ARITARI
SOFTWARE STACK

Included in all software versions of Aritari

OVERVIEW

The Aritari software has been developed over the last nine years, making it one of the longest standing SD WAN technologies in the market today.

Even though our first drive was born out of the need to resolve voice performance issues in networks which struggled with limited bandwidth or packet loss, it did not take long to understand the broader benefits of our original Voice VPN software in the greater SD WAN market. This document aims at providing greater insight into the technologies that go with every software installation provided by Aritari and include

- Secure VPN
    - Link Bonding
    - Bandwidth Aggregation
    - Path Selection
- TCP Acceleration
- Voice Optimisation
- Packet Loss Mitigation
- QOS

ARITARI SOFTWARE STACK

To simplify our roll outs and software sales we collapsed our software capability into a single release of Aritari maximizing the value our clients receive when purchasing our software. We only create pricing differentiation based on the size of the last mile required and whether you are using an Edge device or Gateway. Simple.

Secure VPN

All SD WAN technology is based on the ability to build hybrid or Internet VPN's for customers. In some cases this allows customers to build hybrid VPN's which MPLS alone cannot achieve, and in other cases it's to support clients developing full Internet VPN's.

Aritari provides not only a VPN ability, but a unique VPN protocol that is responsible for some of the differences between Aritari and the rest of the market. These differences will become evident in other technologies in this document.

There are also several flexible way in which you can deploy Aritari including:

- Point to point
- Point to DC or Head Office
- Point to Cloud (Gateway)

Simply choose the right edge, DC or Gateway license option and install your services on your chosen hardware. Our software also comes with AES encryption support to make sure your network traffic is protected when travelling over a public domain such as the Internet.

It is also important to note that customers deploy Aritari inside MPLS networks to get access to voice optimisation, TCP acceleration or packet loss mitigation. Some more features of Secure VPN include:

- **Link Bonding** – Bond up to seven network or Internet links at a single site
- **Link Aggregation** – Get 95% of bonded link bandwidth aggregated to a single VPN
- **Path Selection** – Ensure your applications are always travelling on the best path

TCP Accelerate

One of the most unique and powerful features of Aritari is the ability to overcome latency with a feature we call TCP Accelerate. This single technology ensures that we can always outperform our competitors by providing our customers with faster and better network response times especially in high latency networks.
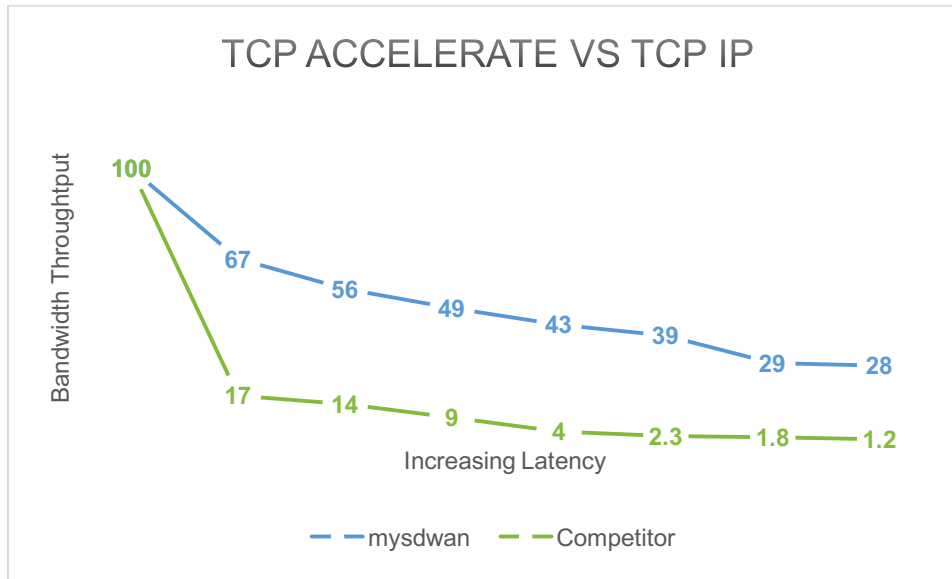
Simply put we can achieve up to 20x faster network and download response times with TCP Accelerate than almost all of our peers. Benefits include:

- Increase WAN application delivery and speed
- Improve Cloud integration and improve user experience (Azure, AWS, 0365 etc)

To highlight the benefit of this technology over normal SD WAN, consider the below graph which outlines the effect latency has on bandwidth throughput per session. As latency is increases in any network when you centralize applications or move to Cloud, the corresponding result is a reduction in bandwidth per session and ultimately user experience.

Aritari TCP Accelerate overcomes this not by lowering latency, but by changing the way the network determines the bandwidth window size using latency as part of the calculation.

Graph 1.1: TCP Accelerate is 20x faster at 200ms latency than normal TCP IP

TCP ACCELERATE VS TCP IP

This technology is critical for large global networks in resolving application performance issues, and is supporting a customer's move to Cloud whilst delivering improved user experience.

Voice Optimisation

Voice optimisation is the longest-serving capability with Aritari. Today we support over 20 000 installation globally and more than 90 million minutes pass through our devices every month. There are several key reasons that our SD Voice product remains a market leader:

- **Voice Optimisation** – Aritari remains the only company to truly offer voice optimisation in its ability to cut the bandwidth required by voice by 80% on average. This is essential in areas with limited bandwidth.

- **Voice Packet Loss Mitigation** – Because we can compress voice by as much as 90%, we can protect voice in the network by transmitting every packet multiple times and down multiple tunnels to remove the effect of packet loss which may arise. This improves overall voice quality through an improved call quality (MOS). This is especially beneficial to VOIP providers that do not own the underlying delivery network for the customer.

- **Voice Protection** – To further make sure we can find and protect voice, we allow customers the option to run all traffic through the SD WAN link and then apply QOS markings to ensure voice priority.

Packet Loss Protection

Another key technology within the Aritari software stack is the ability to overcome the general effects of latency in the Internet. This has become a key software driver for many organisation's that see the financial benefits of moving to the Internet for the delivery of their network or Cloud applications, but are negatively affected by the presence of packet loss.

Packet loss is generally caused by lost packets or by network routers slowing down due to full buffers. These issues are further exacerbated by how the TCP Protocol deals with the re-transmit of packets, resulting in serious bandwidth degradation for customers.

Infact only 2% of network packet loss can reduce your available network bandwidth by as much as 75%.
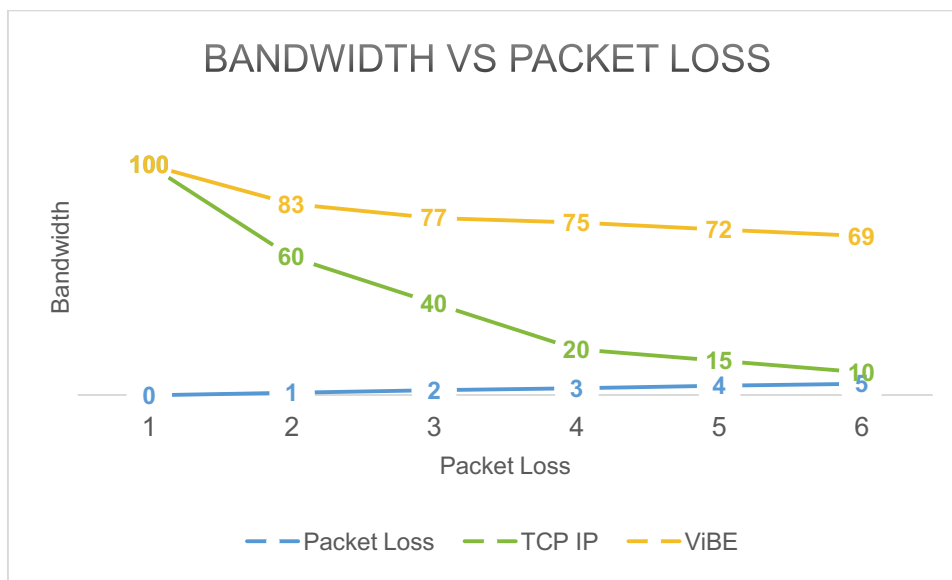
How is Aritari different?

Aritari does not use TCP IP to transfer packets

Because the VPN tunnel of Aritari is a unique and proprietary technology, which does not use TCP IP, we are able to reduce the harmful effects of packet loss arising in the network. It's mostly to do with the requirement we have that all packets are sent and arrive in order meaning that when they don't we immediately re transmit lost packets without waiting.

This seemingly small difference has a considerable result on bandwidth as can be seen in Graph 1.2.

It shows that with Aritari, the effect of packet loss on the network is considerably reduced improving application delivery and responsiveness.

Graph 1.2: Normal TCP IP VS Aritari in respect to packet loss

Network QOS

Most organisation that have run MPLS networks are familiar with network QOS (Quality of Service).

This network capability allows Aritari to tag application data or protocols with the importance assigned to it by the company. Generally speaking the highest priority of a network is general associated with voice due to its sensitivity to network delay, but CRM, ERP could be seen as equally important in terms of the business process.

Aritari works with customers to find and classify network traffic correctly to make sure the right applications are getting the right network priority.

CONCLUSION

Whilst there are other capabilities in the Aritari software stack that relate more to design and architecture, the above software makes up the software stack available to all clients as an all-inclusive approach to SD WAN.

We feel that every part of our software solution offers our organisations something important when developing and growing their networks.