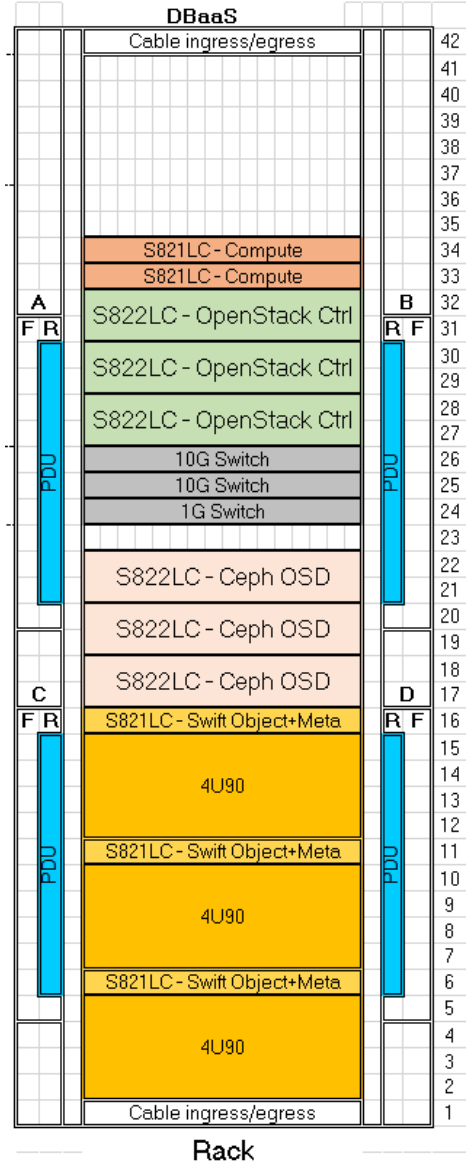
High Level Component Architecture Diagram – DBaaS



OpenStack Software Stack:
Ubuntu 16.04 (all nodes)
OpenStack Newton
Ceph Jewel
Operational Management
- Nagios Core
- ELK Stack (Elasticsearch, Logstash, Kibana)

Network : (HA) – Bonding
2 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

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

Ceph OSD:
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 SAS RAID controller based on LSI 3008L
- 2 x 2-Port 10G NIC (Intel / Mellanox)

Swift Object / Metadata
QTY: 3

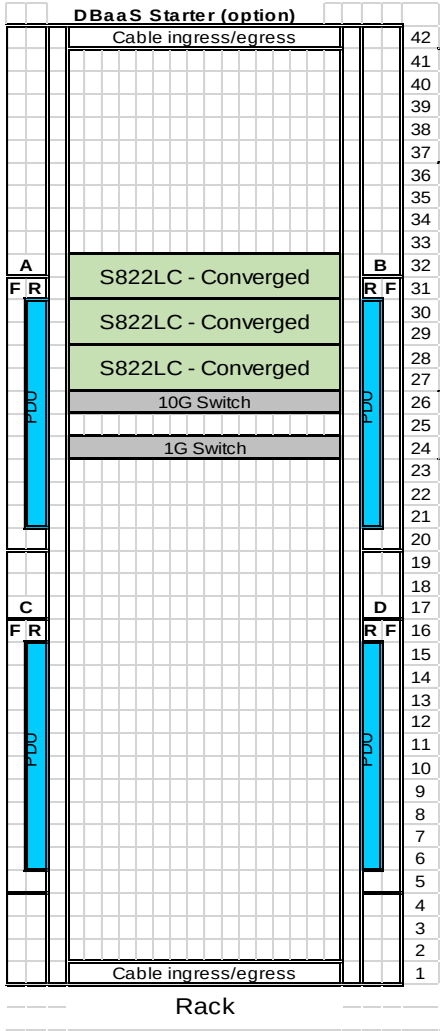
Per Server Config: (Stratton 8001-12C) (1U)
16 Cores (2.3Ghz), 128GB
- (OS) 1 x 4TB SATA HDD + 4 x SSDs 240GB
- 2 x 2-Port 10G NIC (Intel / Mellanox)
- 1 x LSI 3008 External SAS (8 port SAS3)

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

****Notes:**

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

High Level Component Architecture Diagram – DBaaS Starter



OpenStack Software Stack:
Ubuntu 16.04 (all nodes)
OpenStack Newton
Ceph Jewel
Operational Management
- Nagios Core
- ELK Stack (Elasticsearch, Logstash, Kibana)

OpenStack + Ceph + Swift + OpsMgr (converged)
QTY: **3**

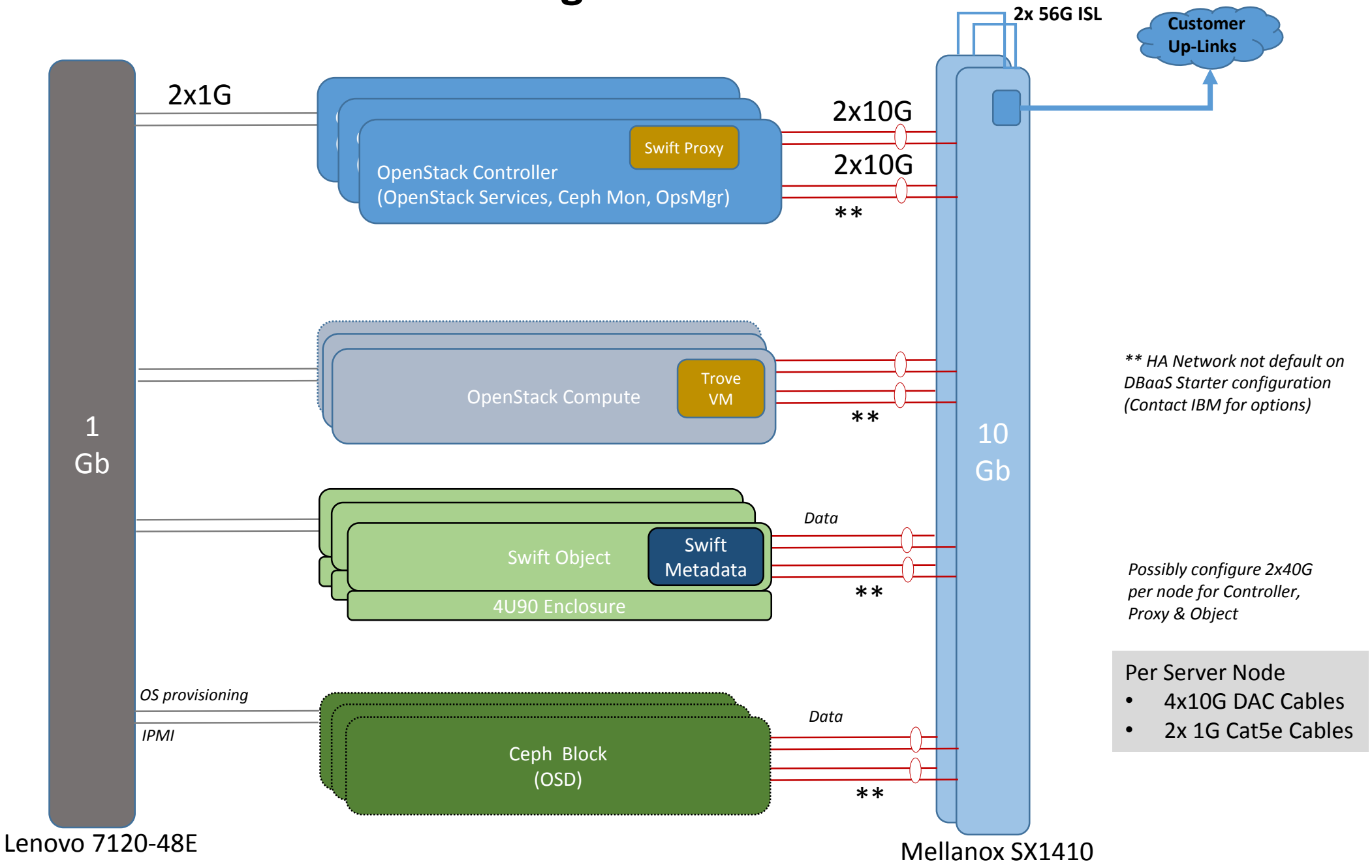
Server Config: (Briggs 8001-22C) (2U)
20 Cores (2.92 Ghz), 128 GB,
1 x 1.9 TB SATA SDD (OS)
2 x 240 GB SATA SSD (Ceph journal)
9 x 8 TB SATA HDD (Ceph Data)
1 x 2-Port 10G NIC (Intel 10G / Mellanox)
1 x SAS RAID controller based on LSI 3008L

Network : (non HA) – non-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

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

High Level Network Architecture Diagram



*** HA Network not default on DBaaS Starter configuration (Contact IBM for options)*

Possibly configure 2x40G per node for Controller, Proxy & Object

Per Server Node
- 4x10G DAC Cables
- 2x 1G Cat5e Cables