ARITARI
TCP ACCELERATE
For Cloud Applications and VPN

OVERVIEW

Resolving the negative effect of packet loss and latency on Cloud applications and WAN are becoming essential as organisations centralise applications. Aritari offer an essential software and network ability which helps customers measurable improve their application performance and user experience in these scenarios.

- TCP Accelerate
- Packet Loss Mitigation
- Cloud Applications
- WAN

ARITARI TCP ACCELERATE

Aritari offer a unique and powerful ability to reduce or end the harmful effects of latency and packet loss on application performance. This software improves the delivery of your business applications whilst improving user experience and supporting your business processes.

TCP Accelerate

Whilst still a relatively unknown ability, TCP acceleration is growing in popularity due to its ability to improve application performance in high latency networks. With the growth of Cloud and the global centralization of applications high amounts of latency are introduced between the application and the user's or network branches.
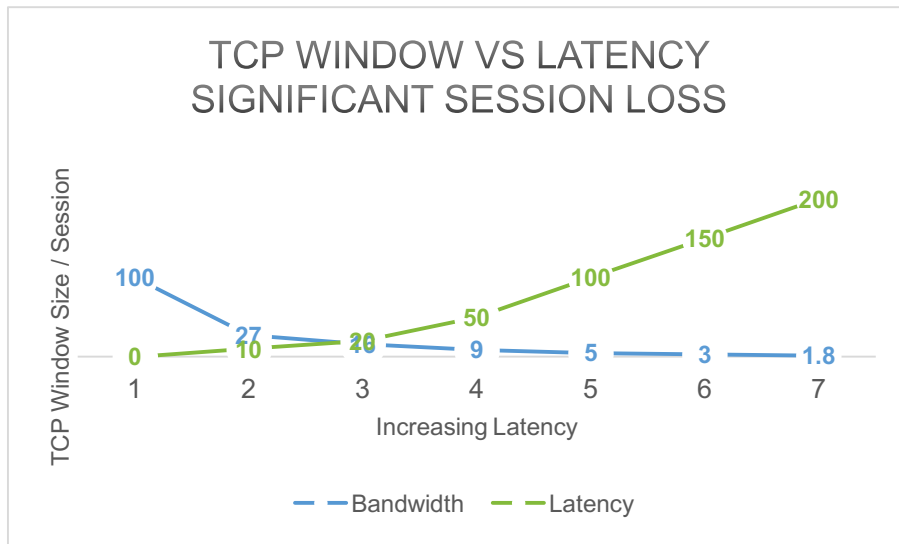
Where can latency be found?

- Internet. The Internet is a logical delivery mechanism for Cloud applications due to its low cost and global pervasiveness. However the Internet experiences far higher levels of latency than MPLS networks which reduces application performance.
- Remote site. Global companies have sites in remote areas of the world. These sites experience high levels of latency when accessing centralised applications. The greater the latency the worse the application performance.

(Read how and why latency affects user experience and application performance http://mysdwan.weebly.com/tcp-accelerate.html)
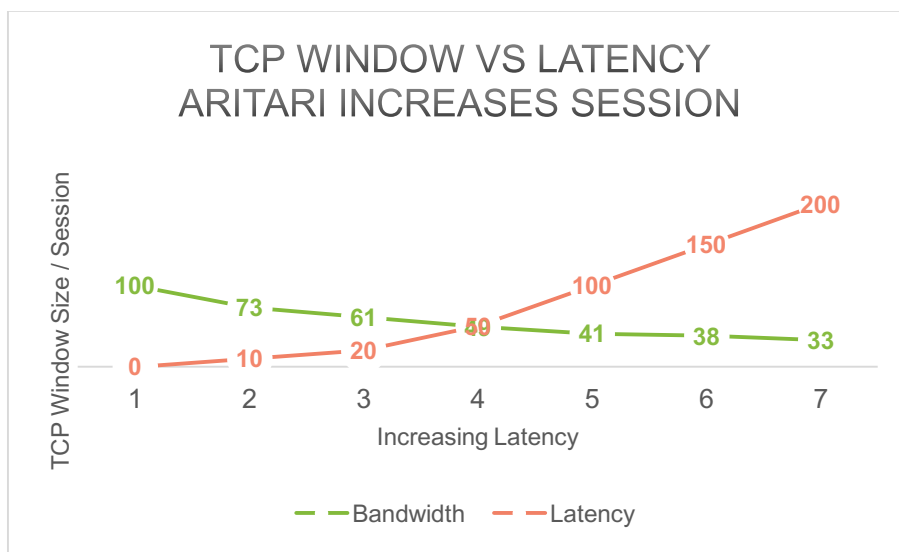
How does Aritari work?

Aritari has developed software that removes the inefficiency in the TCP protocol responsible for determining the amount of bandwidth in a single user session. Whilst the network latency remains the same, the way the TCP protocol measures latency changes with Aritari, resulting in up to 20x larger bandwidth allocation per session to your application users.

Diagram 1.1 Application Session bandwidth (MPLS)

TCP WINDOW VS LATENCY SIGNIFICANT SESSION LOSS

Bandwidth values: 100, 27, 20, 9, 5, 3, 1.8
Latency values: 0, 10, 20, 50, 100, 150, 200

TCP Window Size / Session vs Increasing Latency (1–7)

Legend: Bandwidth, Latency

In diagram 1.1, which illustrates normal effects of latency on TCP window size, you will note the considerable reduction in available bandwidth per user as latency is introduced between two points. At 200ms, the maximum theoretical bandwidth available in the network will be about 2 Mbps on a 100 Mbps dedicated link.

Diagram 1.2 Application session bandwidth with Aritari

TCP WINDOW VS LATENCY ARITARI INCREASES SESSION

Bandwidth values: 100, 73, 61, 49, 41, 38, 33
Latency values: 0, 10, 20, 40, 100, 150, 200

TCP Window Size / Session vs Increasing Latency (1–7)

Legend: Bandwidth, Latency

In diagram 1.2, with the addition of Aritari on either side of the network, a far higher TCP window size is maintained under the same latency conditions. The result is a measurably improved user experience.

Packet Loss Mitigation

Another network condition that severely effects your application users over the Internet or in a private WAN is packet loss. The addition of very small amounts of packet loss in a network has the same overall effect on the user as latency.

2% packet loss = 75% reduction in TCP window size

It is therefore critical to adopt technology that allows you to manage the effects of packet loss in a network to give a more consistent user experience.

For more detail on this ability, read (www.Aritari.com/tcp-accelerate.html) or section on packet loss correction.

Because Aritari does not use TCP IP to transfer your packets across the network, your data does not succumb to the inefficiency of the TCP protocol when packet loss becomes clear in the network. This results in the TCP window size being maintained even when packet loss is experienced.

Cloud Applications

Whilst Aritari has the ability to support any public or private Cloud application deployment globally, we will use the two most common private domain services being deployed namely Microsoft Azure and Amazon Web Services (AWS) for an example of Internet deployments.
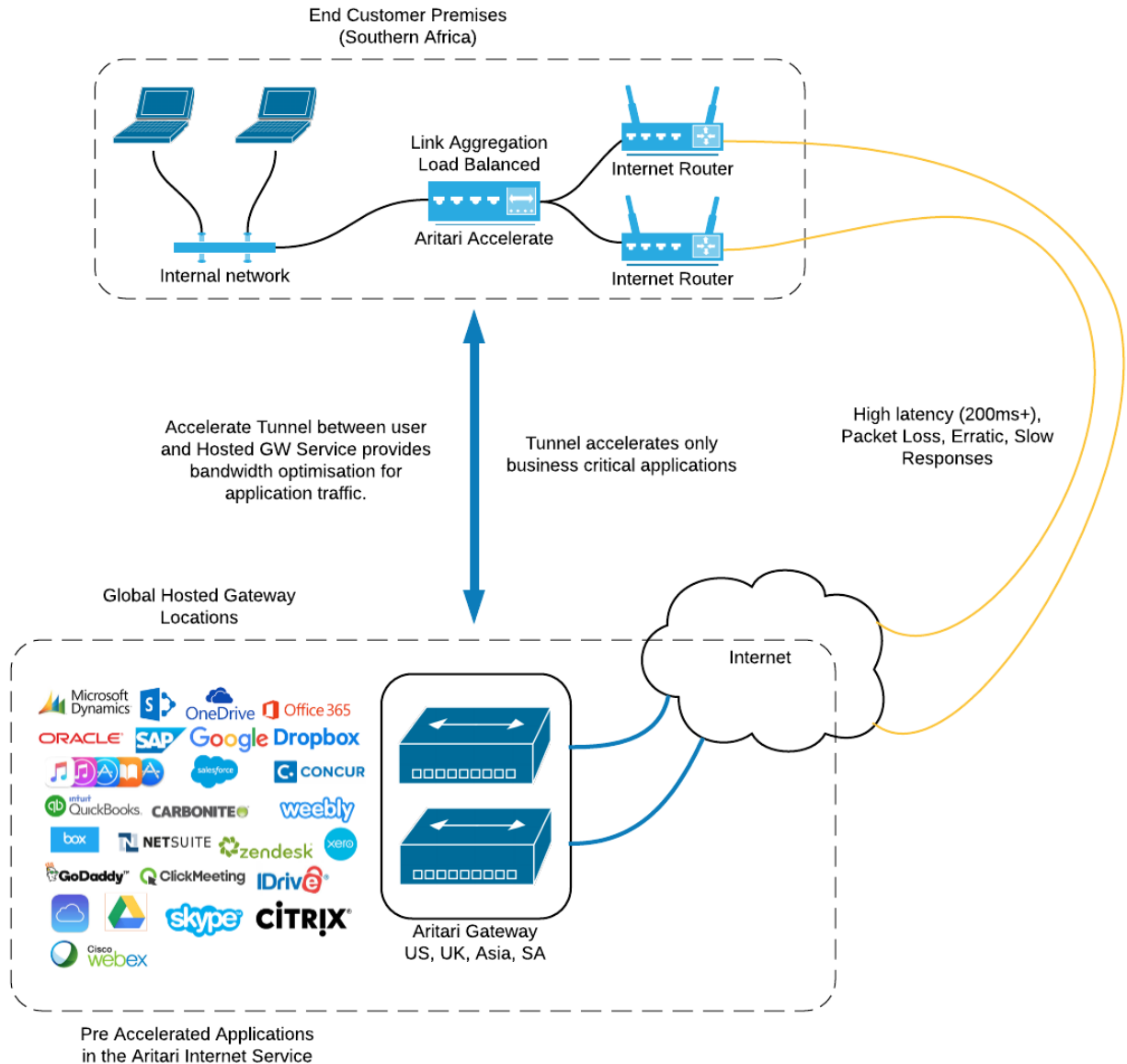
Adding Aritari into your network design can have a measurable benefit to your application speeds and user experience.

- Aritari over the Internet

Aritari replaces your need to create an IP Sec tunnel between your network and your private domain service in Azure or AWS as it is a VPN tunnel that uses a proprietary VPN technology. Included within this VPN tunnel is TCP Accelerate and packet loss correction for improved application speeds and user performance.

Diagram 1.3 illustrates the deployment of Aritari software on a standard VM on either side of the Internet. A VPN tunnel is established between each Aritari deployment through the network firewall.

Diagram 1.3 Aritari Internet VPN

End Customer Premises
(Southern Africa)

Link Aggregation
Load Balanced

Internet Router

Aritari Accelerate

Internal network

Internet Router

Accelerate Tunnel between user
and Hosted GW Service provides
bandwidth optimisation for
application traffic.

Tunnel accelerates only
business critical applications

High latency (200ms+),
Packet Loss, Erratic, Slow
Responses

Global Hosted Gateway
Locations

Internet

Aritari Gateway
US, UK, Asia, SA

Pre Accelerated Applications
in the Aritari Internet Service

Aritari also support two more Internet based deployments which include:

- Public Aritari Cloud Gateway deployments
  (http://mysdwan.weebly.com/uploads/9/6/6/4/96647816/Aritari_gateway_document_v1_20170101.pdf)
- Private Aritari dedicated bandwidth deployment

Aritari WAN (SD WAN)

Companies replacing their Internet VPN technology with Aritari will receive all the benefits highlighted in TCP Accelerate and packet loss correction, eliminating the need to deploy Aritari specifically for application acceleration.

WAN sites that struggle with high latency or packet loss will achieve better application speeds and user experience due to the full software stack within Aritari. For more information on the full range of Aritari software:
http://mysdwan.weebly.com/uploads/9/6/6/4/96647816/Aritari_sd_wan_software_v1_20170101.pdf

CONCLUSION

Addressing latency and packet loss is essential in the new application economy. Aritari provides unique and powerful software algorithms that help manage and even end the effects of latency and packet loss in Cloud or WAN's.