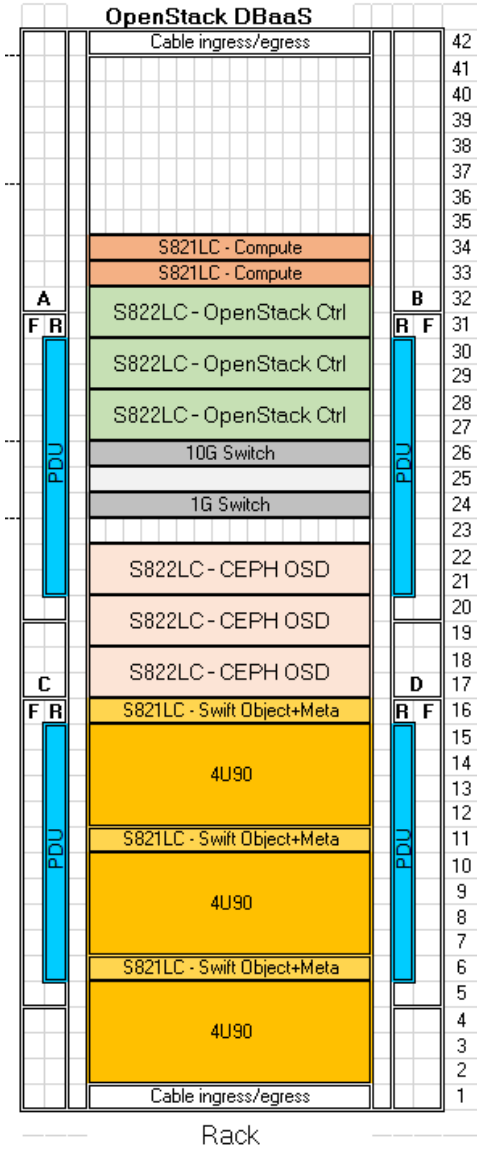
DBaaS– Base Config– High Level Specification Sheet



OpenStack Software Stack:
Ubuntu 16.04 (all nodes)
Openstack Newton

OpsMgr + Horizon DashBoard
-Nagios Core
- ELK Stack (Elasticsearch, Logstash, Kibana)

OpenStack Controller and Proxy:
QTY: 3

Server Config: (Briggs 8001-22C) (2U)
20 Cores (2.92 Ghz), 128 GB,
1 x 1.9 TB SATA SDD
1 x 2-Port 10G NIC (Intel 10G/Mellanox)

OpenStack Compute:
QTY: 2

Server Config: (Stratton 8001-12C) (1U)
16 Cores (2.3Ghz), 128GB ,
1 x 4TB SATA HDD
1 x 2-Port 10G NIC (Intel 10G/Mellanox)

CEPH Config :
QTY: 3

Per Server Config: (Briggs 8001-22C) (2U)
16 Cores (3.32Ghz), 128GB
- (OS) 1x SSD 240GB + (Journal) 2x SSD 240GB (**1.2** DWPD) + (Storage) 9x 8TB SAS HDDs (~72TB)
- 1 x LSI 3008 External SAS (8 port SAS3)
- 1 x 2-Port 10G NIC (Intel/Mellanox)

**Notes:
a) Openstack & Proxy Node can be combined for fewer than 24 SWIFT Objects
b) Compute qty + Memory may need to be altered based on actual performance requirement
c) Dedicated Swift Proxy Server maybe required

**Contact IBM for Redundant/Bonding Options

Network : (non HA) – no Bonding **
1 x Mellanox SX1410 (8831-S48)
1 x Lenovo G8052 (7120-48E)

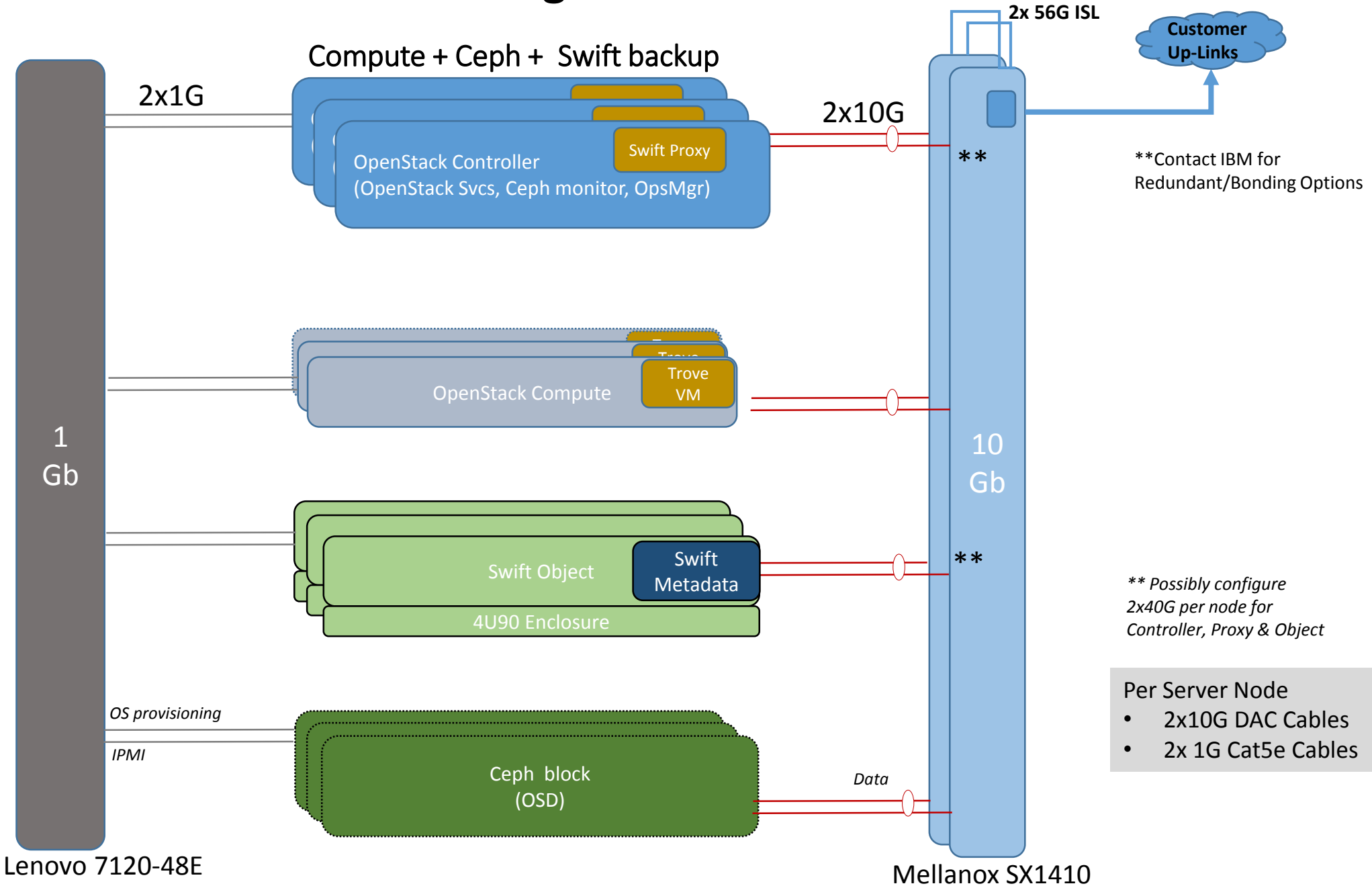
Rack:
QTY: 1
SlimRack 7965-94Y (Standard 19” rack)
PDUs x 4: Each node should have 2 power cords cabled to two different PDUs

Swift Object / Metadata
QTY: 3

Per Server Config: (Stratton 8001-12C) (1U)
16 Cores (2.3Ghz), 128GB
- (OS) 1 x 4TB SATA HDD + 4 x SSDs 240GB
- 1 x 2-Port 10G NIC (Intel/Mellanox)
- 1 x LSI 3008 External SAS (8 port SAS3)

Expansion Drawer (4U) :
90 LFF JBOD Storage SMC PN SE-946ED-R2KJBOD
90 LFF – 2 TB SAS HDDs

High Level Network Architecture Diagram



Suggested Racking Rule

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 U2and go UP

Common Rule:

–Place Pod / same MTM / Similar Function together

–Place Heavier MTM first starting U2

–Follow native MTM unique racking requirement

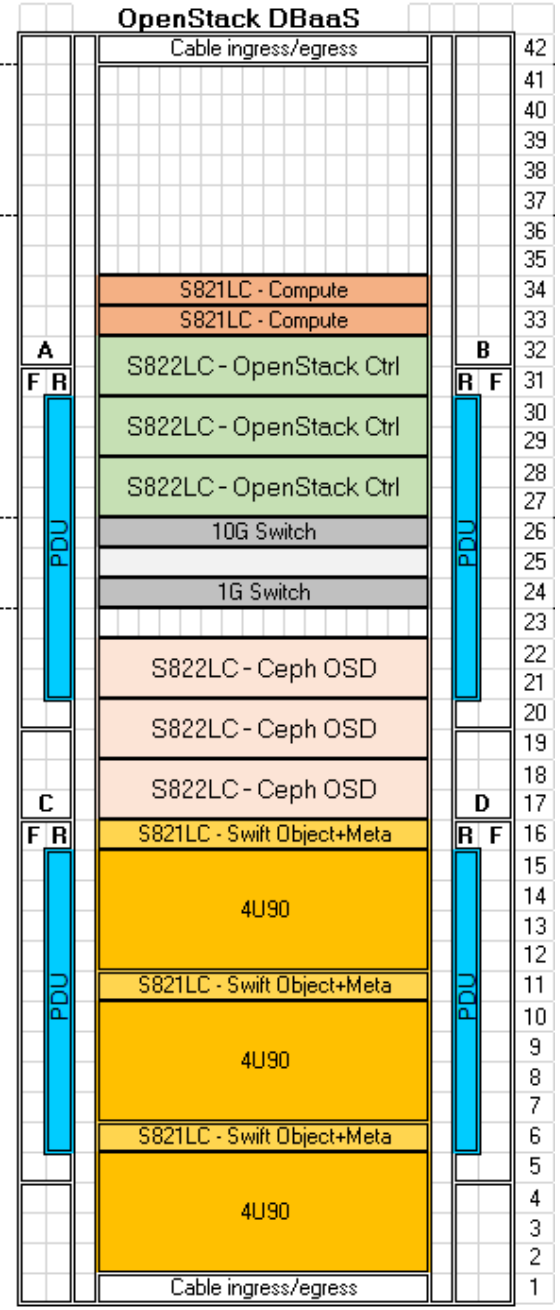
DBaaS Racking Rules:

– Recommend (0 -18) 2U Servers per Rack

– Ceph OSD and Swift Object nodes are placed in the lower part of the rack

– OpenStack controller and compute follow

Reserved for accessibility



Rack

Swift Proxy and OpenStack Controller BOMs

	MT	Model	Description	Mfg Config #1	Solution Rule Min	Solution Rule Max	Comments
S822C Server Config : OpenStack Controller							
	8001	**22C**	**ServerConfig- S822C**	**3**	**3**	******	This section Defined the **Common config of the Server node** (in group servers) -- **Next Section :** Defined any unique config that you may need (Optional)
		Processor	EKP5 10-core POWER8 2.92 GHz	2	1	2	
		Memory	EKM2 (PS) 16GB DDR4 MEMORY DIMM	8	4	16	
		Bezel	EKB5 (PS) 2S BRIGGS LFF DIRECT ATTACH FAB ASSEMBLY	1	1	1	Need to Choose drive assemply 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
				0	0	1	Optional - Exteral SAS adapter for Expansion SAS drawer
		Disks	EKS5 1.9 TB, SFF SATA SSD; 1.2 DWPD Kit	1	0	2	OS Boot Disk
				0	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

OpenStack Compute Server BOMs

				Solution Rule		
MT	Model	Description	Mfg Config #1	Min	Max	Comments
S812C Server Config = OpenStack Compute						
8001	12C	S821LC (8001)	2	1	**	
	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	EKDB 4TB 3.5" SATA HDD	1	2	2	OS Boot Disk
			0	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	
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 BOMs

	MT	Model	Description	Mfg Config #1	Solution Rule Min	Solution Rule Max	Comments
S822C Server Config : Ceph							
	8001	22C	ServerConfig- S822C	3	3	**	This section Defined the **Common config of the Server node** (in group servers) -- **Next Section :** 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 assemply 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	Optional - Exteral 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

Swift Object and Metadata Server BOMs

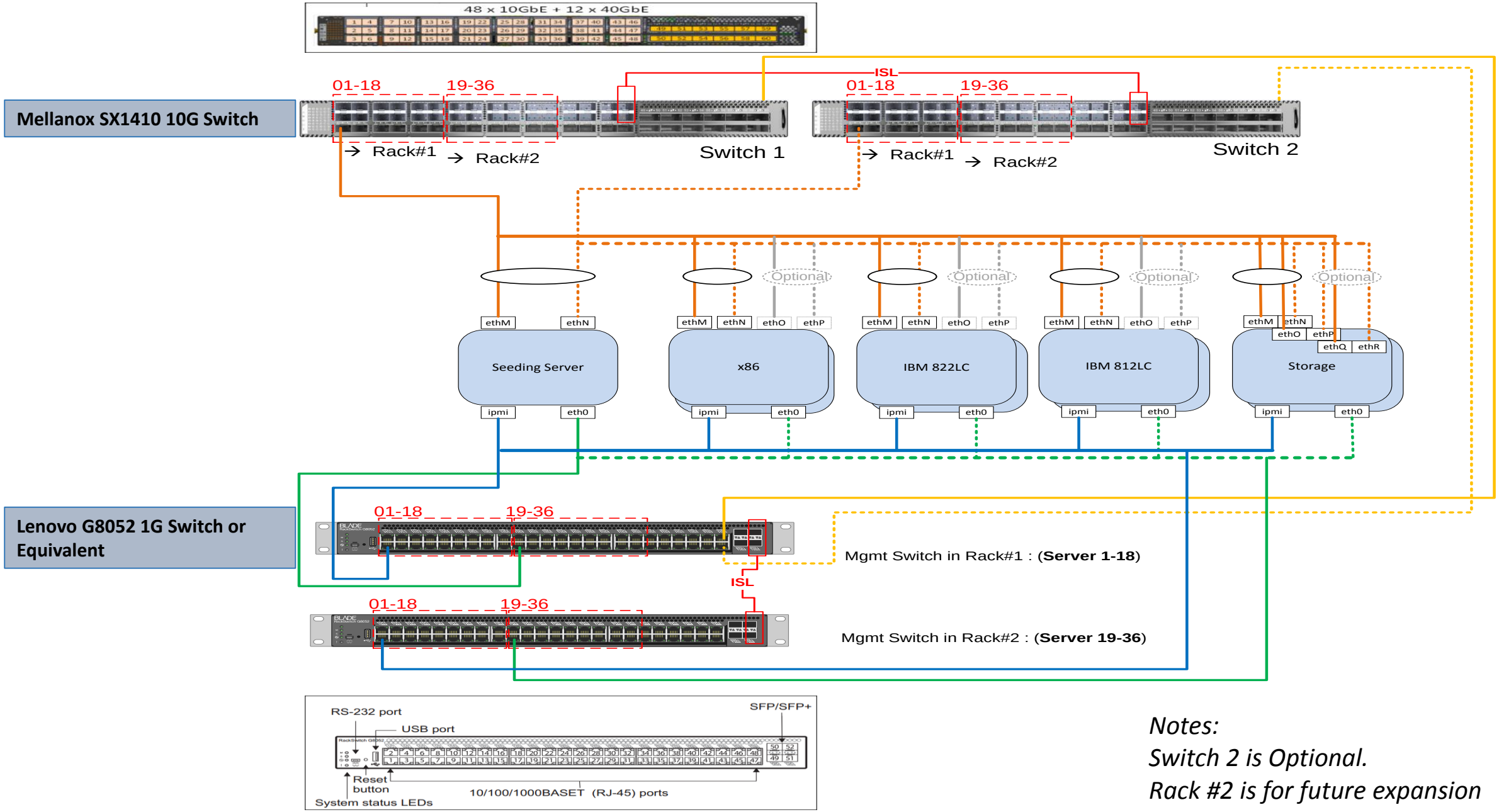
				Solution Rule		
MT	Model	Description	Mfg Config #1	Min	Max	Comments
S812C Server Config =Swift Object / Metadata						
8001	12C	S821LC (8001)	3	3	**	
	Solution ID	Solution Specify Code (for grouping only)	1	1	1	n/a
	Pod Type	Login Server Specify Code	1	1	1	n/a
	Processor	8-core POWER8 2.328 GHz	2	1	2	
	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	0	0	1	Build-in HDDs : Integrate SATA controller + Optional SAS /RAID Controller
		EKAD Storage Adapter SAS-3 3008 Chipset 8 Ports external for 1U	1	1	1	
	Disks	EKDB 4TB 3.5" SATA HDD	1	0	2	OS Boot Disk
		EKS1 240 GB, SFF SATA SSD; 1.2 Disk Writes Per Day (DWPD) kit	4	4	4	If SAS drive is selected, please choose Bezel Assembly to match drive size (.5" or 3.5" and SAS controller)
	NVmE PCI		0	4	2	
	GPU		0	0	1	
	HDD Drawer	90 LFF JBOD Storage 90 LFF – 2TB SAS HDDs	1	1	1	Supermicro CSE-946ED-R2KJBOD 4U Rackmount https://www.supermicro.com/products/chassis/4u/946/SC946ED-R2KJBOD
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

Network Switch BOMs

	MT	Model	FC	Description	
1G Mgmt (Base)	7120	48E		Lenovo G8052 1GbE Switch (48x 10GbE ports + 4x 10GbE ports)	1
			1118	CAT5E SWITCH CABLE, 3M, YELLOW	1
			6577	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.	

10G Data Network	8831	S48		Mellanox 10GB Switch (48x10G + 12x40G)	1
			EDT6	1U AIR DUCT FOR S48	1
				Include all existing FCs; except FC 4649, FC 0456 (Customer Specified Placement) and ESC1 (Shipping & Handling), do not include these FCs	1

Network Plug Rule - Sample



Notes:
Switch 2 is Optional.
Rack #2 is for future expansion

Network Plug P2P Label -- Sample

Server PCI Slot Placement

8001-12C/22C Stratton/Briggs

	adapter	PCI slot	Port	Cabling
Primary NIC	10GbE	slot 3	T1	yes
			T2	yes
Optional NIC	10GbE	slot 4	T1	
			T2	
Mgmt-OS	1GbE	LOM	T1	yes
BMC	1GbE	LOM	impi	yes

Cable P2P Label for H_TOR

		10GbE	10GbE	1GbE	1GbE
		H_TOR_1		M_TOR_1	M_TOR_1
Server #	Name <opt>	P2P Data network Cable Label	P2P Data network Cable Label	P2P Mgmt RJ4-5 Cable Label	P2P IPMI RJ-45 Cable Label
1		1A/SVR1/slot 3/T1 <> H_TOR_1/Port1	1A/SVR1/slot 3/T2 <> H_TOR_1/Port19	1A/SVR1/LOM/T1 <> M_TOR_1/Port1	1A/SVR1/LOM/impi <> M_TOR_1/Port19
2		1A/SVR2/slot 3/T1 <> H_TOR_1/Port2	1A/SVR2/slot 3/T2 <> H_TOR_1/Port20	1A/SVR2/LOM/T1 <> M_TOR_1/Port2	1A/SVR2/LOM/impi <> M_TOR_1/Port20
3		1A/SVR3/slot 3/T1 <> H_TOR_1/Port3	1A/SVR3/slot 3/T2 <> H_TOR_1/Port21	1A/SVR3/LOM/T1 <> M_TOR_1/Port3	1A/SVR3/LOM/impi <> M_TOR_1/Port21
4		1A/SVR4/slot 3/T1 <> H_TOR_1/Port4	1A/SVR4/slot 3/T2 <> H_TOR_1/Port22	1A/SVR4/LOM/T1 <> M_TOR_1/Port4	1A/SVR4/LOM/impi <> M_TOR_1/Port22
5		1A/SVR5/slot 3/T1 <> H_TOR_1/Port5	1A/SVR5/slot 3/T2 <> H_TOR_1/Port23	1A/SVR5/LOM/T1 <> M_TOR_1/Port5	1A/SVR5/LOM/impi <> M_TOR_1/Port23
6		1A/SVR6/slot 3/T1 <> H_TOR_1/Port6	1A/SVR6/slot 3/T2 <> H_TOR_1/Port24	1A/SVR6/LOM/T1 <> M_TOR_1/Port6	1A/SVR6/LOM/impi <> M_TOR_1/Port24
7		1A/SVR7/slot 3/T1 <> H_TOR_1/Port7	1A/SVR7/slot 3/T2 <> H_TOR_1/Port25	1A/SVR7/LOM/T1 <> M_TOR_1/Port7	1A/SVR7/LOM/impi <> M_TOR_1/Port25
8		1A/SVR8/slot 3/T1 <> H_TOR_1/Port8	1A/SVR8/slot 3/T2 <> H_TOR_1/Port26	1A/SVR8/LOM/T1 <> M_TOR_1/Port8	1A/SVR8/LOM/impi <> M_TOR_1/Port26
9		1A/SVR9/slot 3/T1 <> H_TOR_1/Port9	1A/SVR9/slot 3/T2 <> H_TOR_1/Port27	1A/SVR9/LOM/T1 <> M_TOR_1/Port9	1A/SVR9/LOM/impi <> M_TOR_1/Port27
10		1A/SVR10/slot 3/T1 <> H_TOR_1/Port10	1A/SVR10/slot 3/T2 <> H_TOR_1/Port28	1A/SVR10/LOM/T1 <> M_TOR_1/Port10	1A/SVR10/LOM/impi <> M_TOR_1/Port28
11		1A/SVR11/slot 3/T1 <> H_TOR_1/Port11	1A/SVR11/slot 3/T2 <> H_TOR_1/Port29	1A/SVR11/LOM/T1 <> M_TOR_1/Port11	1A/SVR11/LOM/impi <> M_TOR_1/Port29
12		1A/SVR12/slot 3/T1 <> H_TOR_1/Port12	1A/SVR12/slot 3/T2 <> H_TOR_1/Port30	1A/SVR12/LOM/T1 <> M_TOR_1/Port12	1A/SVR12/LOM/impi <> M_TOR_1/Port30