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# CIM Virtualization Implementation Experience of Hitachi

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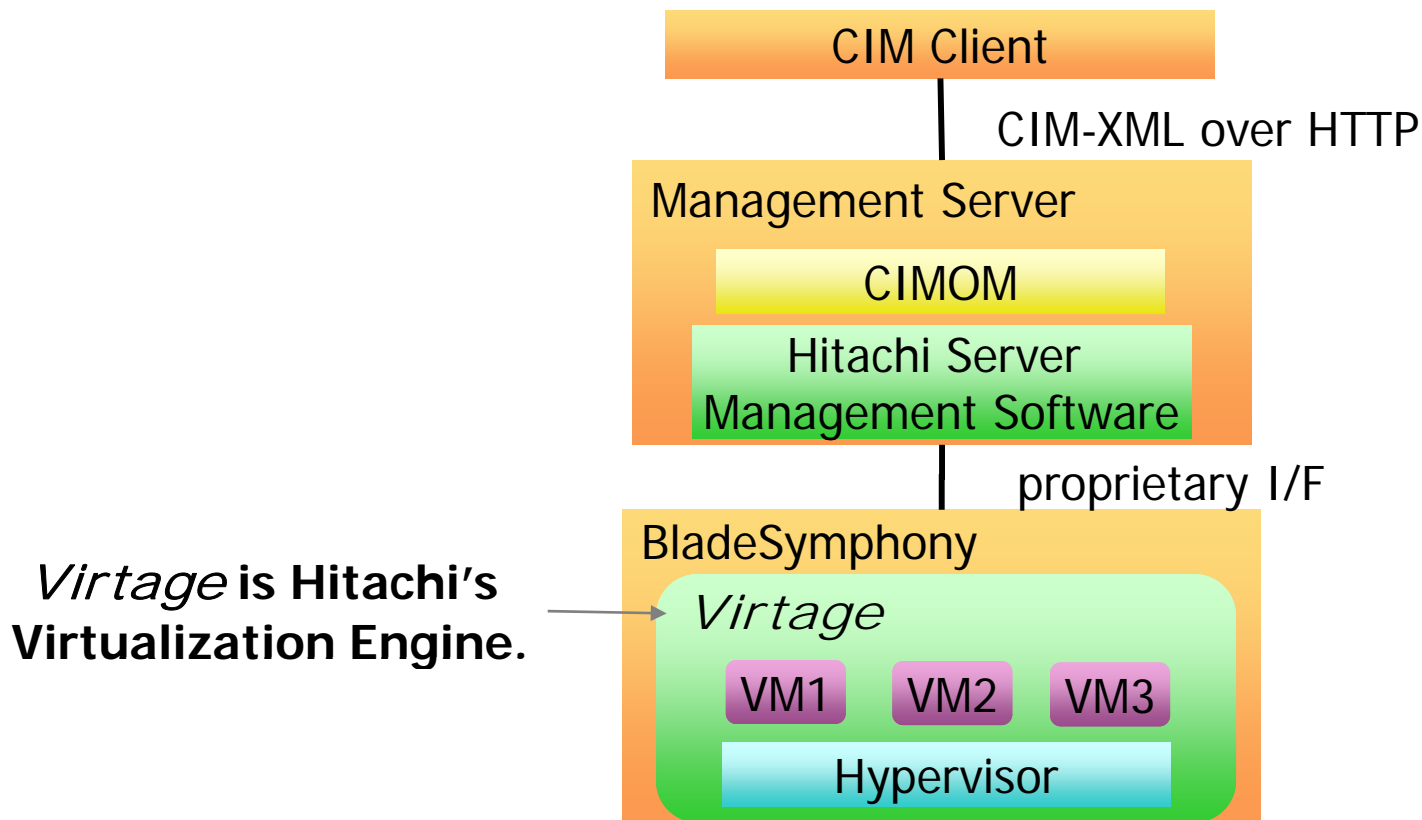
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# System Architecture of Prototype

## Apply the SVPC model to *Virtage*

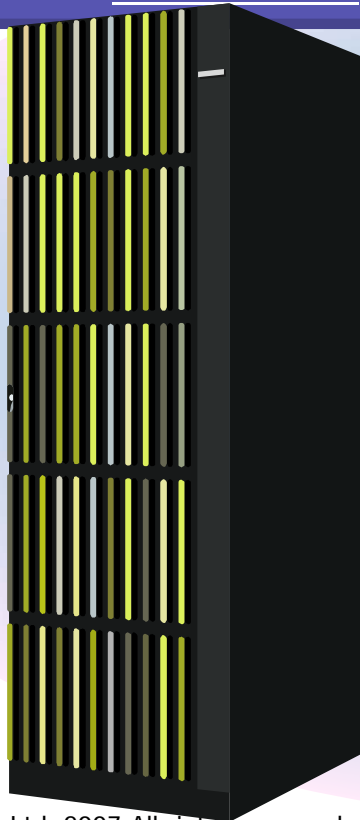
- There is CIMOM on the Management Server
- CIMOM links Hitachi Server Management Software
- Interface to Client is CIM-XML over HTTP



# Features of Hitachi Server Virtualization Engine

*Virtage* is Hitachi's own Virtualization Engine on BladeSymphony.

- Hypervisor type implementation
- Low overhead logical partitioning
- H/W embedded, transparent host layer



## Outline of Specification

1	Virtualization Type	Hypervisor	
2	Platform	BladeSymphony (BS1000 IPF/IA32)	
3	#LPAR	16 LPARs/SMP	
4	CPU Virtualiz'n	Type	Intel VT compliant
		Dedicated alloc.	Processor core
		Shared alloc.	1% granularity
5	I/O Virtualiz'n	Type	H/W assisted
		Shared dev.	NIC/Hitachi FC
		Ded'ed dev.	Commercially available I/O cards
6	OS modification	Not required	
7	Hot standby	HA monitor	

# Server Virtualization Technologies (1/2)

## Virtual Machine

- Realizes server hardware virtually.
- Capable to run OS which is not supported by native hardware.

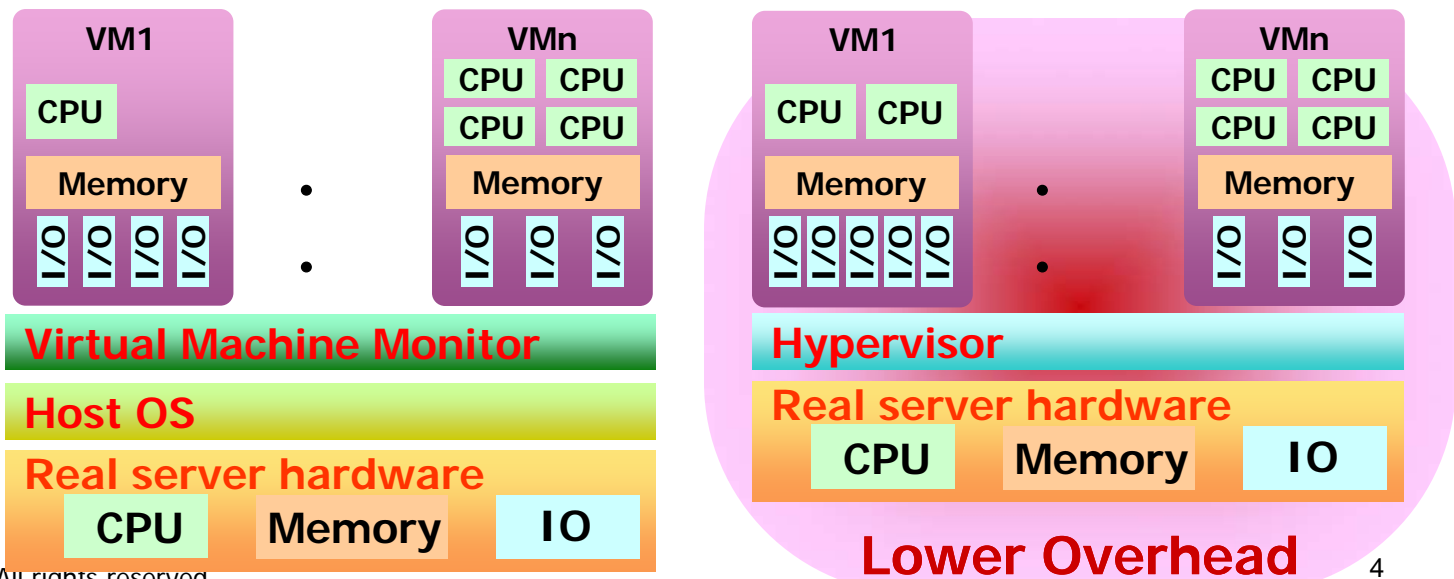
## Partitioning

- Divides hardware resources into multiple pieces (partitions).
- H/W failure is less influential across the partitions.
- Lower overhead than sharing.

### Virtual Machine (VM)

Realizes Virtual Machines with virtual hardware resources.

Can realize even larger systems than its real physical configuration.



# Server Virtualization Technologies (2/2)

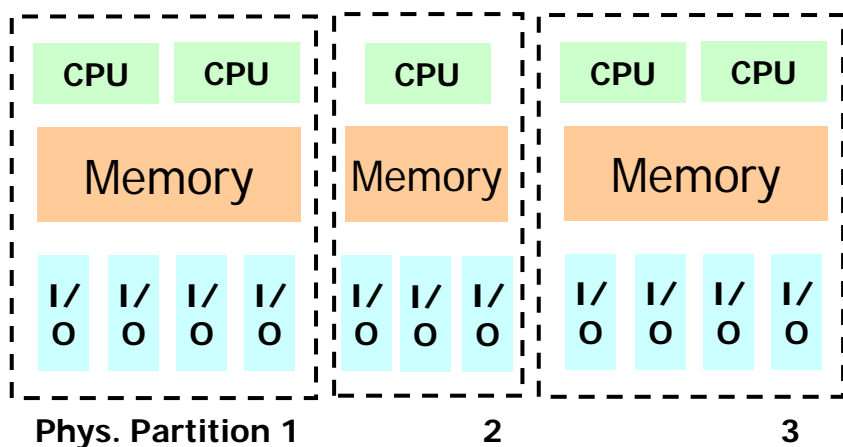
## ■ Virtual Machine

- Realizes server hardware virtually.
- Capable to run OS which is not supported by native hardware.

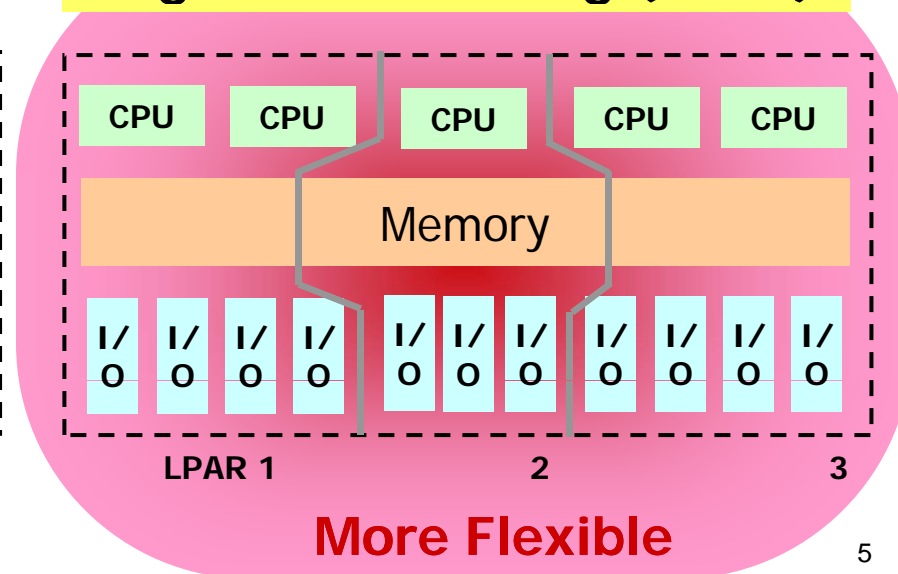
## ■ Partitioning

- Divides hardware resources into multiple pieces (partitions).
- H/W failure is less influential across the partitions.
- Lower overhead than sharing.

### Physical Partitioning



### Logical Partitioning (LPAR)

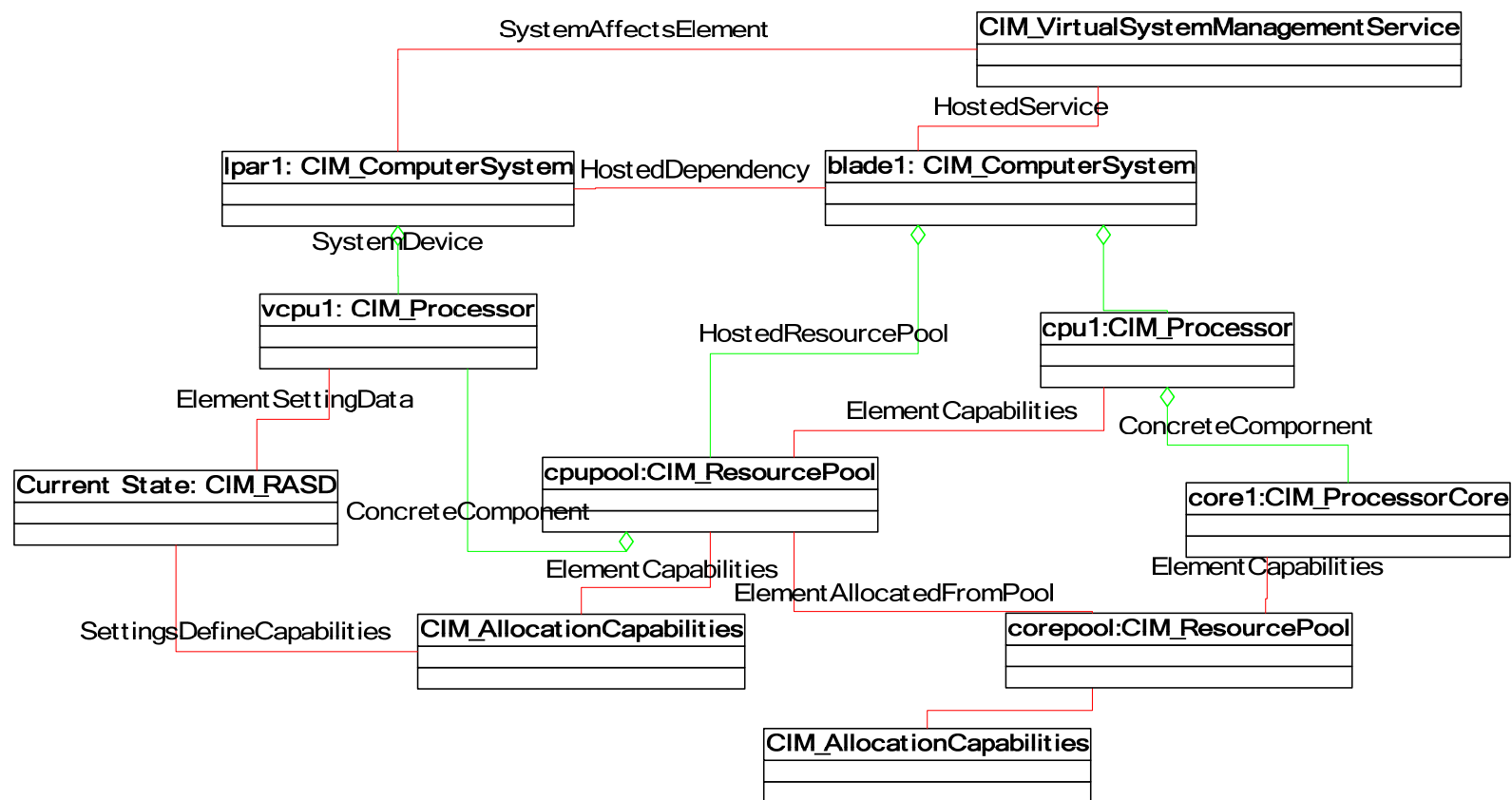




# Modeling Control Functions of Prototype

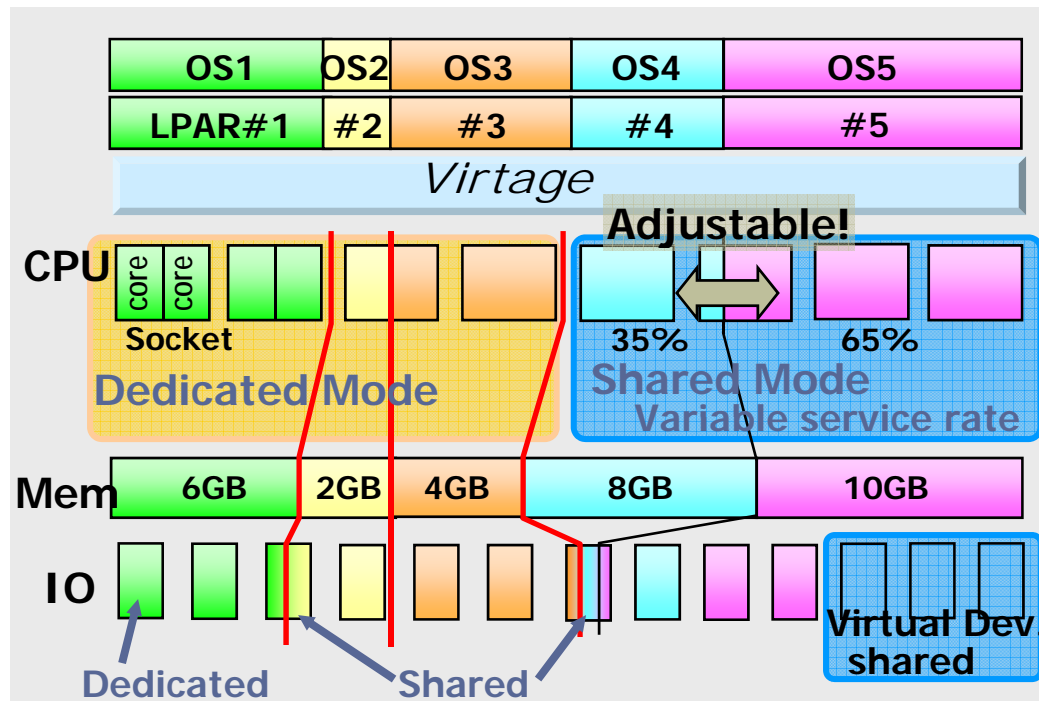
## Managed functions of the Prototype

- Create/Destroy VM
- Activate/Deactivate VM
- Modify the Resource Allocation Setting Data (RASD)



# Key Feature about Resource Allocation Modeling (1/2)

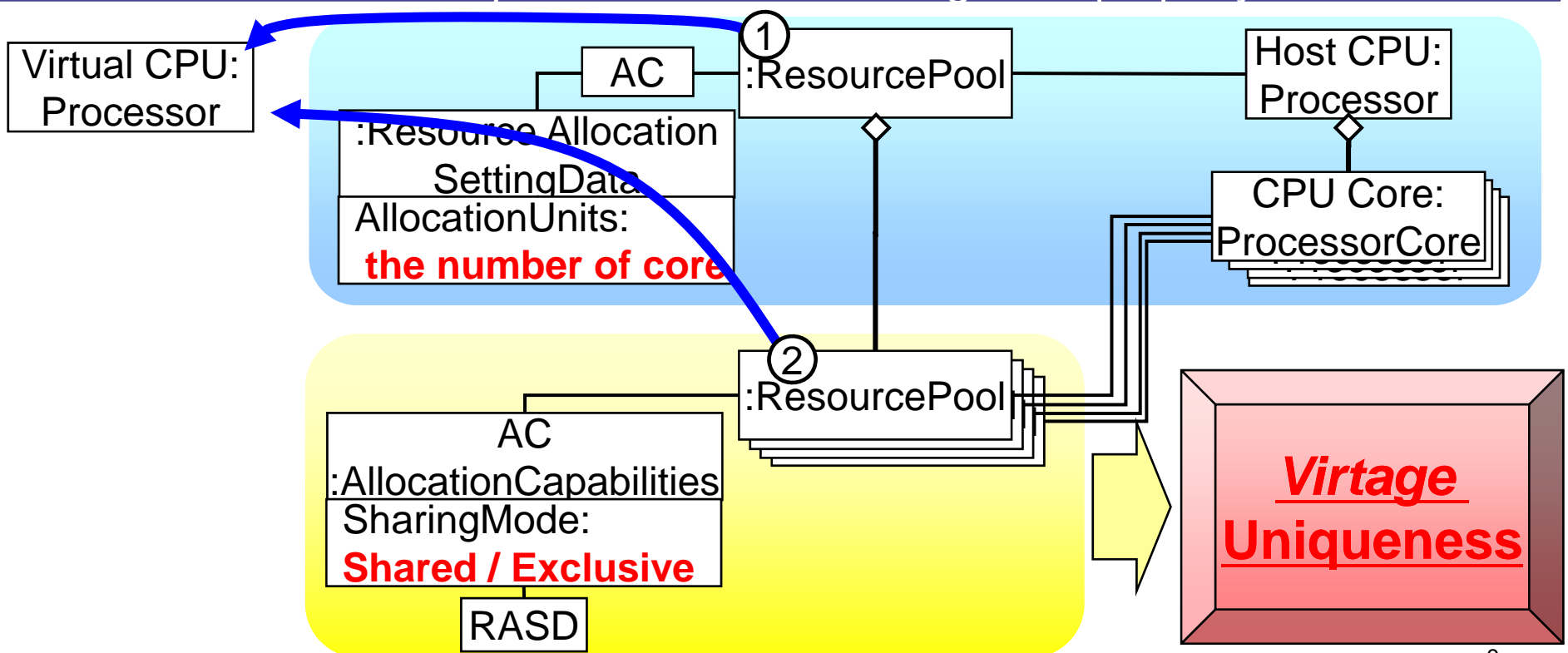
- Can allocate CPU Resource to VM per core unit
- Can allocate CPU & Network Resource to VM exclusively
- ➔ Dedicated allocation makes it easy to isolate the failure of other VMs.



# Key Feature about Resource Allocation Modeling (2/2)

## Allocate CPU resource (2 ways)

1. Simple Allocation (ex. just specifying performance value) -> choose the Primordial (parent) *ResourcePool* and assign the number of core.
2. Dedicated Allocation -> choose the *ResourcePool* corresponding to core and the *AllocationCapabilities* whose *SharingMode* property is "Exclusive".



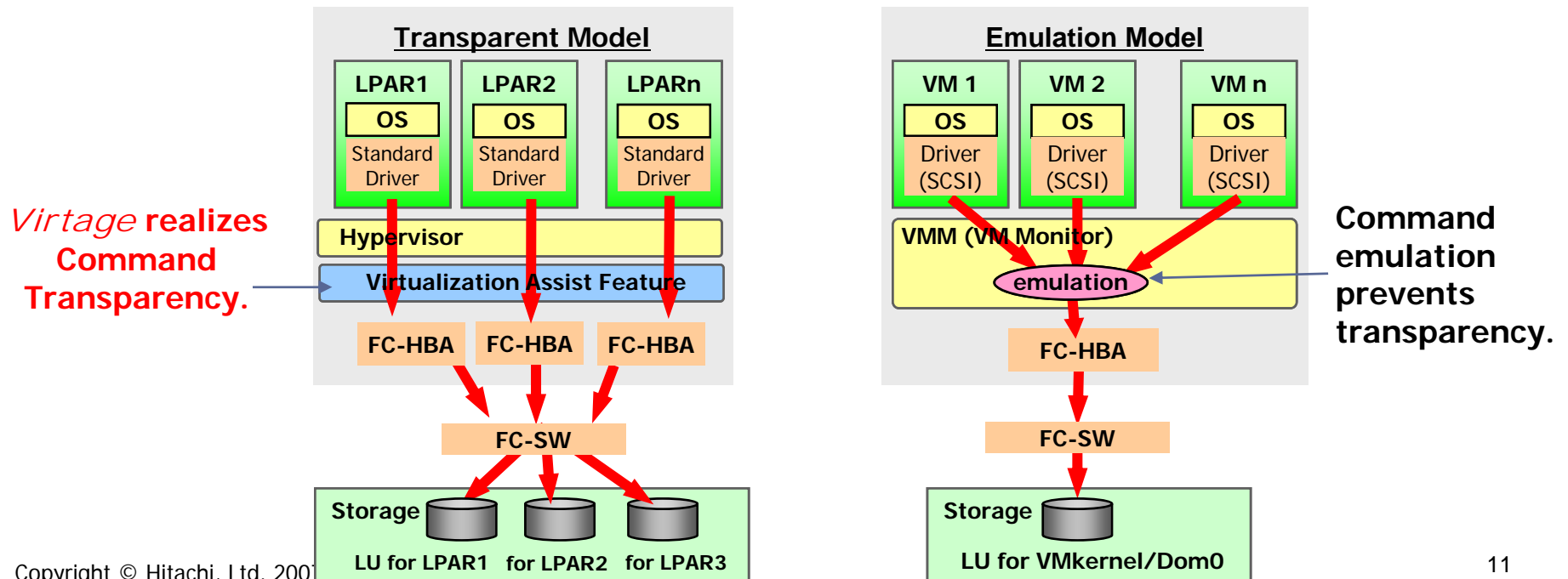
# Q&A

# Virtage Key Features

■ Hitachi *Virtage* supports the Transparency in the IA server world.

- Hitachi Self-made hardware allows us to keep the Hardware Transparency.
- Hardware Transparency is the key features for Performance & Software enablement.

Ex. Cluster-ware etc. need control command transparency to disks.





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