DATA SHEET

Dynamic WAN Selection

Overview

Ipanema's Dynamic WAN Selection (DWS) is a core component of Ipanema SD-WAN and provides **user-centric, dynamic path selection**. It automatically chooses the best WAN connection for each application flow, taking into account the **real-time end-to-end performance** of all available paths. Metrics that include **capacity, availability and quality** are used to maximize the end-user experience and optimize the usage of all network resources.

Additionally, to enabling native integration of DWS, Ipanema provides **WAN Security**. Ipanema's Hybrid WAN (i.e.: DWS + WAN Security) empowers enterprises to simultaneously manage MPLS and Direct Internet (without requiring additional firewall devices in the branch offices). Therefore, this diversity of access technologies can be efficiently controlled and optimized in terms of available bandwidth and performance. It increases business continuity, adds IT agility and reduces bandwidth TCO.

How Ipanema Dynamic Wan Selection Works

Next generation Hybrid WAN deployments use DWS to distribute up/down traffic over two or more WAN accesses. Thus, DWS allocates bandwidth for every single flow, given its priority and the performance state of every available link on the network path. It supports multiple WAN access combinations, such as multiple MPLS accesses, dual or triple service providers, MPLS and Ethernet, MPLS and Internet, and more.

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When DWS decides to send traffic directly to an untrusted Internet link, secure local exceptions can allow or deny the traffic. The traffic can also be encapsulated over IPsec or Generic Routing Encapsulation (GRE) VPNs and the service chained to a specialized Secure Web Gateway provider, which will protect the broader connection to the Internet (for web, SaaS, Cloud traffic).

SENSE

The Ipanema system identifies all application flows that cross the network. Contrary to other Hybrid WAN mechanisms that are limited to Layers 3 and 4 inspection, such as Policy-Based Routing (PBR), Ipanema's Deep Packet Inspection analyses traffic up to Layer 7 attributes to identify the signature of applications flows. Then, flows are continuously classified based on their Application Performance Objectives (APO), which are strategically defined by the enterprise.

Measuring bandwidth availability requires knowing the current network performance. As opposed to other technologies, (e.g. Path Controllers), DWS not only considers the local availability of links, but also end-to-end performance metrics, such as availability of the path as a whole, total available bandwidth, one-way delay, jitter and packet loss. This is possible because all Ipanema appliances are cooperative and share information, which is centrally aggregated.

Ipanema SD-WAN, application intelligence for the WAN edge, links application performance over the network with the enterprise's business goals.

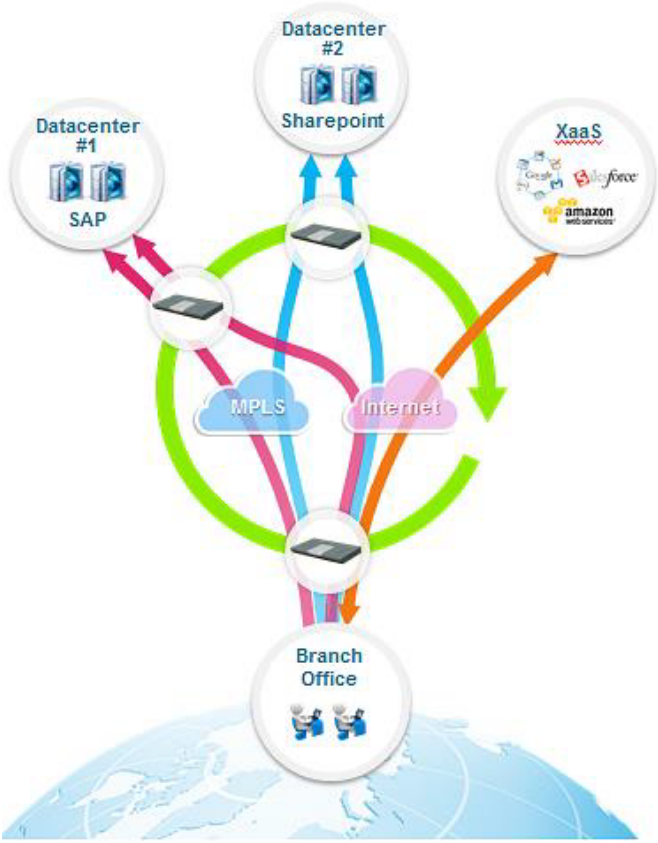
- **Self-learning, self-adapting and self-healing,** Ipanema offers tightly coupled features that bring a unique level of intelligence to the enterprise network;
- **Application Visibility** provides full understanding of application usage and performance over the global network – from the smallest detail up to SLA-based application performance management;
- **Application Control** dynamically adjusts network behavior and resources to the exact application traffic demand – guaranteeing critical application performance in the most complex and changing traffic situations;
- **WAN Optimization** accelerates application response times and offers additional virtual bandwidth to the network;
- **Dynamic WAN Selection** enables dynamic hybrid WAN for multi-networked branch offices, selecting in real-time the best path according to actual performance and application traffic characteristics;
- **WAN Security** protects branch Internet connections from threats. It encrypts traffic over IPsec VPNs to public and private DCs. It forwards Web traffic to Secure Web Gateway providers and allows/denies traffic to go directly to the Internet.

RESPOND

Based on the global knowledge of application usage and bandwidth availability, the Ipanema appliances select the best path for each flow to match its Performance Objectives. For example, real-time flows are usually allocated on the fastest path, while email can be allocated to the largest path. DWS works simultaneously with the Application Control feature to enforce priorities and avoid traffic congestion for any given flow on the dynamically selected path.

Options for network path preference allow for a variety of path selection strategies –from fully automated, to partially constrained or fully constrained – in order to adapt tovarious enterprise policies. For example, as the figure shows, a user can decide to usea path from network #2 (Internet) when network #1 (MPLS) does not match with theAPOs ("Fully Dynamic"), or only when network #1 (MPLS) is not available("Primary/Backup" usage). For certain applications, it can be decided to never use network #2 even when network #1 is not available (this usage is driven by "best practices" that may prohibit the transmission of highly sensitive information through Internet, even if encryption is used). Other options can be set centrally per application, such as whether to use or not use the same path for a whole IP session (per packet vs per session decision).

Centrally defining these objectives and preferences by application is another fundamental advantage of DWS from Ipanema. Additionally, IT teams can simplify DWS policy configurations, while visualizing instantaneous load sharing status of all hybrid links on the network and connectivity and stability insights between sites across all available paths.



Benefits

For the enterprise as a whole: DWS increases business continuity by ensuring always-available connectivity to critical applications. To further improve business continuity for all applications even in the case of a single link and/or single appliance failure, the Dynamic WAN Selection and WAN Security features (i.e. DWS + WAN Security = Hybrid WAN) can be made redundant thanks to the High Availability (HA) feature. HA clusters (pair of Ipanema appliances working in active/standby mode) secure the availability of the Hybrid WAN feature to ensure a site is always connected to any available WAN. DWS accelerates time-to-market for key innovations, which are dependent on network-centric infrastructures. DWS reduces time to launch new remote offices
and points-of-sale.

For the IT organization: DWS improves IT agility and ensures the WAN will not be a bottleneck to the rollout of new applications. It reduces IT infrastructure costs by optimizing network efficiency and leveraging the best of MPLS and other carrier technologies. DWS activates inactive backup links. It simplifies hybrid WAN deployments by eliminating the configuration issues of other solutions such as PBR and legacy Path Controllers. The WAN Security feature eliminates the requirement for additional firewall by protecting branch Internet connections from threats.

For the end user: Increase end-user productivity. Reduce end-user frustration by offering a comfortable work experience. Offer more bandwidth for file sharing or bulky traffic replications and reduce response times for SaaS applications.

KEY DIFFERENTIATORS TO REMEMBER:

- **Granular & User-Centric:** Decisions made in real-time per user-application-flow, contrasting with rigid solutions for unilateral control of all flows of an application or sets of applications.
- **Business-Oriented:** Predefined and centrally controlled APOs and network path preferences are aligned with global business objectives of the corporation.
- **Dynamic and End-to-End Decisions:** Local and integral end-to-end path conditions are taken into account to decide which is the best WAN.
- **Integrated with other features:** Ensure the global consistency of all network functions.
- **Easy to manage:** APOs and network path preferences are automatically spread to all sites.

About Infovista

Infovista, the leader in modern network performance, provides complete visibility and unprecedented control to deliver brilliant experiences and maximum value with your network and applications. At the core of our approach are data and analytics, to give you real-time insights and make critical business decisions. Infovista offers a comprehensive line of solutions from radio network to enterprise to device throughout the lifecycle of your network. No other provider has this completeness of vision. Network operators worldwide depend on Infovista to deliver on the potential of their networks and applications to exceed user expectations every day. Know your network with Infovista.