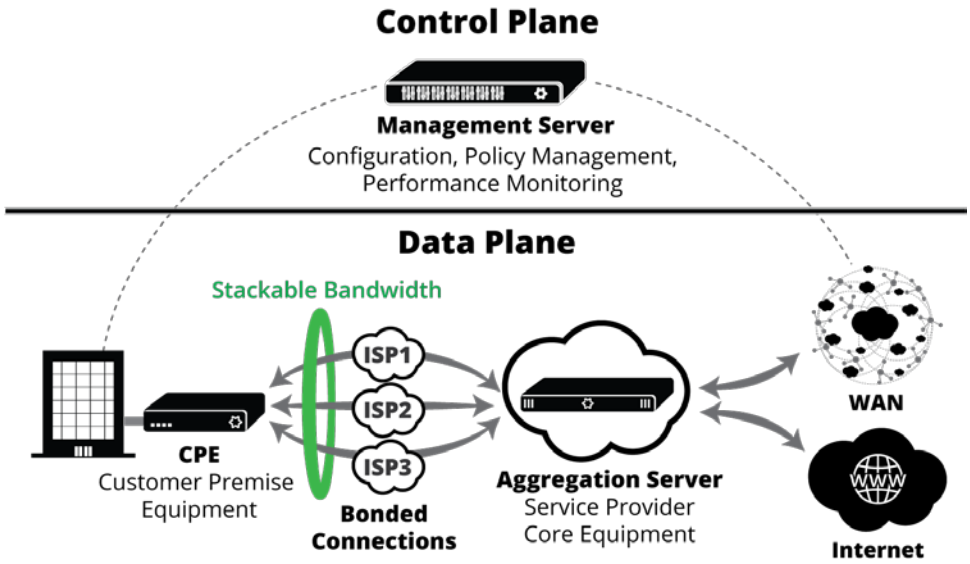
MULTAPPLIED NETWORKS

SD-WAN TECHNICAL OVERVIEW
All Sites, One Tool

Networking software that combines multiple IP connections to create a single, smart pipe.

Create WANs made up of multiple connections, from multiple service providers, in multiple geographies - and apply global rules, alerts, and features easily.



Technical Details

The technology uses a packet-level distribution algorithm to effectively control WAN paths. The service encapsulates multiple WAN connections into a proprietary, over-the-top protocol that routes traffic over the Internet.

Decisions about traffic shaping, prioritization and balancing are made through a Cloud-based management server that monitors the health of your WAN connections – the control plane. This device then sends traffic-handling information to each of the devices in the network, so that each node knows what it needs to do to ensure the customer experience is optimized.

How it works

Traffic leaving customer's site

The Bonder receives and disassembles the traffic from a LAN node. It then distributes the individual packets across the WAN connections based on rules and policies that have been set in the Management Server. The traffic packets are re-ordered at the Aggregation Server before being sent to the destination host.

Traffic going to customer's site

The Aggregation Server broadcasts your customers' IP address(es) and receives all of its traffic. It then disassembles the traffic into packets and sprays those packets across the multiple WAN links – applying customer/ application/class-specific prioritization, cryptography, and/or routing rules. At the customer's site, the Bonder receives the packets and re-orders them before sending them into the LAN and to the recipient node.

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MPLS ADD-ON Solution Brief
ENTERPRISE SOLUTION

Limitations of Traditional MPLS

Enterprises have typically connected their branch offices through a private Multi-Protocol Label Switching (MPLS) data service. While reliable, traditional MPLS based Wide Area Network (WAN) have two clear limitations:

(1) Cost prohibitive: up to 10X the price of typical Internet connection
(2) Lack of general availability: coverage issues, local loop complexity

We've found that roughly 8% of MPLS based WAN branches aren't actually MPLS at all – they're over the public Internet because of reach or high cost. This means almost 1 in every 10 MPLS branches doesn't adhere to corporate WAN policies (security, application assurance, redundancy, and etc). Enterprises that can, spend more than twice as much to incorporate remote sites, compared to urban sites.

Enterprise Class WAN, Leverage the Internet

Today, savvy network administrators are looking for creative ways to get all the benefits of MPLS, but control costs and maintain uniformity across the WAN. To satisfy these requirements we offer a solution to create a consistent network platform that enhances communication and coordination to include the troublesome 8%. Our cutting edge technology combines multiple low-cost Internet connections into a single, faster and more reliable connection onto which we layer a centralized firewall, end-to-end Quality of Service (QoS), and WAN monitoring management.

Prepare For the Future

Network technology enables people to communicate to one another. It allows devices to speak to each other in the form data transmission. And, with the average enterprise projected to manage 50 times more data by 2020, the infrastructure supporting the flow of traffic needs to be simple, scalable, and secure. MPLS is one way to ensure real-time application quality on increasingly congested networks, but for a complete solution you need to supplement MPLS. We help your branches that are missing from your MPLS WAN prepare for the future with our MPLS Add-On solution.

	URBAN	RURAL
MPLS	~$350/mo	As high as $1,700/mo
SD-WAN	~$350/mo	~$350/mo

SD-WAN Benefits

Crystal Clear Voice
Sufficient bandwidth, low latency, with no packet loss.

Multi-Carrier Solution
Added redundancy and no dependence on a single carrier.

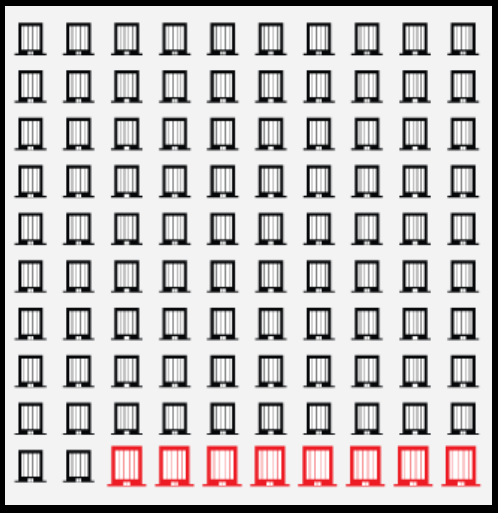
Cost Reduction
Combines multiple readily available low-cost Internet connections.

WAN Link Redundancy
Seamless failover that maintains session traffic, security, and policies.

The average MPLS WAN:

92% of branch sites are linked to MPLS network

8% are missing out



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SD-WAN Solution Brief
ENTERPRISE SOLUTION

Private Wide Area Network

Multi-site businesses are faced with the challenge of managing traffic routes from site to site quickly and securely using some form of Private Wide Area Network (PWAN). The four most critical factors to consider are:

1. **Security:** Recent massive data breaches at many large, multi-site enterprises (impacting tens of millions of people) highlight the importance of having safeguards in place to protect your valuable digital information and to meet industry compliance requirements.
2. **Cost Control:** Organizations spend almost five times as much to incorporate remote sites compared to urban sites due to logistical complexity. The significant over-spend in both CapEx and recurring monthly charges needs to be contained.
3. **Reliability:** Network failures are inevitable; often caused by way of accidentally cut lines, weather and environment issues, hacking, or other unforeseen issues beyond the control of the service provider. Businesses need a reliable failover system that can respond quickly and gracefully.
4. **Availability:** Almost 1 in every 10 MPLS branches transmit over the public Internet because of lack of general availability. The ability to easily add users and nodes regardless of geography is a must to future-proof your WAN and meet ever-increasing expectations.

Side by Side Comparison

Bonded Internet compares strongly against today's WAN technologies: Carrier Ethernet, MPLS, and Public Internet.

	Security	Cost Control	Reliability	Availability
HIGH	Carrier Ethernet	Internet	SD-WAN	Internet
	SD-WAN	SD-WAN	Carrier Ethernet	SD-WAN
	MPLS	MPLS	MPLS	MPLS
Low	Internet	Carrier Ethernet	Internet	Carrier Ethernet
Goal	Private, robust security features	Leverage cost-effective broadband	Mitigate broadband shortcomings	Readily available anywhere

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Summary

Your goal is to bring together a distributed organization into a secure, reliable, and affordable PWAN that easily accommodates changing requirements.

PWAN using **Bonded Internet** provides the best overall solution to meet critical goals in a simple and convenient way in order to gain control of the WAN and prepare for the future.

Mitigate the security risks of BYOD and Cloud while providing the features users expect.

Benefits

Firewall & Encryption
The entire WAN is protected by a centralized firewall and/or encryption to control and manage data.

Packet Distribution
Spreading packets across multiple connections ensures the information can't be easily stolen.

Lossless Failover
If a connection fails, traffic dynamically and seamlessly re-routes over online connections ensuring calls aren't lost.

Stacked Bandwidth
Provides true aggregation of combined connections allowing for a simple solution to accommodate future bandwidth requirements.

Site-to-Site QoS
Users can enjoy clear voice and data transmissions with customizable queues and filters.