

Caching at the VIX

Steve Noorderbroek

CTO

Telsat Broadband

Caching at the VIX

- Founding of the VIX in March 2013
- VIX founding members exploring what services could be hosted at the IX for common good
- Ideas included:
 - Root nameserver
 - Akamai content distribution network
 - Google Global Cache
 - Public FTP Server

Google Global Cache

- A lot of the Internet content is now “Google”, whether it is searching, documents, YouTube, embedded advertising, etc
- Which means for a network operator, a vast portion of your overall network traffic will be going to and coming from a Google server
- The closer this Google server is to your network, the faster the response, and ***hopefully*** the happier the client will be

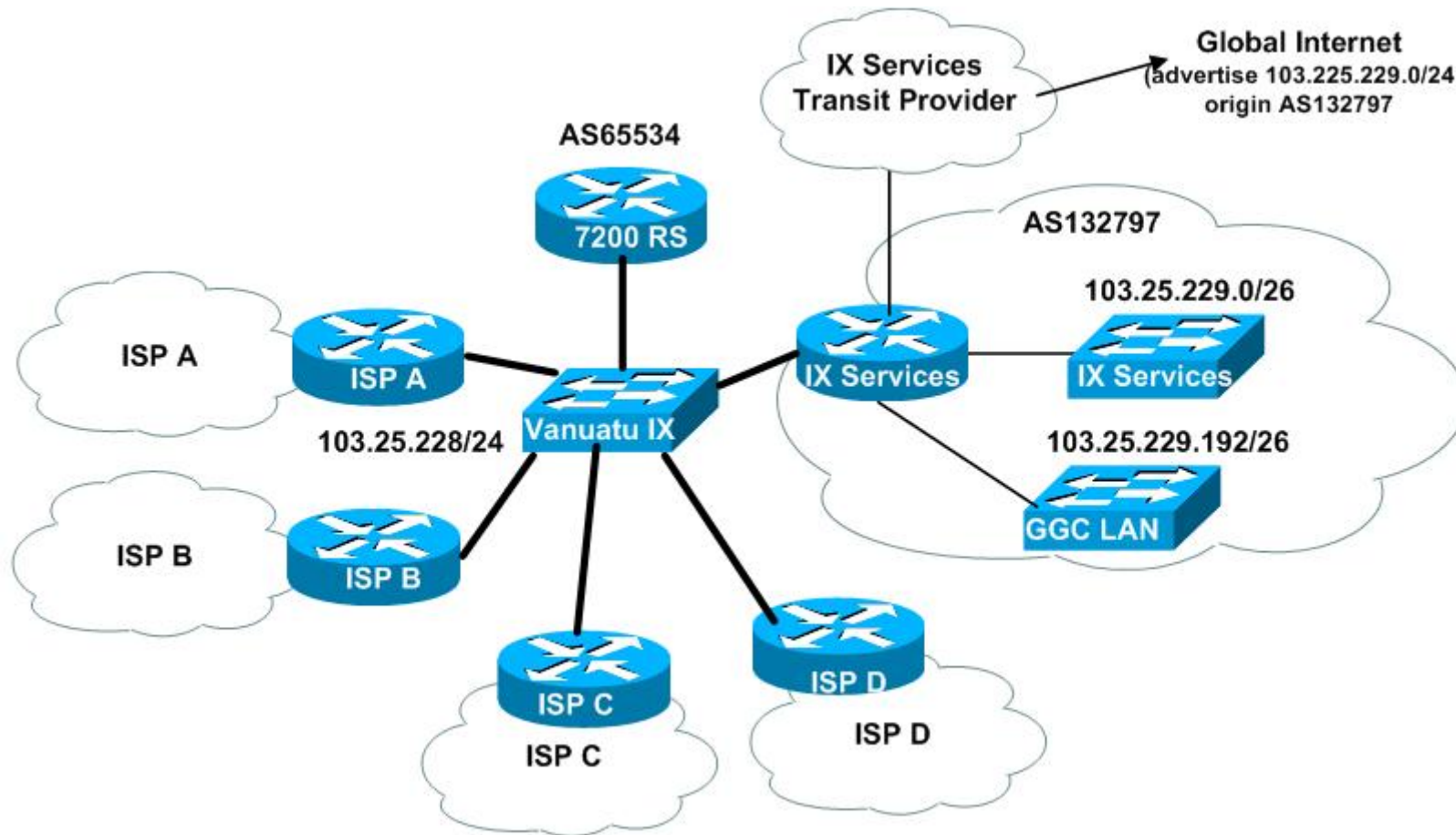
Google Global Cache

- Google Cache was the “first line of business” for the new IXP
- Google’s normal operating guidelines mean that a cache would only be installed when there is over 1Gbps of traffic (order of magnitude more than the entire capacity into Vanuatu in 2013)
- But Google also supports infrastructure development, and agreed to install the GGC at the new VIX to benefit all ISPs in Vanuatu

Google Global Cache

- Three Dell servers arrived one month later
- The GGC team remotely directed the local VIX team how to install a basic image which allowed the cache to bootstrap itself and for the GGC team to complete the configuration to bring the node online
- ISPs at the VIX advertised their routes to the GGC node via BGP
 - And from then on the GGC began handling requests

VIX and GGC placement



Caching Experiences

- Initial misunderstanding about how the GGC would work
 - We believed the cache would receive local requests for content
 - And would respond if the content was local
 - If content was not local, the cache would forward the request onwards
 - Content would come in via each provider's upstream link

Caching Experiences

- In reality, the GGC node operates more like a transparent proxy
 - The request goes to Google as normal, overseas
 - The request would be handed back to the local cache to be dealt with
 - If the content not available locally, it would be requested from overseas, using the cache's transit provider link

Caching Experiences

- With only satellite links to Vanuatu, this was much slower than not using the GGC
 - Google content now comes over transit provider link, not the ISP link
- We removed our network from the local GGC so we could go direct
 - Restored “acceptable” performance for our customers

Caching Experiences

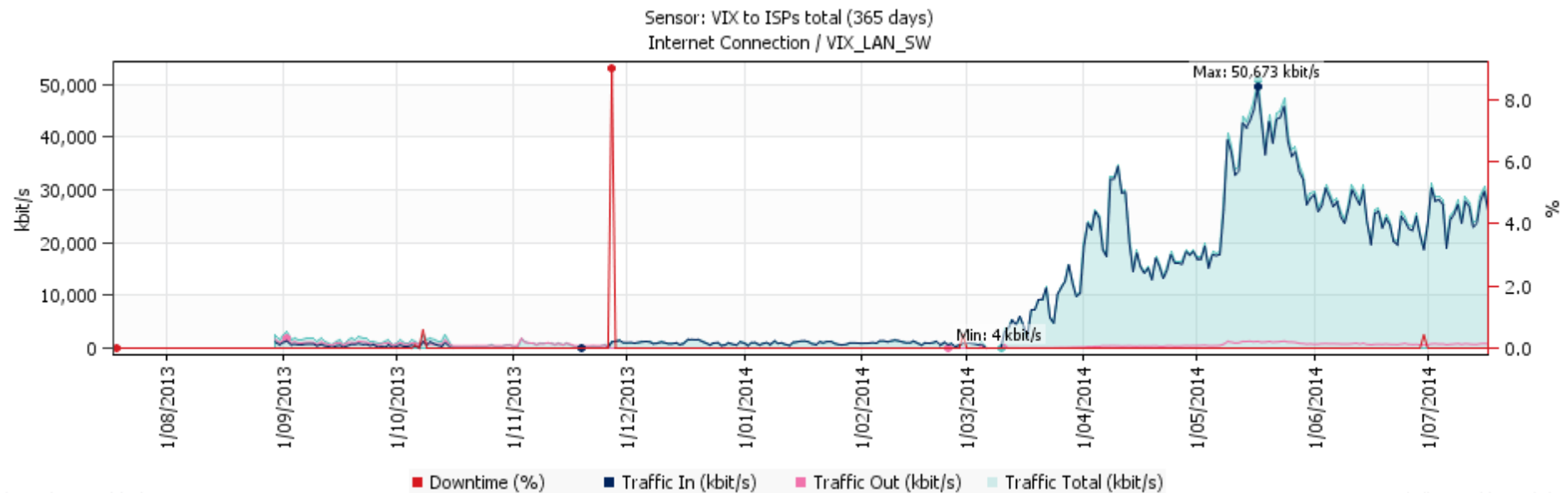
- GGC team disenchanted with the performance
 - Very little usage due to the satellite links
 - TVL yet to join the VIX
 - Digicel hadn't yet completed their IX peering
 - Telsat had just withdrawn routes from the GGC
 - Suggestions of withdrawing the cache due to low usage
- A Plan B needed...

A new plan

- Telsat temporarily took over provision of transit to the GGC
 - Telsat customer routes readvertised to GGC
 - No performance disadvantage now
 - Performance benefits seen by end users
 - GGC team happier
- And then the submarine cable arrived in April 2014
 - Replacing all satellite connections (which now operate as backup only)

The submarine cable

- The difference is obvious



The submarine cable

- iGov link now providing transit to the GGC again
 - Significant improvement in responsiveness of various Google services
 - Content like YouTube loading much faster

Current situation

- Telsat now seeing average 10-25% of traffic being served by the GGC
 - This traffic responds in sub 10ms RTTs and frees up international links for other traffic
- VIX monitoring of the GGC node shows that it is handling approximately 280Gbytes per day
 - Average 25-30Mbps of data and growing
- Our next goal is to approach Akamai and get a set of their servers in Vanuatu as well

Conclusion

- Google Global Cache has brought great benefits to Vanuatu
 - Housed at VIX means benefits for all VIX members
- Feeding GGC via satellite links brings no benefit
 - Providers have small congested links already
- Submarine cable has made a huge difference to viability of caching in Vanuatu