

MBIX operational Report

A review of the first year of operation

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Summary

This report is about the technical operations of MBIX. It will present our current situation, as well as comments about the past year of operation.

In general, we had a good first year, because we had a year of firsts. Initially 4 ASes were connected, proving the concept. Today, we have 11 ASes connected, including a major international ISP, root DNS nodes, NTP servers and a CDN present.

Further expansion is expected, which will require further technical know-how, especially with regards to BGP routing. We don't expect any equipment upgrades will be needed in the next year, even with the most optimistic growth; our core switchgear has vast amounts of headroom at this point.

MBIX in statistics

Connected ASes: 11

Active Ports: 14

Total Connected Capacity: 37100 Mbps

Average Traffic: ~30 Mbps

Average Peak traffic: ~150 Mbps

IPv4 routes visible: ~25,000

IPv6 routes visible: ~9,000

MBIX equipment

- Cisco Nexus 7004 ethernet switch
 - 48 ports 10/100/1000 Mbps copper module
 - 48 ports 1/10 Gbps SFP/SFP+ module
 - Management module
- Cisco 3945E ISR router
- 3x IBM x335 - Route servers and AS112 node
- IBM x336 web and email server (Colocated at Les.net)

MBIX services available

To existing members, and prospective members, MBIX can offer the following services. They are not all operated by MBIX, but MBIX members can benefit directly from them.

- Low-latency, high-capacity, unmetered connections to all other networks connected to MBIX
- Redundant BGP route servers, for facilitating route announcement exchange between members. All members are peering with these route servers.
- An IPv4 root DNS server, operated by PCH (e.root-servers.net)
- Two dual-stack (IPv4 & IPv6) .CA DNS servers, operated by PCH (j.ca-servers.ca) and CIRA (any.ca-servers.net)
- An Akamai CDN node. Member ISPs who peer at MBIX and operate their own DNS resolvers will load Akamai data from this node, rather than one far away from Winnipeg
- NTP servers synchronized to CDMA and GPS, donated by CIRA

Reliability and major incidents

Over the past year of operations there has only been one episode of total MBIX outage, when our Nexus 7004 switch disabled all the fiber optic ports, affecting all our largest members. The root cause was a software licence issue. We were using a software feature in a grace period, which expired. We didn't realize this would be a problem, and so were caught unaware when the grace period ended. Subsequently we have upgraded to NX-OS 6.2, and the problem has a permanent solution.

We have had minor incidents with IP transit failing, but because the exchange does not depend on IP transit, this was not a true outage of the exchange, nevertheless a serious issue as administration and statistics collection failed during that period.

BGP configuration as a result of MBIX has caused complexity to increase, and the BGP admins involved have required extra troubleshooting and research in order to correct. These types of optimizations continue, and the exchange of BGP expertise ought to be exchanged in a more regular or extensive way; the more peers, the greater the impact of sub-optimal routes.

Future Outlook

Due to provision of high-end equipment donated by CIRA, we expect to have capacity to handle any expansion in the next year. We have 10-gigabit capable ports in plentiful numbers, which will service all expected expansion and activity in the next year.

MBIX would be well served by a more active technical committee, as any routing problems, or other issues are likely to directly affect members. More communication about these issues should serve to improve performance of MBIX, and also enlighten connected members, many of whom are small operators who can particularly benefit from sharing of knowledge.

Close partnership with GSC should be maintained, as the majority of MBIX and member equipment is housed in their facility. MBIX members are occupying a significant portion of the current colocation space, more members may necessitate facility upgrades from GSC.