Introduction

Telecom Fiji's Connect ISP peering with Vodafone Fiji Akamai Cache project was successfully completed on 15 May 2015.

Telecom Fiji has currently hosted a Cache in the ISP network which is Google Global Cache, GGC. This caches all Google webpages, Google Play contents and Youtube. TFL saves around 600Mbps upstream bandwidth at peak time in a day through this Google Cache. Due to this TFL has saved on upstream transit link congestions.

There has always been a need for another caching device that can cache download contents like Microsoft, Oracle, Adobe and other contents. Our corporate customers have started to complain lately, demanding for good download speed with the view of better performances from TFL's competitors.

Objective

There have been two objectives targeted for this project.

- maximise the software download and updates speed for especially for our corporate customers who in the past few years have been raising concerns regarding the sluggish software download speeds and software updates they have been facing from their dedicated internet leased line.
- reduce bandwidth consumption on the transit links to upstream internet providers

Both these objectives were feasiable through BGP peering with Vodafone Fiji Limited(AS38442) and accessing their locally hosted Akamai cache servers.

Network Diagram
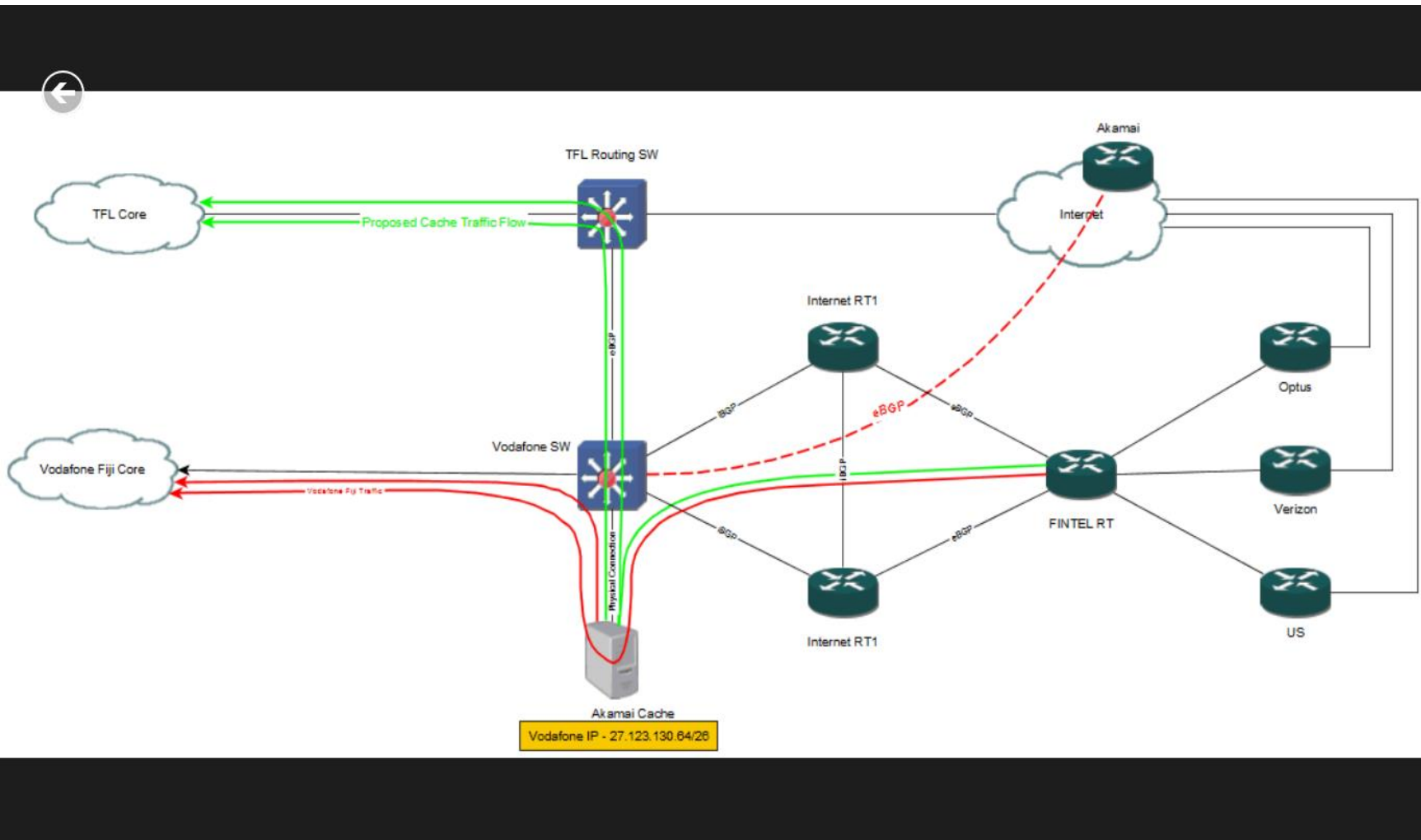
Outcomes and Results

The configuration was carried out smoothly on Wednesday afternoon, 13 May 2015 but the outcome of the cache and impact on our ISP network became visible after almost 48hours from the time BGP peering was successfully up. Caching became apparent on Friday 15 May 2015 at around 1600hrs.

- Traceroutes to download sites were observed to divert to the Vodafone cache to network 27.123.130.64/26.
- Ping tests indicated a remarkable latency of 1ms from the ISP core to Vodafone's Akamai Cache Servers.
- Software downloads from Microsoft, Oracle, Adobe, Avira, etc were observed to be extremely fast.
- Bandwidth consumptions especially on the OPTUS link dropped from around 200 – 250Mbps during peak hours.

Bandwidth Graphs

GigabitEthernet1/9 · Peer with Vodafone for Akamai Cache

Jul 5 2015, 7:39 am – Jul 11 2015, 1:13 pm
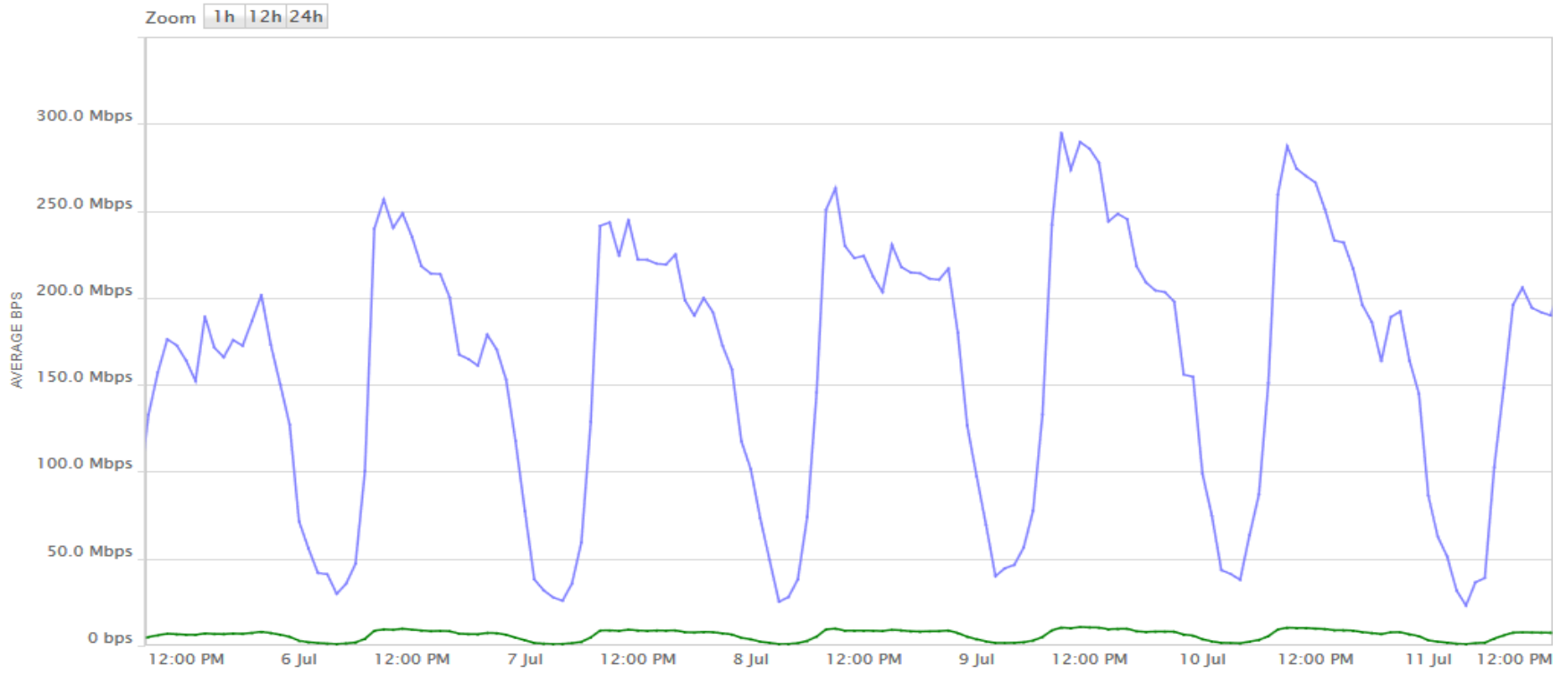
Ping Results

*C:\>**ping download.microsoft.com***

Pinging a767.dscms.akamai.net [27.123.130.72] with 32 bytes of data:
Reply from 27.123.130.72: bytes=32 time=1ms TTL=61
Reply from 27.123.130.72: bytes=32 time<1ms TTL=61
Reply from 27.123.130.72: bytes=32 time=1ms TTL=61
Reply from 27.123.130.72: bytes=32 time=1ms TTL=61

Ping statistics for 27.123.130.72:
*   Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),*
Approximate round trip times in milli-seconds:
*   Minimum = 0ms, Maximum = 1ms, Average = 0ms*

*C:\>**ping download.oracle.com***

Pinging a1961.d.akamai.net [27.123.130.74] with 32 bytes of data:
Reply from 27.123.130.74: bytes=32 time<1ms TTL=61
Reply from 27.123.130.74: bytes=32 time<1ms TTL=61
Reply from 27.123.130.74: bytes=32 time=1ms TTL=61
Reply from 27.123.130.74: bytes=32 time=1ms TTL=61

Ping statistics for 27.123.130.74:
*   Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),*
Approximate round trip times in milli-seconds:
*   Minimum = 0ms, Maximum = 1ms, Average = 0ms*

*C:\>**ping download.adobe.com***

Pinging a1953.d.akamai.net [27.123.130.72] with 32 bytes of data:
Reply from 27.123.130.72: bytes=32 time<1ms TTL=61
Reply from 27.123.130.72: bytes=32 time=1ms TTL=61

Reply from 27.123.130.72: bytes=32 time=1ms TTL=61
Reply from 27.123.130.72: bytes=32 time=1ms TTL=61

Ping statistics for 27.123.130.72:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

*C:\>**ping downloadmirror.intel.com***

Pinging a997.d.akamai.net [27.123.130.73] with 32 bytes of data:
Reply from 27.123.130.73: bytes=32 time=1ms TTL=61
Reply from 27.123.130.73: bytes=32 time=1ms TTL=61
Reply from 27.123.130.73: bytes=32 time=1ms TTL=61
Reply from 27.123.130.73: bytes=32 time=1ms TTL=61

Traceroute Results

C:\\>tracert download.microsoft.com

Tracing route to a767.dscms.akamai.net [27.123.130.72] over a maximum of 30 hops:

```
 1   <1 ms   <1 ms   <1 ms  Core-Static-119-235-102-30.connect.com.fj [119.235.102.30]
 2   <1 ms   <1 ms   <1 ms  10.254.5.20
 3    2 ms    1 ms    2 ms  202.62.119.62
 4    1 ms    3 ms    1 ms  27.123.130.72
```

Trace complete.

C:\\>tracert download.oracle.com

Tracing route to a1961.d.akamai.net [27.123.130.73] over a maximum of 30 hops:

```
 1   <1 ms   <1 ms   <1 ms  Core-Static-119-235-102-30.connect.com.fj [119.235.102.30]
 2   <1 ms   <1 ms   <1 ms  10.254.5.20
 3    2 ms    1 ms    1 ms  202.62.119.62
 4    1 ms    1 ms   <1 ms  27.123.130.73
```

Trace complete.

C:\\>tracert download.adobe.com

Tracing route to a1953.d.akamai.net [27.123.130.72] over a maximum of 30 hops:

```
 1   <1 ms   <1 ms   <1 ms  Core-Static-119-235-102-30.connect.com.fj [119.235.102.30]
 2   <1 ms   <1 ms   <1 ms  10.254.5.20
 3    1 ms    1 ms    1 ms  202.62.119.62
```

4   1 ms   1 ms   <1 ms 27.123.130.72

Trace complete.

C:\>tracert downloadmirror.intel.com

Tracing route to a997.d.akamai.net [27.123.130.72] over a maximum of 30 hops:

1   2 ms   <1 ms   <1 ms Core-Static-119-235-102-30.connect.com.fj [119.235.102.30]
2   <1 ms   <1 ms   <1 ms 10.254.5.20
3   1 ms   1 ms   1 ms 202.62.119.62
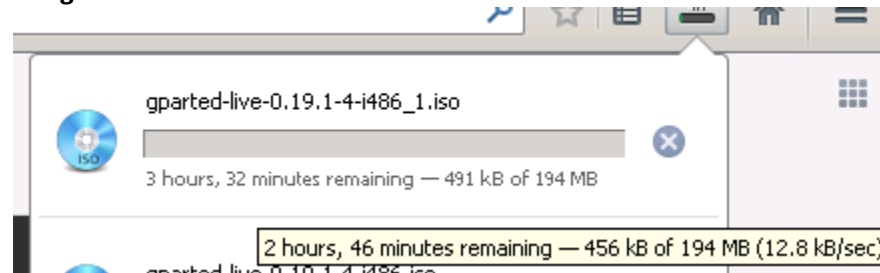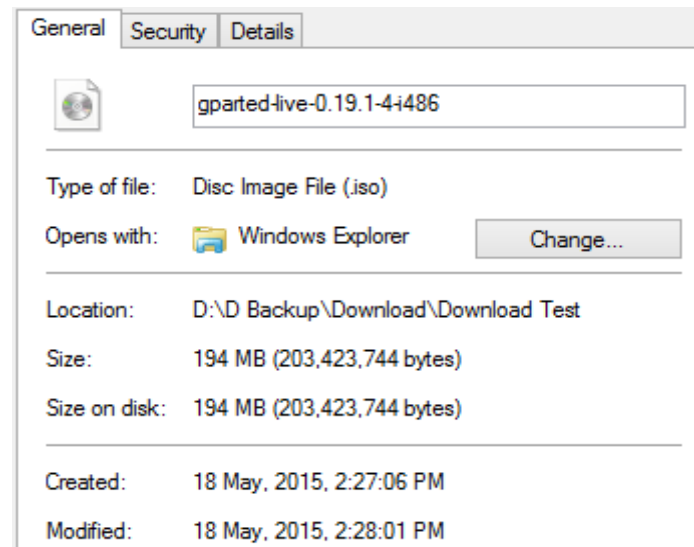4   1 ms   1 ms   1 ms 27.123.130.72

Trace complete.

Download Results

http://jaist.dl.sourceforge.net/project/gparted/gparted-live-stable/0.19.1-4/gparted-live-0.19.1-4-i486.iso

Before Vodafone Akamai cache peering:

After Vodafone Akamai cache peering:

Download Result

Before Vodafone Akamai cache peering:

Name		Location	A
PROWinx64.exe	33.1 MB	Downloads	
downloadmirror.intel.com		4% at 35.2 KB/sec	
		15 min 20 sec remaining	

After Vodafone Akamai cache peering:

General | Compatibility | Digital Signatures | Security | Details

PROWinx64

Type of file:	Application (.exe)
Description:	PROWinx64

Location:	D:\D Backup\Download\Download Test
Size:	33.4 MB (35,084,080 bytes)
Size on disk:	33.4 MB (35,086,336 bytes)

Created:	18 May, 2015, 11:45:09 AM
Modified:	18 May, 2015, 11:45:10 AM

Download Result

Before Vodafone Akamai cache peering:

struxureWareDCExpert7.2.4.ova

7 hours, 5 minutes remaining — 30.8 MB of 1.2 GB

7 hours, 5 minutes remaining — 30.6 MB of 1.2 GB (38.6 kB/sec)

After Vodafone Akamai cache peering:

General | Security | Details

struxureWareDCExpert7.2.4 (1)

Type of file:	OVA File (.ova)
Opens with:	Pick an app Change...
Location:	D:\D Backup\Download\Download Test
Size:	1.20 GB (1,298,862,080 bytes)
Size on disk:	1.20 GB (1,298,862,080 bytes)
Created:	18 May, 2015, 2:41:06 PM
Modified:	18 May, 2015, 2:47:03 PM
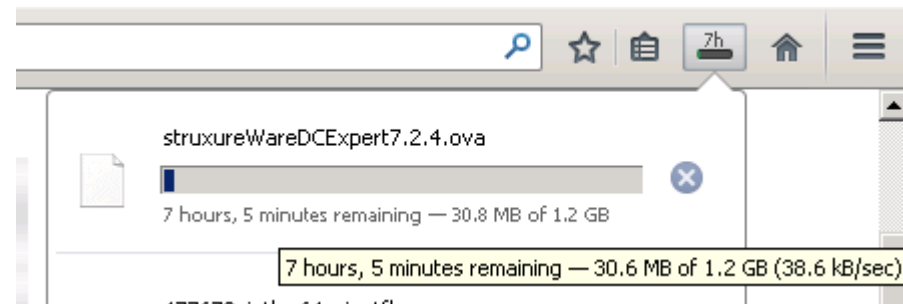
Peering Advantages

The TFL – Vodafone (Akamai cache) peering has resulted in improved network and download performance as highlighted below;

- Low latency between end-user and content provider-end with approximately 1ms latency observed at the core.
- Superior software download speed which for instance, 1sec was taken to download 33.4MB file at the core.
- A drop in international transit bandwidth usage of around 230M - 250M during peak hour has been observed.
- General improvement in internet speed
- Improved customer retention
- Cost sharing advantage between TFL and Vodafone

THANK YOU

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