OPTIMIZING SOFTWARE AS A SERVICE (SAAS) WITH ARUBA SD-WAN

How Aruba Central SaaS Express Optimizes SaaS Applications

INTRODUCTION

A key challenge for network administrators is to cope with the rapid adoption of Software as a Service (SaaS) applications, such as Office 365, Dropbox, Salesforce, and many others. While SaaS providers recommend for enterprises to split-tunnel SaaS traffic directly over the Internet from each branch location, enterprises are concerned that this approach would result in the loss of:

- Visibility into SaaS usage and performance, and
- Policy controls to optimize the SaaS experience for clients at these locations.

There are many important factors for enterprises to consider when optimizing SaaS traffic:

- They need a solution that can direct SaaS traffic on the best available path from each branch location; as many SaaS applications are hosted all over the world, the closest entry point to the SaaS service could be different from the one that's chosen by default at any given location.
- The ISP network used at a branch (to transport the SaaS traffic) is likely to have variable loss or latency that is difficult to track or predict.
- SD-WAN gateways deployed at branch sites must have the ability to dynamically steer traffic to SaaS servers that provide the best performance by continuously monitoring the health of the servers and the WAN links.

Aruba Central's SaaS Express connects users from a branch site to SaaS applications in a seamless and secure way.

KEY BENEFITS

- Network-wide visibility for all SaaS applications
- Improved performance for all SaaS applications
- Improved service reliability via dynamic steering of SaaS traffic
- Optimal user experience through best path connections to SaaS applications

HOW SAAS EXPRESS WORKS

Aruba SaaS Express determines the optimal path for SaaS applications that have been identified by the user. SaaS Express achieves this by:

- Monitoring the health and application performance of SaaS application (front-door) servers
- Finding the best-performing SaaS application servers
- Dynamically steering traffic to the best servers based on path quality and performance metrics

Broadly speaking, the following mechanisms are used to enact a SaaS Express policy.

- Aruba branch gateways have a Deep Packet Inspection (DPI) that identifies overs 3100+ applications, including SaaS applications. To be able to do "first packet detection" for SaaS applications, the gateways profile according to the Fully Qualified Domain Name (FQDN). Once the traffic stream is classified, traffic steering policies can be applied for the chosen traffic stream.
- To determine the performance of a SaaS application, HTTP probes are sent to a SaaS server on each WAN path.

- The next step is Domain Name System (DNS) resolution, as the gateway resolves the FQDN into IP addresses. Branch gateways determine the best available uplink for a given SaaS application on each circuit. When the client makes the DNS queries for SaaS applications, they are intercepted by the gateway and routed on the best performing path for the SaaS applications, in order to get the right response.
- As part of SD-WAN's support for traffic steering and path selection, Aruba Central uses a "Best for SaaS" SLA profile to dynamically steer the matched SaaS application streams on the best WAN path available to reach the SaaS service. Administrators can optionally use a custom SaaS policy for steering SaaS application traffic.

EXAMPLE: FINDING THE BEST PATH FOR A SAAS APPLICATION

In a sense, the SaaS Express option is effectively an extension of Dynamic Path Steering (DPS), wherein the performance of a circuit is measured using synthetic probes and then traffic is dynamically steered on available paths that satisfy Service Level Agreements (SLA).

When a client requests access to a SaaS application, branch gateways resolve the FQDN of the application. HTTP probes are constantly sent by the gateway as soon as the administrator enables SaaS Express for the applications being optimized. Based on the response and the SLA threshold, branch gateways determine the best path and route the application traffic from the branch site using the best circuit. This way, the gateway determines the best possible path even before the client starts to send traffic for SaaS.
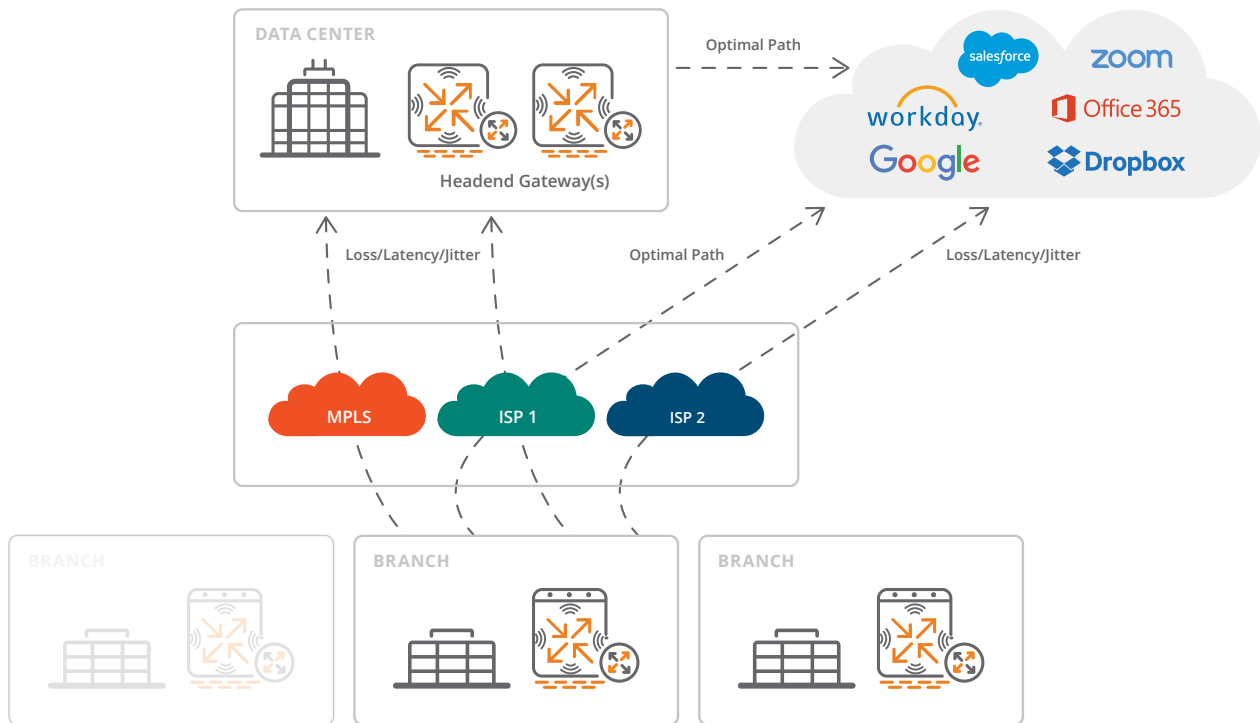

Figure 1: Determining the Best Performing Paths for SaaS Applications

Thus, SaaS Express optimizes for Quality of Experience (QoE) per circuit and per application.

Of course, the administrator must also consider DNS resolution for the configured SaaS application. This resolution is done separately over each Internet circuit to ensure the relevant response. The user DNS request is intercepted and processed by the DPI engine (Figure 2).

For each configured SaaS application, the DNS request is forwarded through the best-performing Internet circuit, overriding the user DNS settings. For other applications, the DNS request is routed normally.

NETWORK-WIDE VISIBILITY FOR ALL CRITICAL SAAS APPLICATIONS

In addition to optimizing SaaS performance, Aruba Central provides deep visibility for SaaS applications. Aruba Central provides a single dashboard to view the SaaS performance across all branch sites. This dashboard acts like a heat map, and helps to quickly identify problematic SaaS applications and poorly performing sites. The user can double click on problem sites and view more detailed performance SLA trends per application across WAN circuits.
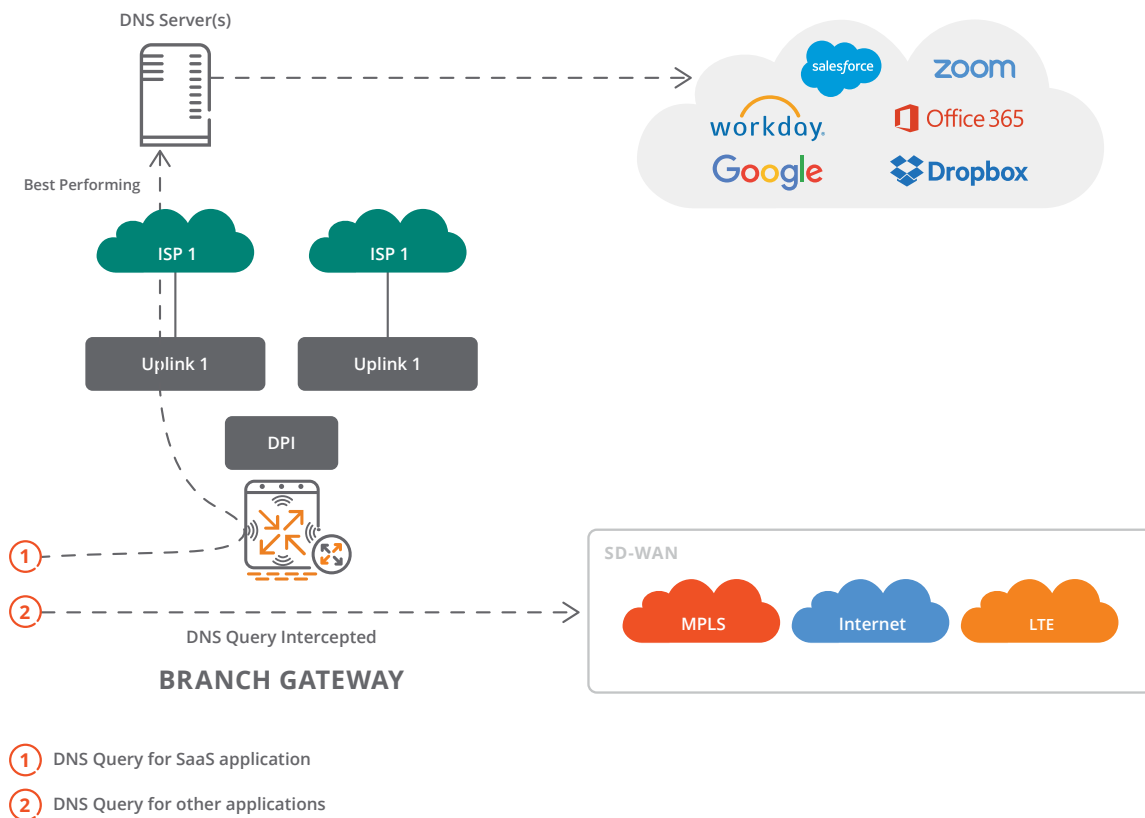
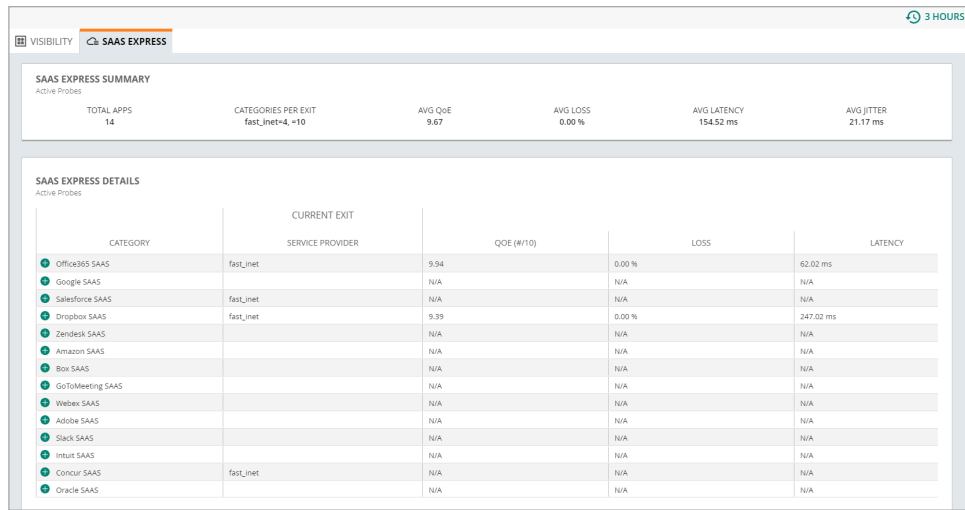Figure 2: DNS Resolution Using the Branch Gateway's DPI Engine

Figure 3: Network-Wide Visibility for Critical SaaS Applications

Figure 3 shows typical SaaS applications (could be Dropbox, Office 365, Salesforce, etc.); for the ones that are being used, the link to the service provider is shown along with values for Quality of Experience (QoE), loss, latency and jitter.

For an individual gateway, you can show detailed graphs with this information over selected time intervals (Figure 4).

CONCLUSION

Aruba's SD-Branch solution provides deep visibility into SaaS application performance across the network. Network administrators can proactively track SaaS application health with drill-downs to troubleshoot application performance issues prior to users reporting problems. Finally, by merely enabling SaaS Express with a few clicks for the top enterprise SaaS applications, the enterprise benefits from the best available SaaS performance across all branch locations.
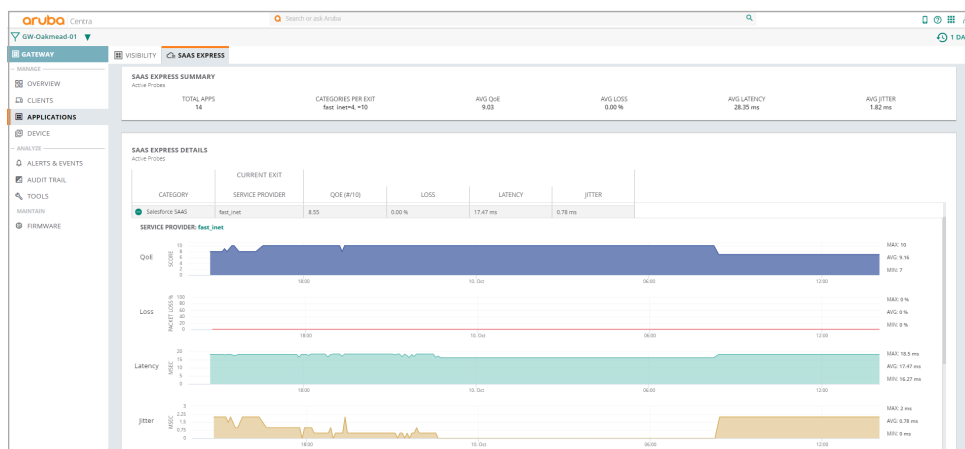

Figure 4: Quality of Experience and Other Details for a SaaS Application

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