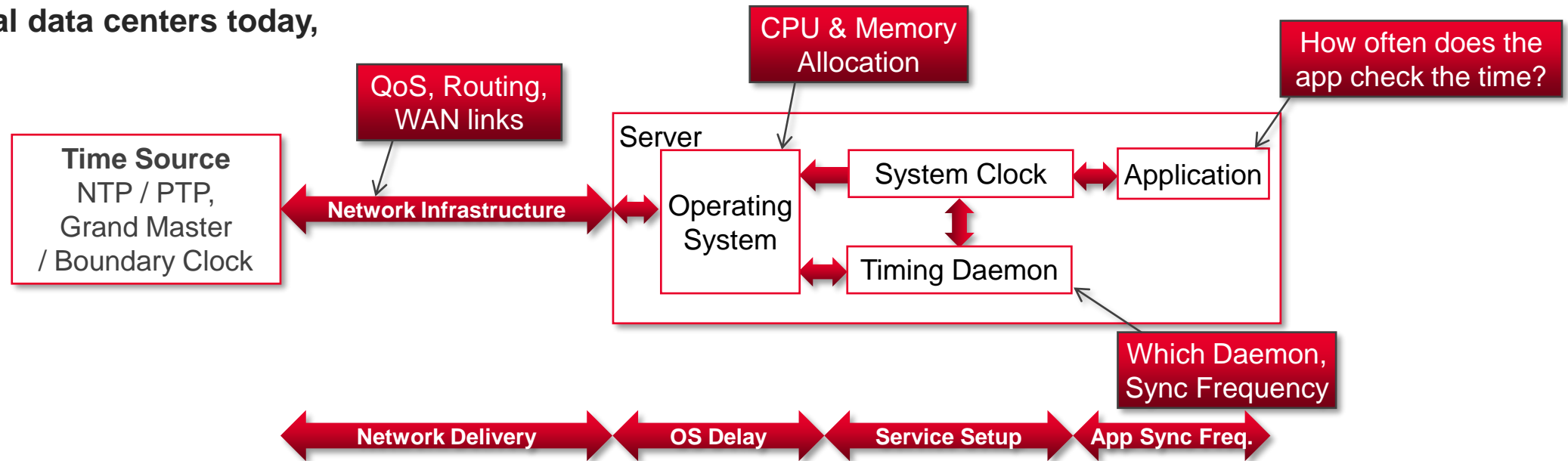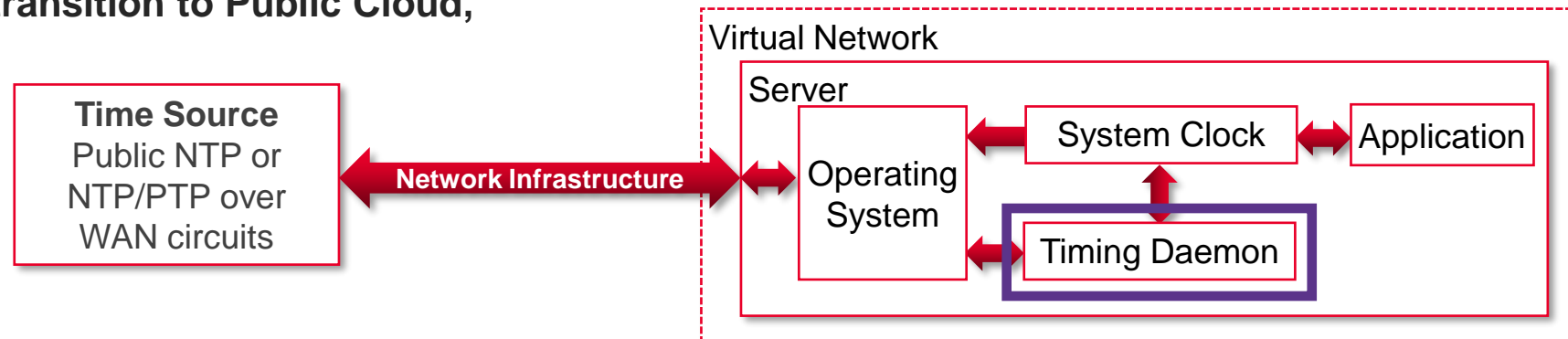**KEYSIGHT**

"Do you have the Time for migrating to the Cloud?" A comparison of three different time synchronization daemons in public cloud environments

It can be a challenge to know your servers are synchronisation their clocks accurately 100% of the time,

Physical data centers today,

CPU & Memory Allocation

How often does the app check the time?

QoS, Routing, WAN links

Time Source
NTP / PTP,
Grand Master
/ Boundary Clock

Network Infrastructure

Server

Operating System

System Clock

Application

Timing Daemon

Which Daemon, Sync Frequency

Network Delivery — **OS Delay** — **Service Setup** — **App Sync Freq.**

As we transition to Public Cloud,

Virtual Network

Time Source
Public NTP or
NTP/PTP over
WAN circuits

Network Infrastructure

Server

Operating System

System Clock

Application

Timing Daemon

Timing Daemon Selection in Public Cloud Environments

Acccuracy and Scalability

- Can the solution be easily deployed across hundreds or thousands of servers with different Operating Systems. Does it synchronize accurately?

Resilience

- Support for Multiple Time Sources with Automatic Failover

Reporting

- Ensure that there are no breaks in synchronisation and that tolerances are within boundaries.

Anomaly Detection

- Monitor your time sources and ensure if an anomaly occurs that it doesn't affect operations
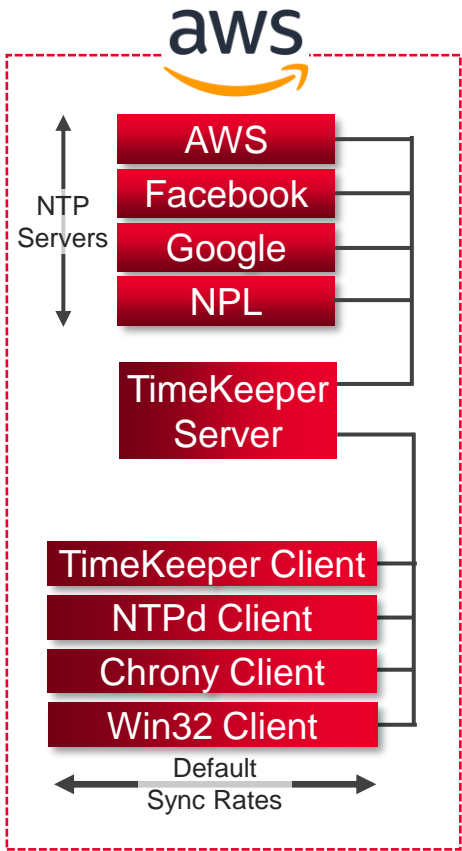
Audit Trail

- Is your time really coming from where you expect it to be coming through and can you prove it
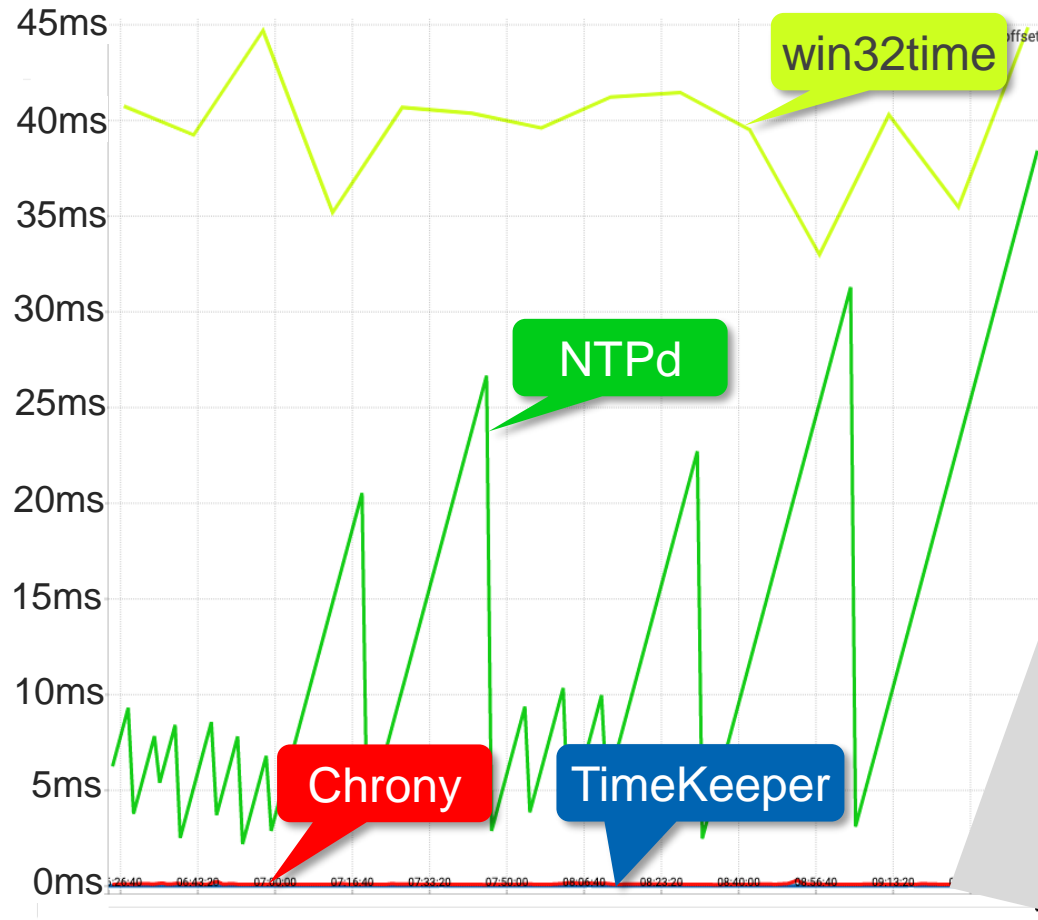
Support

- Commercially Supported Product

The are lots of daemons / software packages which you can use to synchronize the clock on your server,
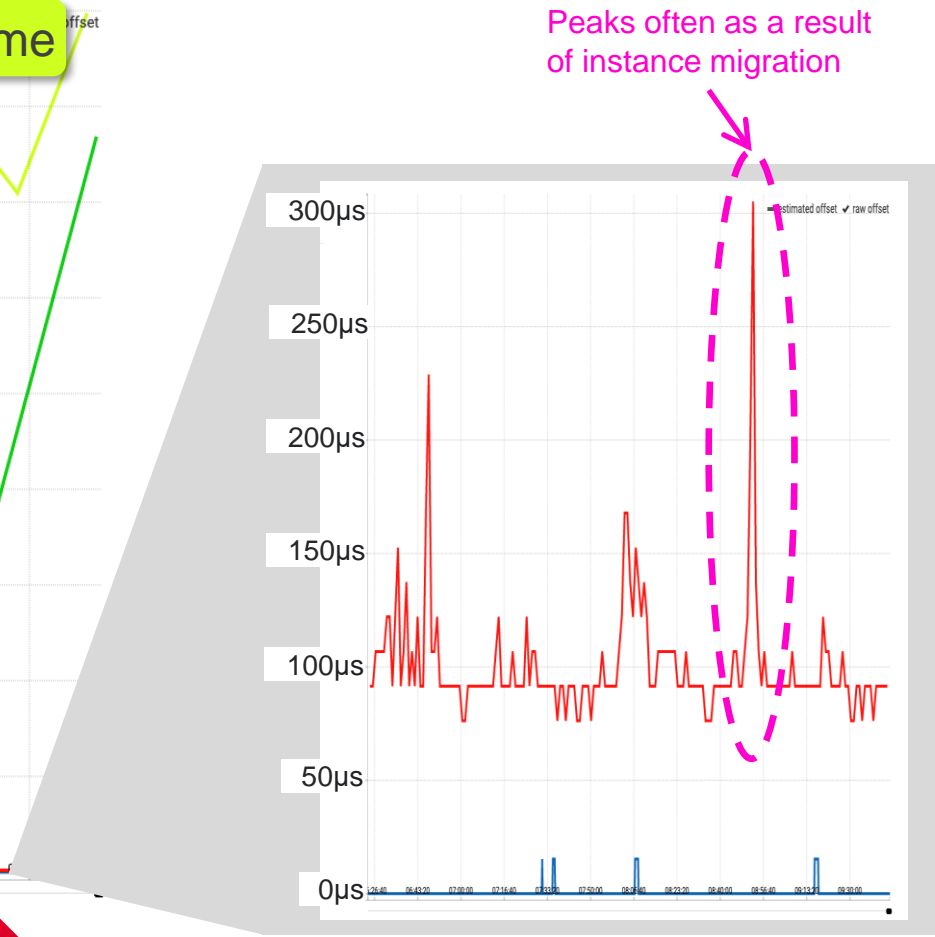
We took four NTP clients and compared the accuracy with their default settings,

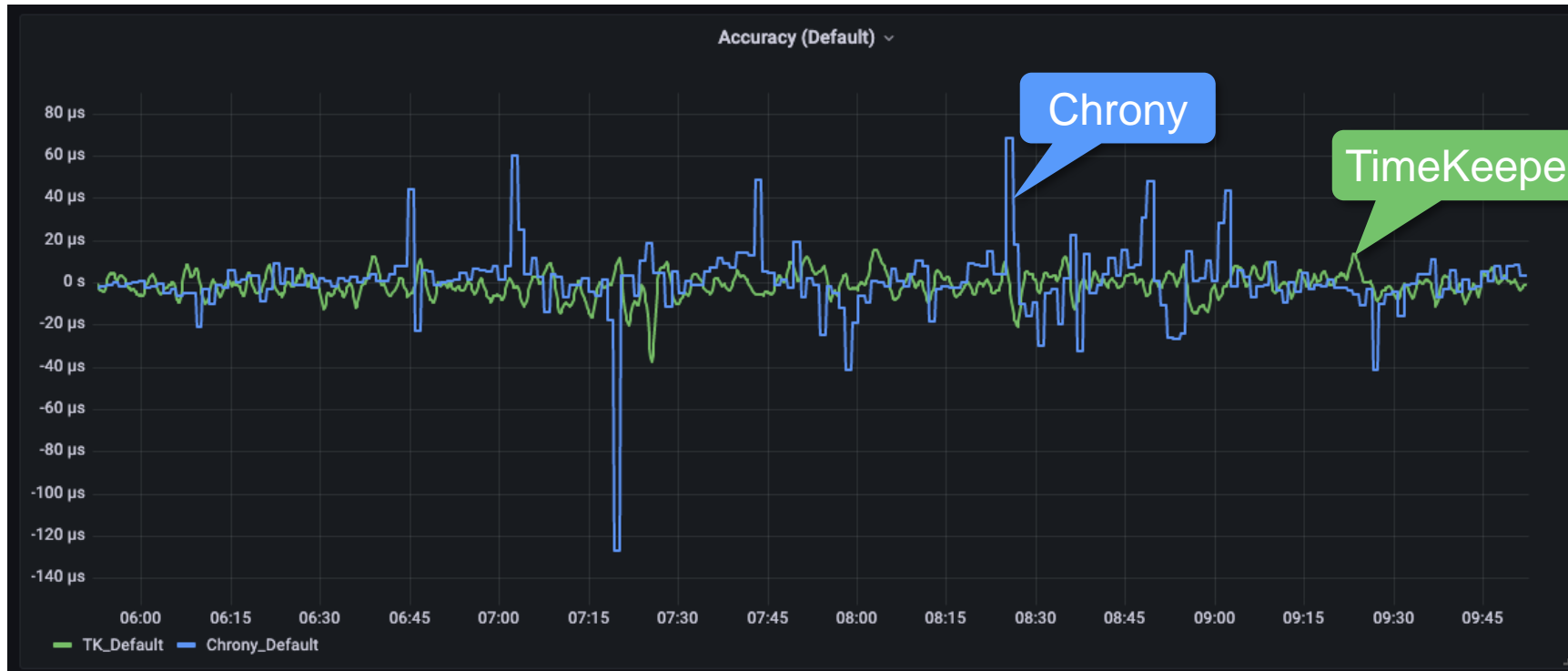*Instance Size: T3 Medium. Sync Accuracy mirrored on larger sized instances.*

4 hour window
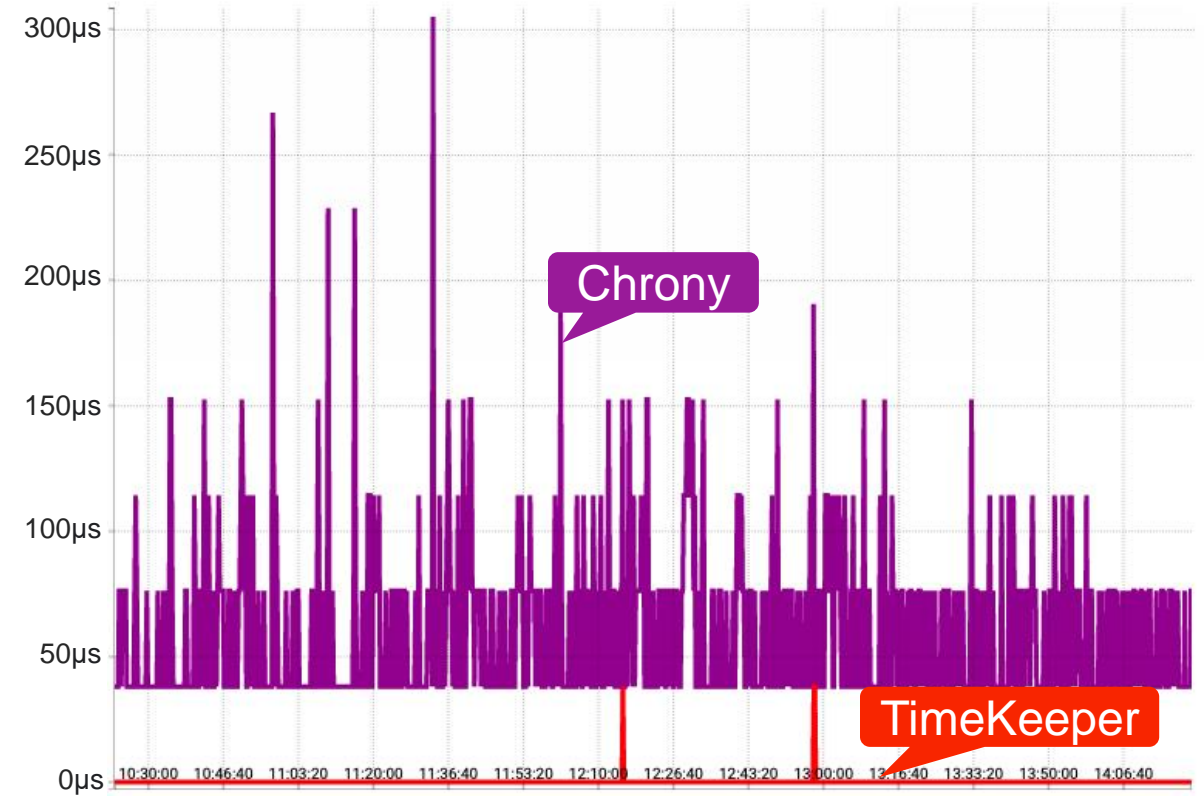
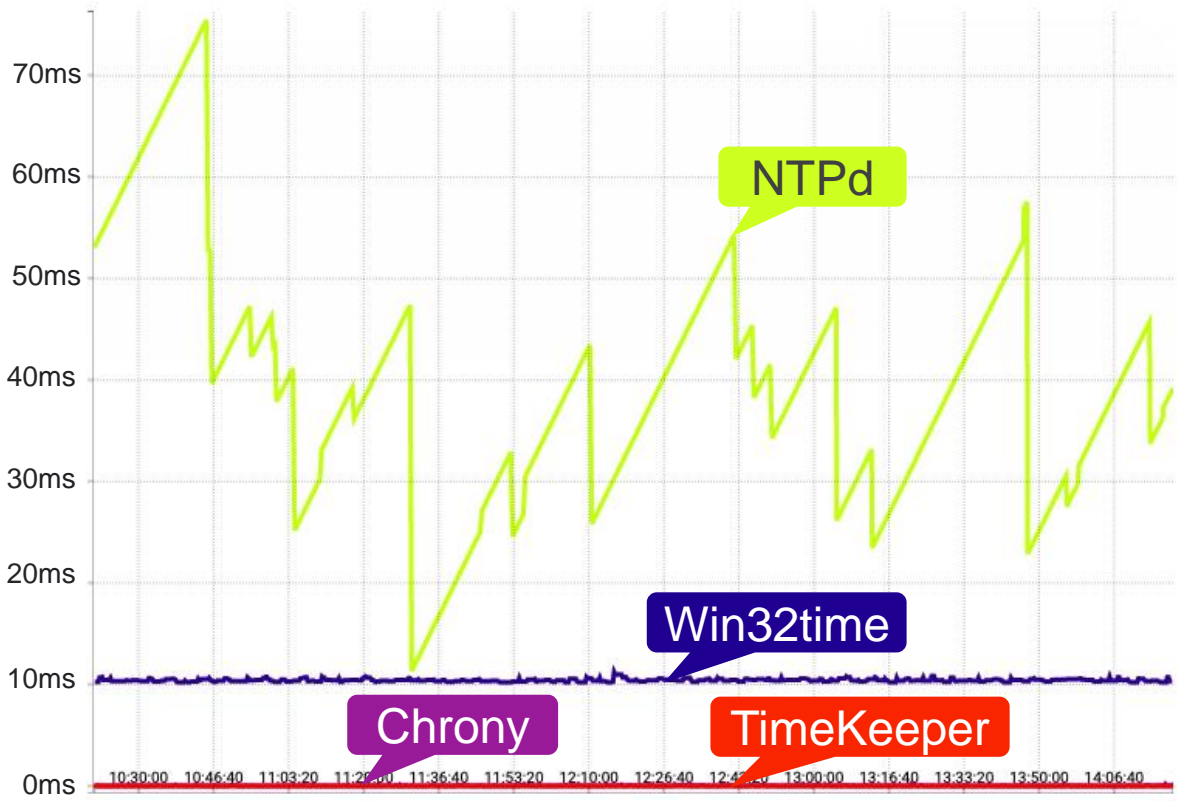Peaks often as a result of instance migration

From the server

If we look at the accuracy from the client's perspective

**But Accuracy is just one item
that needs to be considered…**

What happens when we tune the sync frequency

Client / Sync Frequency	Seconds per Sync	
	Default	Tuned
NTPd	64	8
Chrony	64	0.125[1]
TimeKeeper	1.1	0.125[1]
Win32Time	900	16

Not STAC Benchmarks

KEYSIGHT

6

1 – Can be configured to sync more frequently but accuracy reduced in testing.

Conclusion Slide

Timing in public cloud

- There are lots of to think about when deploying timing in the public cloud.
  - Including: Connectivity, Security Policies, Time Sources, Timing Daemon

Feature / Client	NTPd	Chrony	TimeKeeper	Win32Time
Accuracy and Scalability	★★	★★★★	★★★★★	★★★
Resilience	★★★★	★★★★	★★★★★	★
Reporting	★★	★★	★★★★★	★
Anomaly Detection	★	★	★★★★★	★
Audit Trail	★	★	★★★★★	★
Support	★	★★	★★★★★	★★★★

KEYSIGHT

KEYSIGHT

Thank you