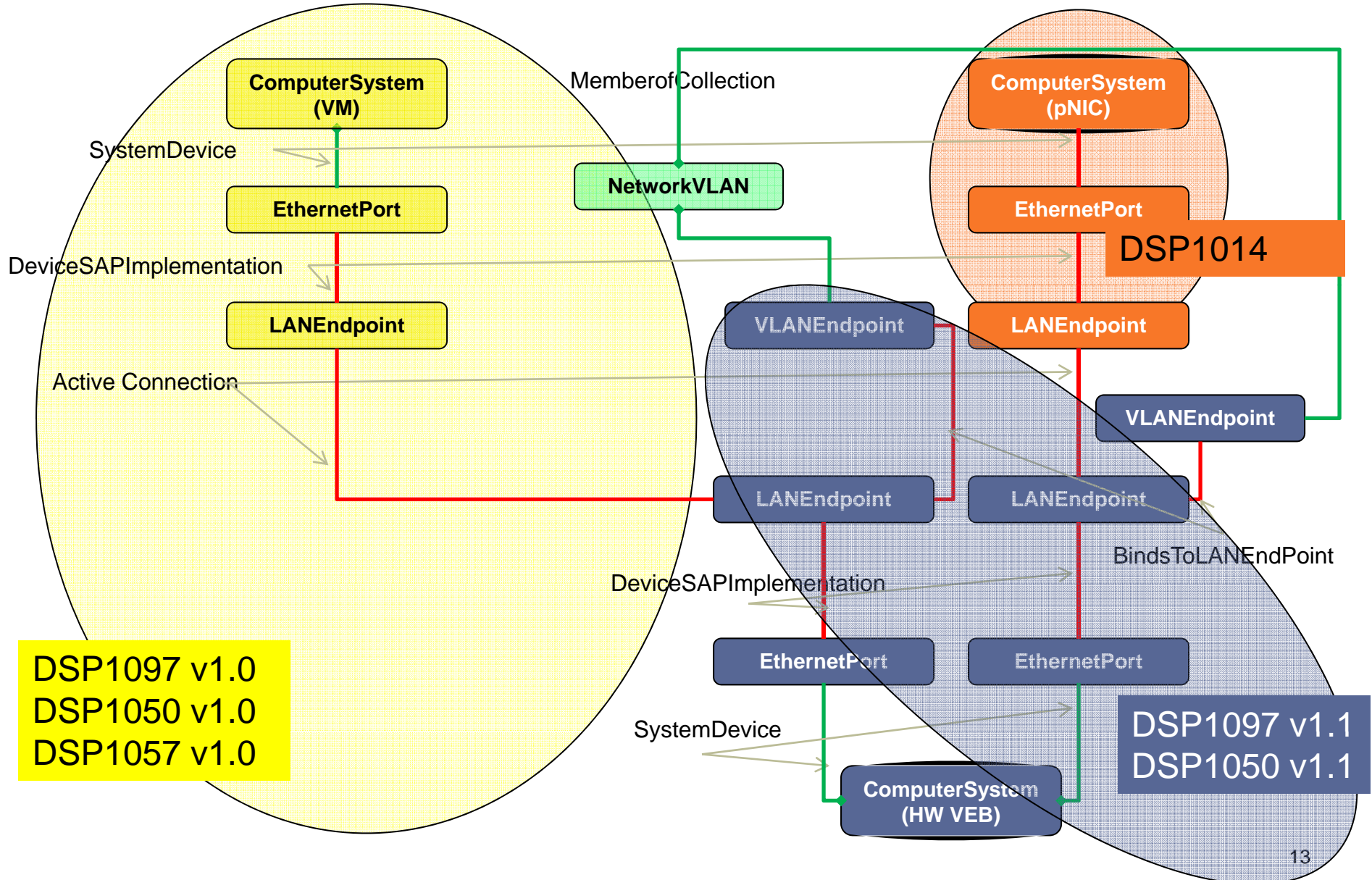
CIM Ethernet Profiles Use Case 1



Conceptual Model: Use Case 2



CIM Ethernet Profiles Use Case 2





Example Life Cycle Operations: Use Case 1

Operation	Methodology	Applicable Methods & Configurable Parameters
Create vNIC, SW VEB	Use Management App and CIM Model to configure	
	vNIC	Methods: ModifyResourceSettings Parameters: VM, MAC, BW, Pri.
	SW VEB	Method: DefineSystem Parameters: MAC, BW, Pri., VLANID
Read vNIC, SW VEB	Use Management App and CIM Model to Read	Methods: WBEM intrinsics (read vNIC, SW VEB)
Create and Configure HW VEB with consistent settings	Use Management App2 and CIM Model to configure	Methods: DefineSystem (Create and configure HW VEB) Parameters: MAC, BW, Pri., VLANID

Example Life Cycle Operations: Use Case 1

Operation	Methodology	Applicable Methods & Configurable Parameters
Create & Store Port-Profile DB	Format: XML Schema Protocol: not specified in SVPC	(under consideration) MAC Addr., Promiscuous Mode, VLANs, Pri., Flow Ctrl, Bandwidth, ACLs
Migrate VM to a new machine	See SVPC OVF Standards	
Read and configure using Port-Profile DB	Format: XML Schema Protocol: not specified in SVPC	(under consideration) MAC Addr, Promiscuous Mode, VLANs, Pri., Flow Ctrl, Bandwidth, ACLs
Configure external switch using Port-Profile DB	Protocols: VDP, ECP, CDCP	Outside DMTF scope

Note: Port-Profile is not a profile in DMTF sense



Further Reference

- Further information: DMTF System Virtualization, Partitioning and Clustering WG
- For questions:
 - murali.rajagopal@qlogic.com Murali Rajagopal QLogic
 - johnp@microsoft.com John Parchem Microsoft
 - tm-redundancy@dmtof.org SVPC workgroup
 - svpc-iov@dmtof.org SVPC Virtual Networking
- Referenced Profiles:
 - DMTF DSP1014, *Ethernet Port Profile 1.0*
 - DMTF DSP1035, *Host LAN Network Profile 1.0*
 - DMTF DSP1050, *Ethernet Port Virtualization Profile*
 - DMTF DSP1097, *Virtual Ethernet Switch Profile*

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Backup



CIM_VirtualizationService

Virtual Ethernet Bridges (switches) are a specialization of virtual computer systems as defined in DSP1050 Virtual Computer System Profile. Thus they can be managed compliant to DSP1042 System Virtualization Profile as well as DSP1097 Virtual Ethernet Switch Profile. For Example

CIM_VirtualSystemManagementService.DefineSystem (

[IN] SystemSettings An embedded VirtualEthernetSwitchSettingData instance that defines the switch Specific properties,

[IN] ResourceSettings[] An Array of Embedded EthernetPortAllocationSettingData that defines a set of switch ports

[Out] ResultingSystem Reference to CIM_ComputerSystem representing the resultant created virtual Ethernet bridge

[Out] Job reference to CIM_ConcreteJob that allows asynchronous method calls

CIM_VirtualizationService

CIM_VirtualSystemManagementService.AddResourceSettings(
[IN] AffectedConfiguration Reference to
CIM_VirtualEthernetSwitchSettingData associated with the affected virtual
switch configuration.
[IN] ResourceSettings[] Array of Embedded Instance
CIM_EthernetPortAllocationSettingData That describes the ports that are to be
added.
[Out] ResultingResourceSettings Array of references to instances of class "
"CIM_EthernetPortAllocationSettingData representing "
virtual aspects of the added virtual resources ,

CIM_VirtualSystemManagementService.ModifyResourceSettings(
[IN] ResourceSettings[] Array of Embedded Instance
CIM_EthernetPortAllocationSettingData That describes the ports that are to be
added.
[Out] ResultingResourceSettings Array of references to instances of class "
"CIM_EthernetPortAllocationSettingData representing "
virtual aspects of the added virtual resources ,

CIM_EthernetPortAllocationSettingData: Ethernet Switch Port 1/3

- ResourceType = 30 (Ethernet Switch Port)
- AllocationUnits: PUnit bit per second
- Reservation, Limit: bandwidth in AllocationUnits
- HostResource: URI to an existing host Ethernet port for host access to network
- DesiredEndPointMode: the VLAN endpoint mode on the Ethernet Switch Port
- Connection: depending on the VLANEndpoint's DesiredEndpointMode either Access VLANID or array of Trunked VLANIDs
- PoolID: specifies desired pool for allocation of the Ethernet Switch Port
- Address: MAC address



CIM_EthernetPortAllocationSettingData: Ethernet Switch Port 2/3

- PortCorrelationID - typically a VSI Instance ID
- NetworkPortProfile – used to map a port to an existing network port profile
- AllowedPriorities[] - allowed values of 802.1Q PCP bits that this port is allowed to transmit
- ReceiveBandwidthLimit - Maximum receive bandwidth this port is allowed to use
- ReceiveBandwidthReserve – Minimum receive bandwidth allocated to this port
- PortVID – VLAN ID that is used as the “DefaultVLAN” (used to mark traffic when no VLAN ID is specified)
- Promiscuous – True if the port passes all traffic without destination MAC address filtering



CIM_EthernetPortAllocationSettingData: Ethernet Switch Port 3/3

- SourceMacFilteringEnabled – If enabled the filter is used to match either the ports MAC address or one of the pairing of the property value in the indexed arrays AllowedToTransmitMACAddresses and AllowedToTransmitVLANs
- AllowedToTransmitMACAddresses - array of MAC addresses this port is allowed to transmit
- AllowedToTransmitVLANs and AllowedToReceiveMACAddresses - indexed arrays of MAC addresses and VIDs to support filtering on MAC,VID pairs.