Annex 3. Technical and Equipment Recommendations

Rack Space
We recommend at least four 42U cabinet racks fitted with trays, door locks, and mesh doors for cooling, and measuring 800 x 900. Recommended rack allocations are as follows:

- One 42U for carrier(s) transmission equipment
- One 42U for the peering fabric switch and servers
- One 42U for value-added services
- One 42U for Peering member routers

Structured Cabling
The structured cabling is necessary to ensure quality of service and presentation of the facility.

Power Backup and Distribution
We recommend the supply and installation of a three phase inline 10KVA UPS with extended battery pack. A 10KVA power inverter with batteries to last at least 12–24 hours would be needed in location with prolonged power problems and without a generator. In addition a power distribution board installed for the facility and rack distribution units installed for each rack for proper power management.

Server Room Cooling
The formula for calculating cooling is: Total Heat Load = Room Area BTU + Windows BTU + Equipment BTU + Lighting BTU

Room Area BTU = length (m) x width (m) x 337 = 15m x 337 = 5,055 BTU

Windows BTU = length (m) x width (m) x 870 = 9m x 870 = 7,830 BTU

Equipment BTU = total wattage x 3.5 = 10,000w x 3.5 = 35,000 BTU
Lighting BTU = total wattage x 4.25 = 100w x 4.25 = 425 BTU

Based on the above formulae, the estimated total heat load for the room operating at full capacity is: 5055 + 7830 + 35000 + 425 = 48,310 BTU.

We therefore recommend at least two 36,000 BTU split system air conditioning units for the MOZIX. During the initial period one air conditioning unit will support the facility and one will serve as backup.

**Switch and Route Server**

We recommend the acquisition of 2 x 48 10/100/1000Gbps with at least 2 – 4 Gigabit (SFP) interfaces to cater for current requirements, future growth and redundancy. The switch should support Sflow features.

A server-based route-server that supports BGP with IPv4 and IPv6 is recommended. Therefore two servers for the route-servers as per the server specifications below will be useful for the lab.

**Server Hardware Recommendations**

The IXP best practices require that an IXP operator provide additional information such as a member’s mailing list, a website with contact information for the IXP and the members available, an email address, and at least some statistical information on the traffic exchanged at the IXP. Some IXPs also keep an archive of their historical traffic growth to track growth. Others provide a ticketing system for lodging queries and have gone further with advanced network monitoring tools. All the efforts are aimed at ensuring that an IXP is able to provide efficient and reliable services for their members.

Computing resources are required in order to host and offer these additional services. Therefore at least five 2U rack mount servers with the following specifications:

- Intel Quad Core Processor
- At least 8GB of RAM
- At least 4 x 450GB 3.5 SAS with 10,000 rpm Hard Disk
- Built-in Raid controller (minimum Raid 1)
- DVD ROM/Writer
- Dual (2) 1Gb Ethernet controllers
- Redundant power supply
- Rack mount kit

The usage is as follows:

- Two servers for route-servers (redundancy)
- One server for IXP email, helpdesk and website
- One server for network monitoring services
- One server for backup, flow analysis, R&D, etc

**Security and Access Control**

The security and access control is important in order to safeguard the equipment hosted at the facility.

**Network Monitoring**

To enhance service delivery there will be a need for monitoring of the network devices. In addition to the computing resources, it’s also necessary to acquire a SMS notification unit that can alert technical staff of outages via SMS messages.

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