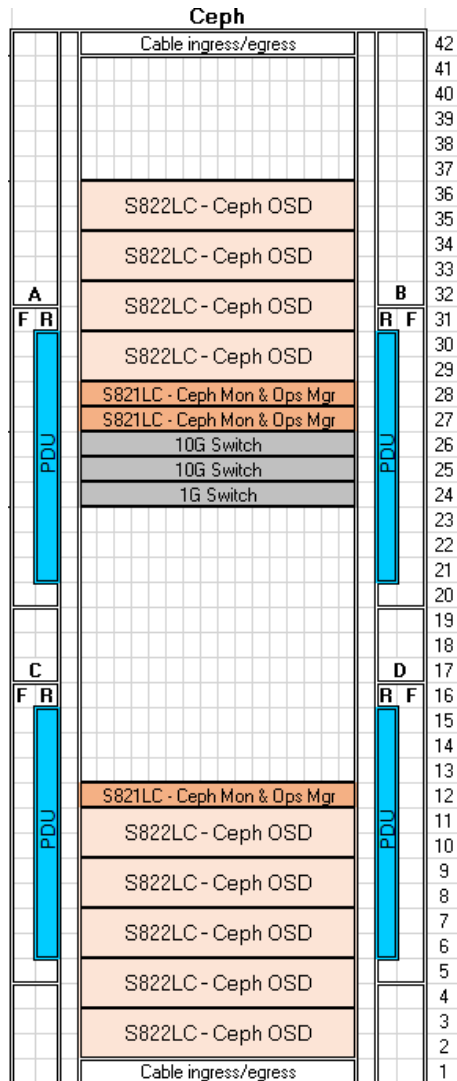


# Ceph Cluster – High Level Specification Sheet



Ubuntu 16.04 (all nodes)

## Software:

Ceph

OpsMgr+ OpenStack compute cloud control plane

- OpenStack: Horizon, Keystone, Nova, Cinder, Glance, RabbitMQ, Galera, etc
- Nagios Core
- ELK Stack (Elasticsearch, Logstash, Kibana)

## Network : (HA – with Bonding)

2 x Mellanox SX1410 (8831-S48)

1 x Lenovo G8052 (7120-48E)

## Rack:

QTY: 1

SlimRack 7965-94Y (Standard 19" rack)

PDU's x 4: Each node should have 2 power cords cabled to two different PDU's

## Ceph Mon & Operational Management

QTY: 3

Server Config: (Stratton 8001-12C) (1U)

16 Cores ( 2.3Ghz), 128 GB,

1 x 1.9TB SSD (1.2 DWPD)

1 x 2-Port 10G NIC ( Intel 10G/Mellanox)

## Ceph OSD :

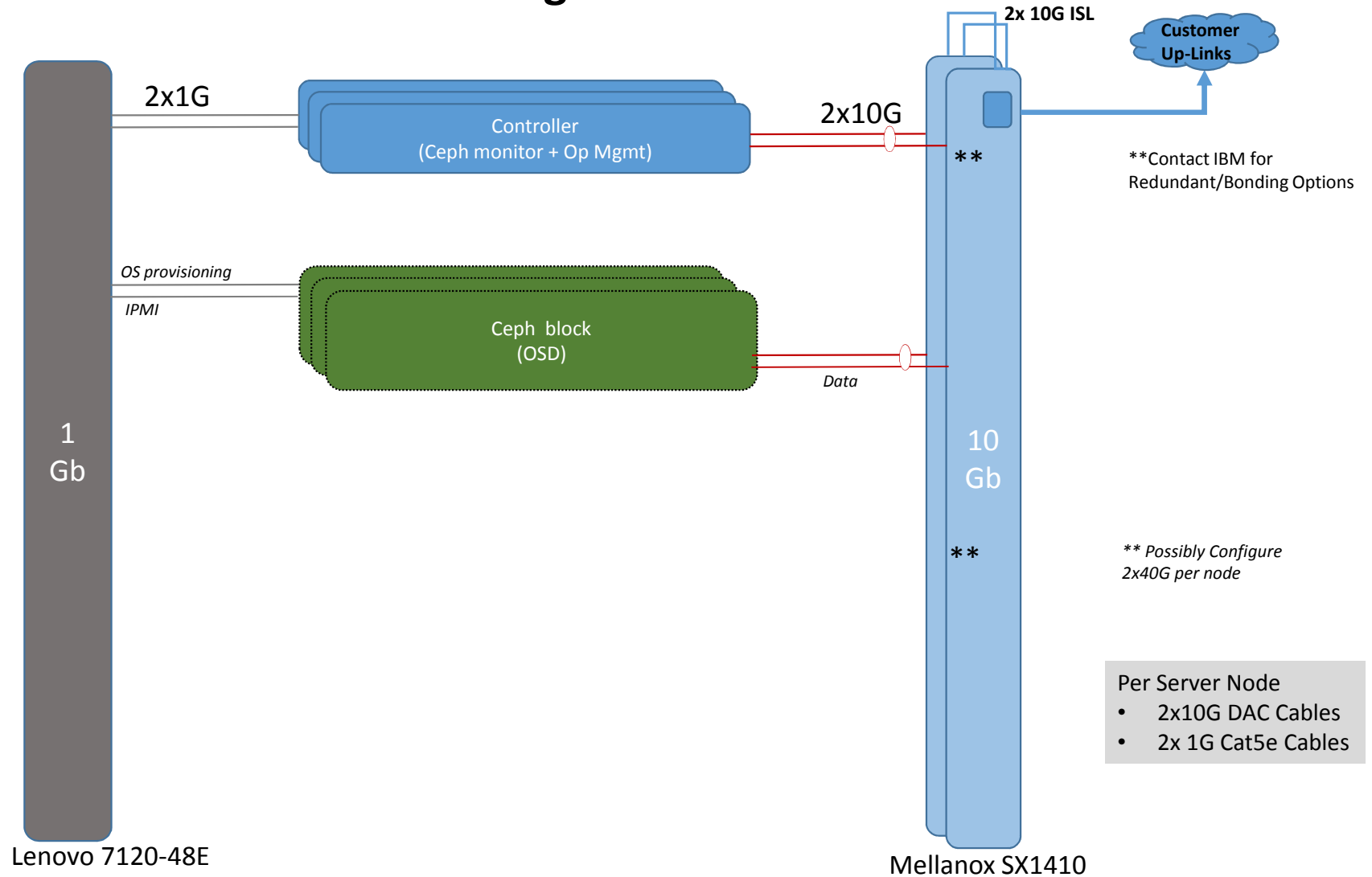
QTY: 9

Per Server Config: (Briggs 8001-22C) (2U)

16 Cores ( 3.32 Ghz), 128 GB

- (OS) 1x 240GB SSD (1.2 DWPD)+ (Journal) 2x 240GB SSD (1.2 DWPD) + (Storage) 9 x 8TB SAS HDDs (~72TB)
- 1 x 2-Port 10G NIC ( Intel/Mellanox)
- Integrated Sata Controller
- SAS RAID controller based on LSI 3008L

# High Level Network Architecture Diagram



### Suggested Racking Rule

Reserved for accessibility

Reserved **U37-U41** for **Rack-Rack** Switches  
*if ordered*

Reserved U24-U26 for In-rack Network Switches

Start at U2 and go UP

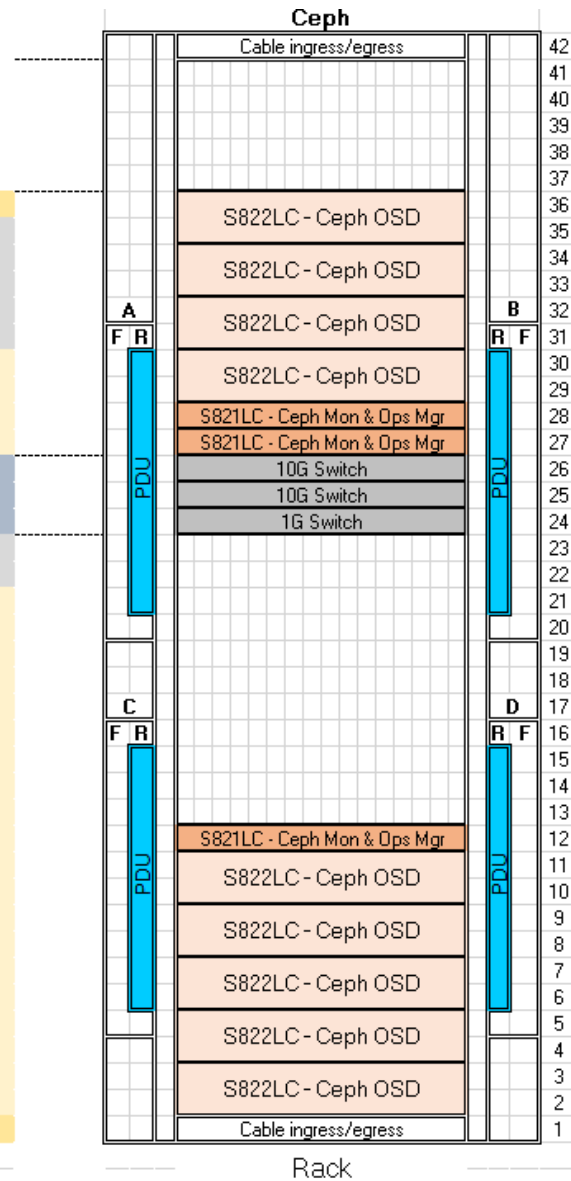
Common Rule:

- Place Heavier MTMs first starting at U2
- Observe native MTM unique racking requirements

### Ceph Racking Rules:

- Recommend (0-18) 2U Servers per Rack
- Ceph monitors should use different sets of PDUs for redundancy
- OSD nodes should use different sets of PDUs for redundancy

Reserved for accessibility



## Ceph monitor and OpsMgr Control plane Server BOM

MT	Model	Description	Config count	Min	Max	Comments
S812C Server Config; Ceph monitor and OpsMgr Control Plane						
8001	12C	S821LC (8001)	3	3	**	
	Solution ID	Solution Specify Code (for grouping only)	1	1	1	n/a
	Pod Type	Login Server Specify Code	1	1	1	n/a
	Processor	8-core POWER8 2.328 GHz	2	1	2	
	Memory	EKM2 (PS) 16GB DDR4 MEMORY DIMM	8	4	16	
	Bezel	EKB4 2S base system with LFF high-function drive midplane (NVMe drives supported.)	1	1	1	
	Storage Adapter	Integrated Sata controller	1	1	1	Build-in HDDs : Integrate SATA controller + Optional SAS /RAID Controller
			0	0	1	Optional - Exteral SAS adapter for Expansion SAS drawer
	Disks	EKS5 1.9 TB, SFF SATA SSD; 1.2 DWPD Kit	1	1	2	OS Boot Disk
			0	0	4	If SAS drive is selected, please choose Bezel Assembly to match drive size (.5" or 1.5")
	NVme PCI		0	4	2	
	GPU		0	0	1	
S812C Server (Base config) -- Required Inter-connect						
Required for Mfg Genesis	Network Adapter	EKA2 PCIe3 2-port 10 GbE SFP+ Adapter, based on Intel XL710	1	1	3	(Required) For High Speed Network
			0	0	3	Section IO device (optional)
	Power	EKLJ (PS #6665) PWR CBL DRWR TO IBM PDU, 2.8m (9.2ft), 250V/10A, IEC320/C13, IEC320/C20	2	2	2	Select Proper Line cord if not connected to IBM PDU
	Cables	CAT5E SWITCH CABLE, BLUE (2M)	1	1	*	(Required) For OS 1G Network (Recommended 2M length min)
		CAT5E SWITCH CABLE, GREEN (2M)	1	1	*	(Required) For IPMI 1G Network (Recommended 2M length min)
		EKC1 3M- Active Twinax cable	2	2	*	(Required) For High Speed Network (Recommended 2M length min)
	Misc	No rack integration	1	1	1	
		Country specific FCs (keyboards, language groups) are selectable	1	1	1	User select
		Shipping and Handling	1	1	1	User select

# Ceph OSD Server BOM

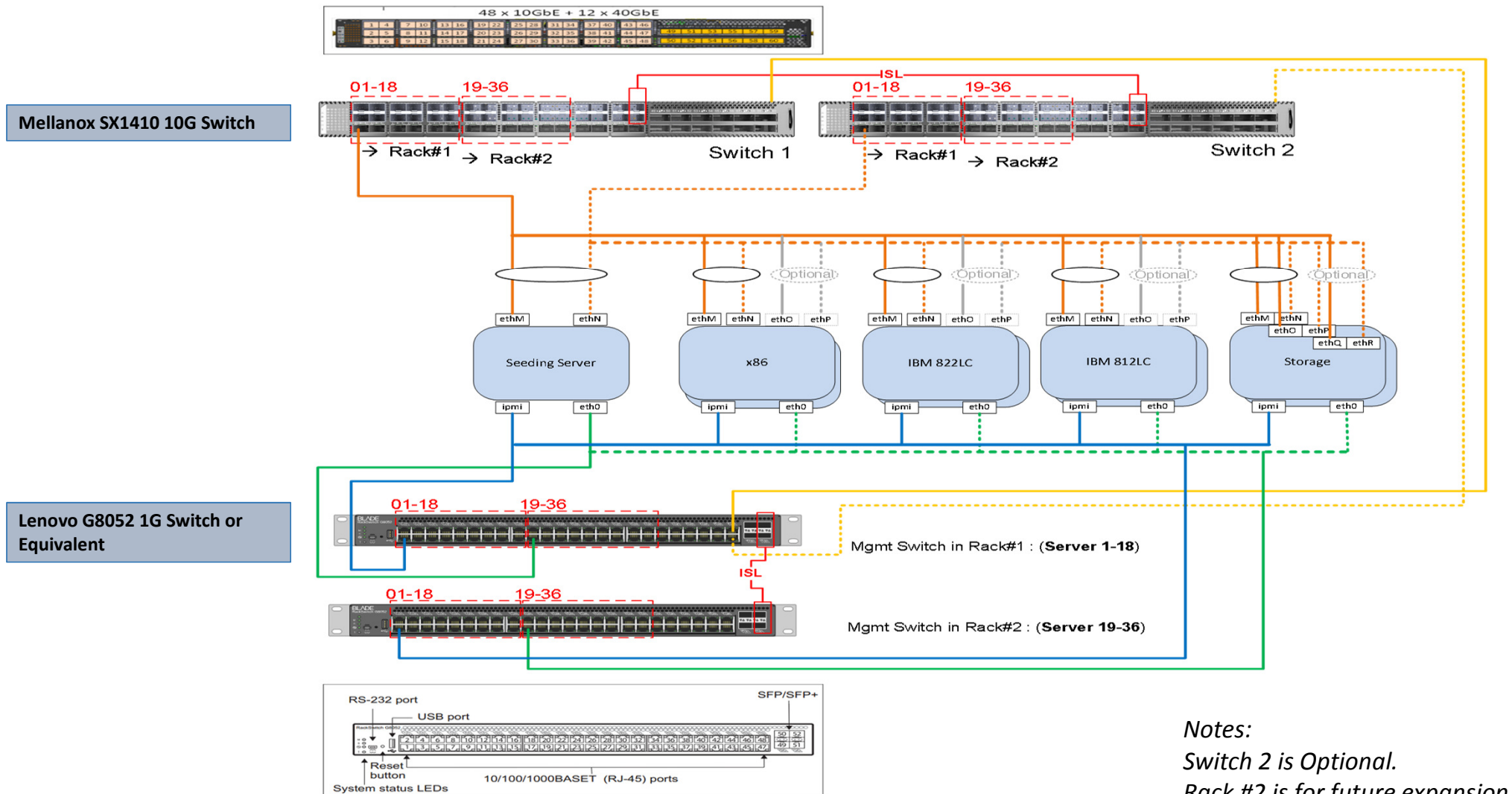
MT	Model	Description	Config count	Min	Max	Comments
S822C Server Config : Ceph OSD						
8001	22C	ServerConfig- S822C	9	3	**	This section Defined the <b>Common config of the Server node</b> (in group servers) -- <b>Next Section</b> : Defined any unique config that you may need (Optional)
	Processor	EKP4 8-core POWER8 3.32 GHz	2	1	2	
	Memory	EKM2 (PS) 16GB DDR4 MEMORY DIMM	8	4	16	
	Bezel	EKB9 2S base system with LFF high function drive midplane (NVMe drives supported)	1	1	1	Need to Choose drive assembly to match your Disks (LFF/SFF) and Controler type (SAS)
	Storage Adapter	Integrated Sata controller	1	1	1	Build-in HDDs : Integrate SATA controller + Optional SAS /RAID Controller
		EKEB PCIe3 SAS RAID Controller w/cable for 2U server, based on LSI 3008L	1	1	1	Internal SAS adapter for Expansion SAS drawer
	Disks	EKS1 240 GB, SFF SATA SSD; 1.2 Disk Writes Per Day (DWPD) kit	1	0	2	OS Boot Disk
		EKS1 240 GB, SFF SATA SSD; 1.2 Disk Writes Per Day (DWPD) kit	2	0	4	If SAS drive is selected, please choose Bezel Assembly to match drive size (.5" or
		EKDD 8TB 3.5" SATA HDD	9	0	4	If SAS drive is selected, please choose Bezel Assembly to match drive size (.5" or
	NVme PCI		0	4	2	
	GPU		0	0	1	
S822C Server (Base config) -- Required Inter-connect						
Required for Mfg Genesis	Network Adapter	EKA2 (PS) INTEL 82599ES 2-PORT SFP+ 10G GEN2 x8 STANDARD	1	1	3	(Required) For High Speed Network
			0	0	3	Section IO device (optional)
	Power	EKLJ (PS #6665) PWR CBL DRWR TO IBM PDU, 2.8m (9.2ft), 250V/10A, IEC320/C13, IEC320/C20	2	2	2	Select Proper Line cord if not connected to IBM PDU
	Cables	CAT5E SWITCH CABLE, BLUE (2M)	1	1	*	(Required) For OS 1G Network (Recommended 2M length min)
		CAT5E SWITCH CABLE, GREEN (2M)	1	1	*	(Required) For IPMI 1G Network (Recommended 2M length min)
		EKC1 3M- Active Twinax cable	2	2	*	(Required) For High Speed Network (Recommended 2M length min)
	Misc	Country specific FCs (keyboards, language groups) are selectable	1	1	1	User select
		Shipping and Handling	1	1	1	User select

## Network Switch BOMs

	MT	Model	FC	Description	
<b>1G Mgmt (Based)</b>	<b>7120</b>	<b>48E</b>		<b>Lenovo G8052 1GbE Switch (48x 10GbE ports + 4x 10GbE ports)</b>	<b>1</b>
			<b>1118</b>	CAT5E SWITCH CABLE, 3M, YELLOW	1
			<b>6577</b>	PWR CBL, DRWR TO IBM PDU, MFG SEL LENGTH, 200-240V/10A, IEC320/C13, IEC320/C14	2
				Include all existing FCs; except FCs 0010, 0011, 0712, 0714, EGSx, EHKx, EHLA, 4649 (Rack Integration Services), and 0456 (Customer Specified Placement); do not include these FCs.	
<b>10G Data Network</b>	<b>8831</b>	<b>S48</b>		<b>Mellanox 1410 ..10GB Switch (48x10G + 12x40G)</b>	<b>2</b>
			EDT6	1U AIR DUCT FOR S48	1
			EN01	1m DAC cable SFP+ to SFP+	1
				Include all existing FCs; except FC 4649, FC 0456 (Customer Specified Placement) and ESC1 (Shipping & Handling), do not include these FCs	1

NOTE: 1m DAC SFP+ to SFP+ cables provide interpeer link connections

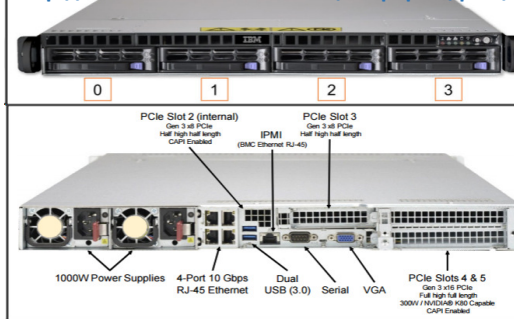
## Network Plug Rule - Sample



## Network Plug P2P Label -- Sample

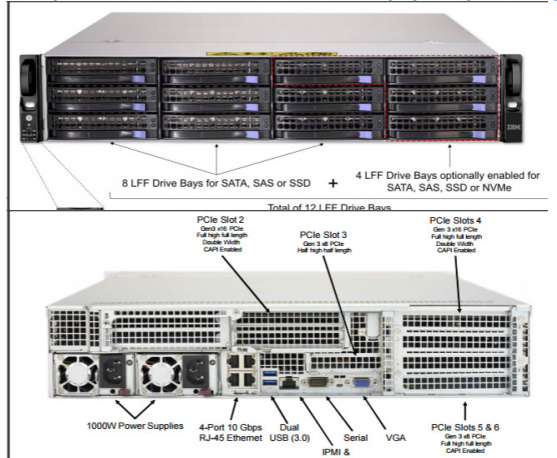
MTM: 8001-12C

<http://www.redbooks.ibm.com/redpapers/pdfs/redp5406.pdf>



MTM: 8001-22C

<http://www.redbooks.ibm.com/redpapers/pdfs/redp5407.pdf>



Cable P2P Label for H\_TOR#1-2

[illegible]

MLAG IPL connections are D\_TOR\_1 port 37 to D\_TOR\_2 port 37 and D\_TOR\_1 port 38 to D\_TOR\_2 port 38