



PATH-BASED VS SESSION-BASED SD-WAN

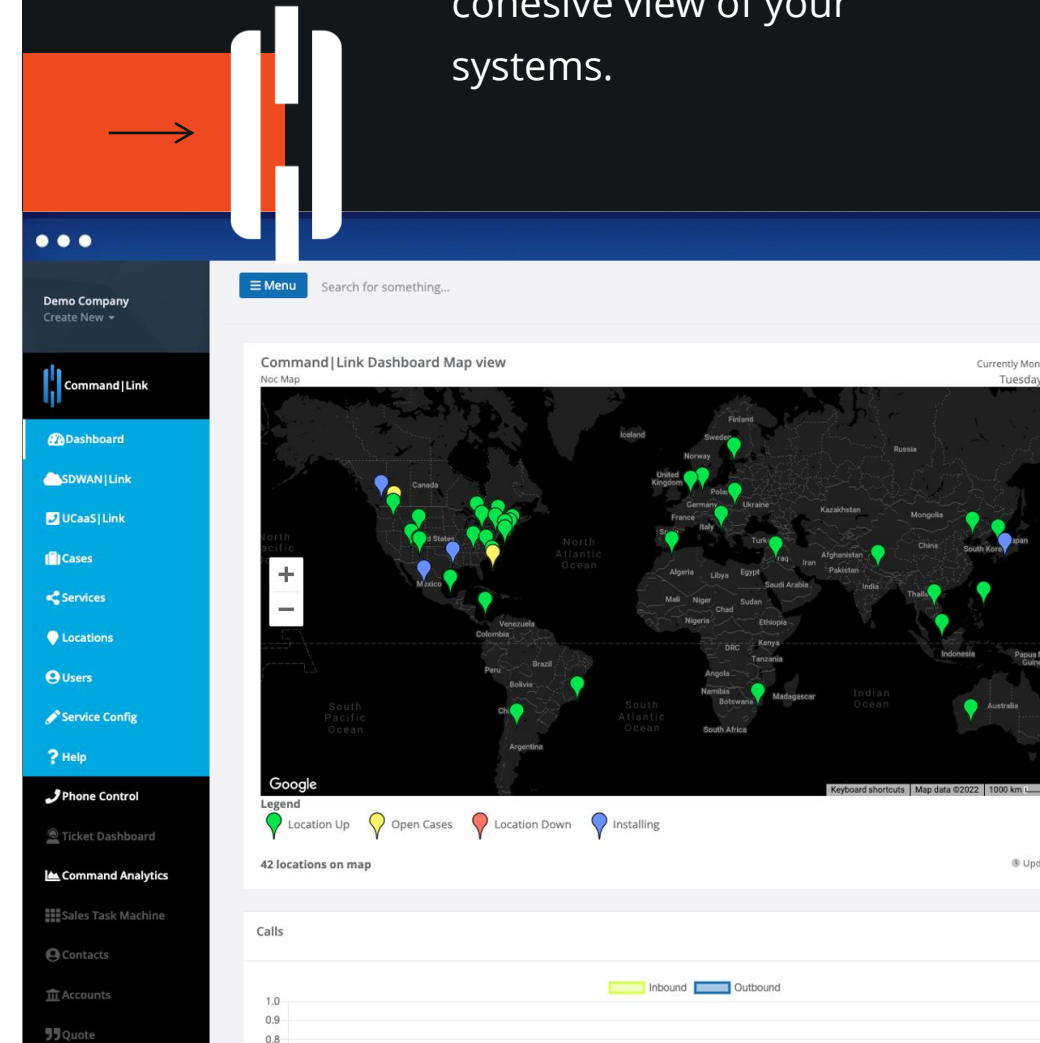


HOW IS PACKET-BASED SD-WAN
DIFFERENT FROM SESSION-BASED
SD-WAN?

PACKET-BASED SD-WAN

- Packet-based SD-WAN refers to a type of SD-WAN technology that operates at the **packet level** to manage and optimize network traffic across a wide area network (WAN).
- Unlike traditional WANs, which typically rely on physical devices and standard telecommunications links to connect different network sites, SD-WAN uses software-based approaches to control the traffic and routing of data packets across the network.

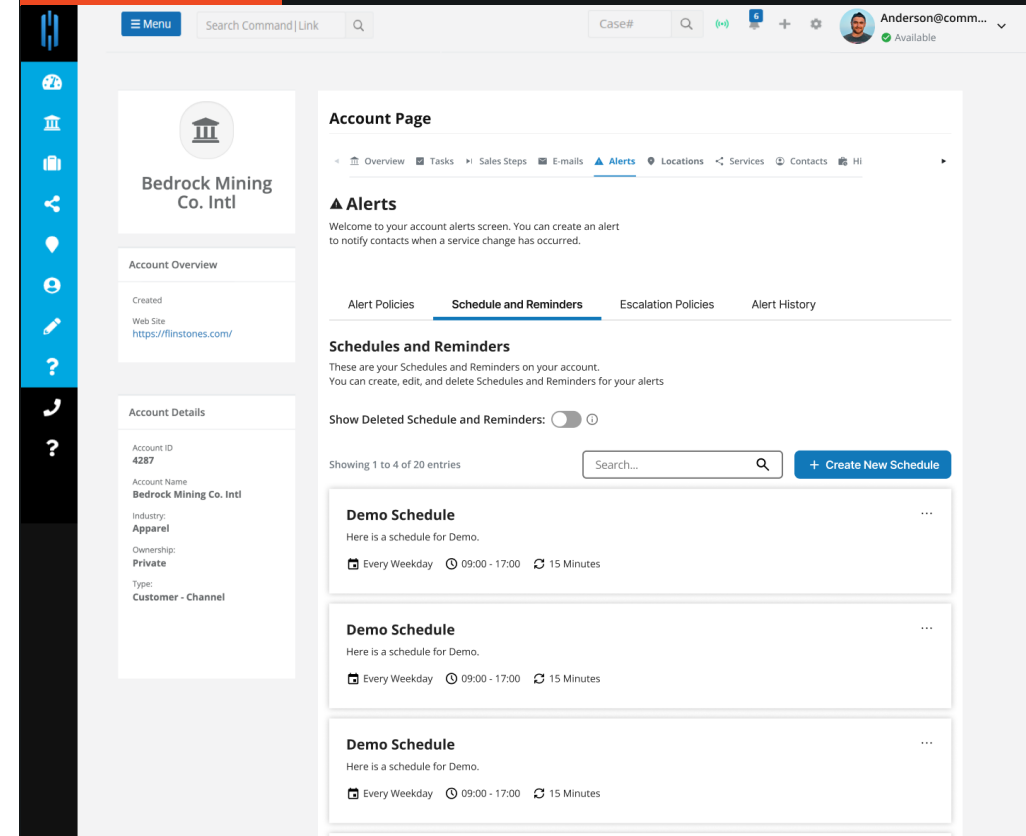
Our integrated platform allows you to streamline processes and ensure top-tier security, giving you a cohesive view of your systems.



PACKET-BASED SD-WAN FEATURES

- **Intelligent Path Selection:** Dynamically chooses the best path for data packets based on network conditions and policies, optimizing for performance.
- **Centralized Management:** Simplifies WAN management through a central control function, making it easier to set traffic handling policies.
- **Application-aware Routing:** Identifies and prioritizes traffic types, ensuring critical applications get the bandwidth and performance needed.
- **Improved Security:** Enhances security with network segmentation and encrypted connections, reducing cyber attack risks.
- **Cost Efficiency:** Lowers operational costs by using cheaper internet connections and optimizing bandwidth use, offering a more flexible connectivity choice.
- **Enhanced Performance and Reliability:** Adapts to network changes to improve WAN performance and reliability, ensuring a better user experience.

Command | Link offers a superior integrated monitoring solution within our CommandLink platform. Designed to provide a holistic IT and Telecom experience, this feature ensures real-time oversight of CommandLink services and any additional IT assets.



PACKET BASED ROUTING

- **Policy Definitions:** Administrators set policies for prioritizing applications and traffic types.
- **Real-Time Network Monitoring:** Continuously evaluates WAN link performance for latency, bandwidth, and stability.
- **Application Awareness:** Identifies traffic by application to meet specific performance needs.
- **Dynamic Path Selection:** Chooses the best path for each packet based on policies, application requirements, and network conditions.
- **Optimization and Remediation:** Applies techniques like data compression and error correction to improve traffic flow.
- **Feedback Loop:** Adjusts routing decisions and policies based on ongoing network performance feedback.

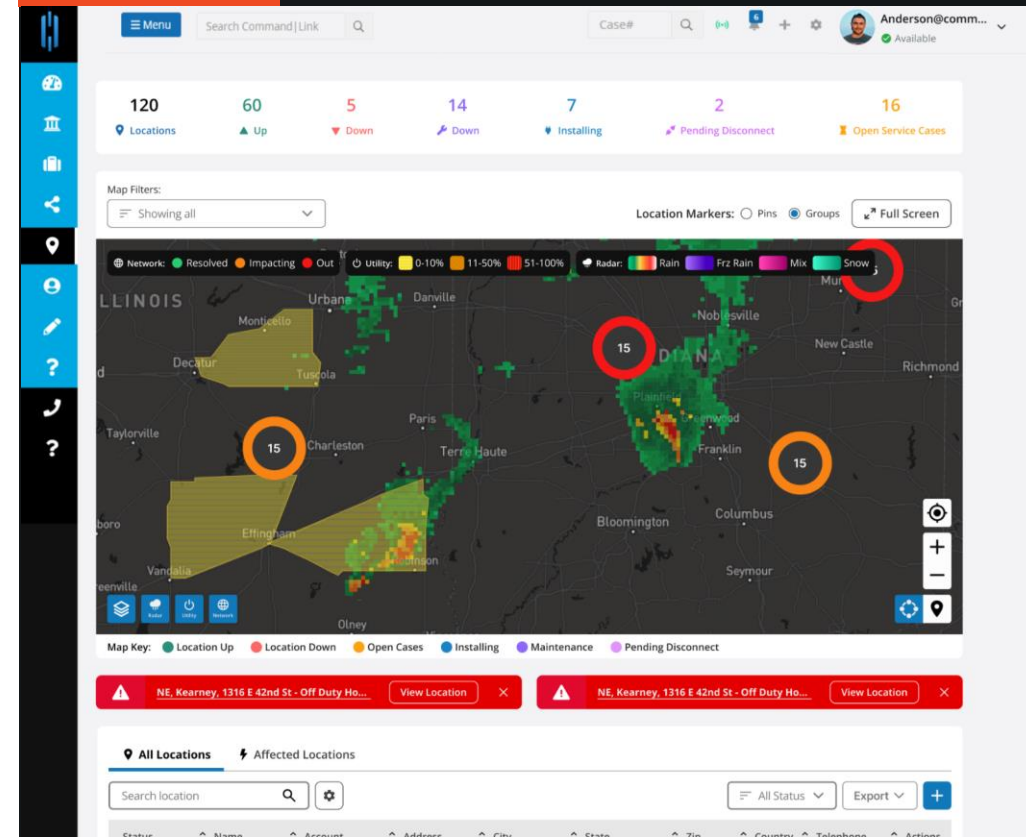
Only CommandLink offers a unified platform to manage your SD-WAN, UCaaS, CCaaS, firewalls, MPLS, network, switches, IP phones, installs, trouble tickets, bills, and network performance across the entire globe

PACKET BASED SD-WAN USE CASES:

- **Highly Dynamic Networks:** Ideal for networks with frequent bandwidth, latency, and packet loss changes, ensuring optimal performance.
- **Real-Time Applications:** Best for applications needing minimal latency, like VoIP and video conferencing, by making immediate routing decisions.
- **Complex Traffic Patterns:** Suitable for environments with diverse application needs, offering fine-tuned traffic management.
- **Bandwidth Efficiency:** Optimal for situations where bandwidth is limited or costly, maximizing resource use through intelligent routing.
- **Enhanced Security:** Provides an extra security layer by inspecting and routing packets based on content and destination.
- **Frequent Path Changes:** Efficient for networks requiring quick adaptation to congestion or downtime, maintaining performance and reducing loss.



Build a fully integrated custom alert policy for your entire tech stack with granular workflows based on time of day, user, location, service, and more.



PACKET BASED CHALLENGES



1. **Complexity:** Initial setup and configuration can be complex and require deep technical knowledge.
2. **Security Concerns:** Expands the attack surface and necessitates robust security measures.
3. **Interoperability Issues:** Potential compatibility problems with different vendors' products or legacy equipment.
4. **Dependence on Connectivity:** Performance heavily relies on the quality of underlying internet connections.
5. **Costs:** Significant initial investment in hardware, software, and implementation, despite potential long-term savings.
6. **Limited Control Over Public Networks:** Challenges with visibility and control over internet-based segments.
7. **Technical Expertise Required:** Need for skilled personnel to manage and optimize the network effectively.
8. **Scalability and Flexibility:** Rapid network growth or changes require constant reevaluation and adjustments.

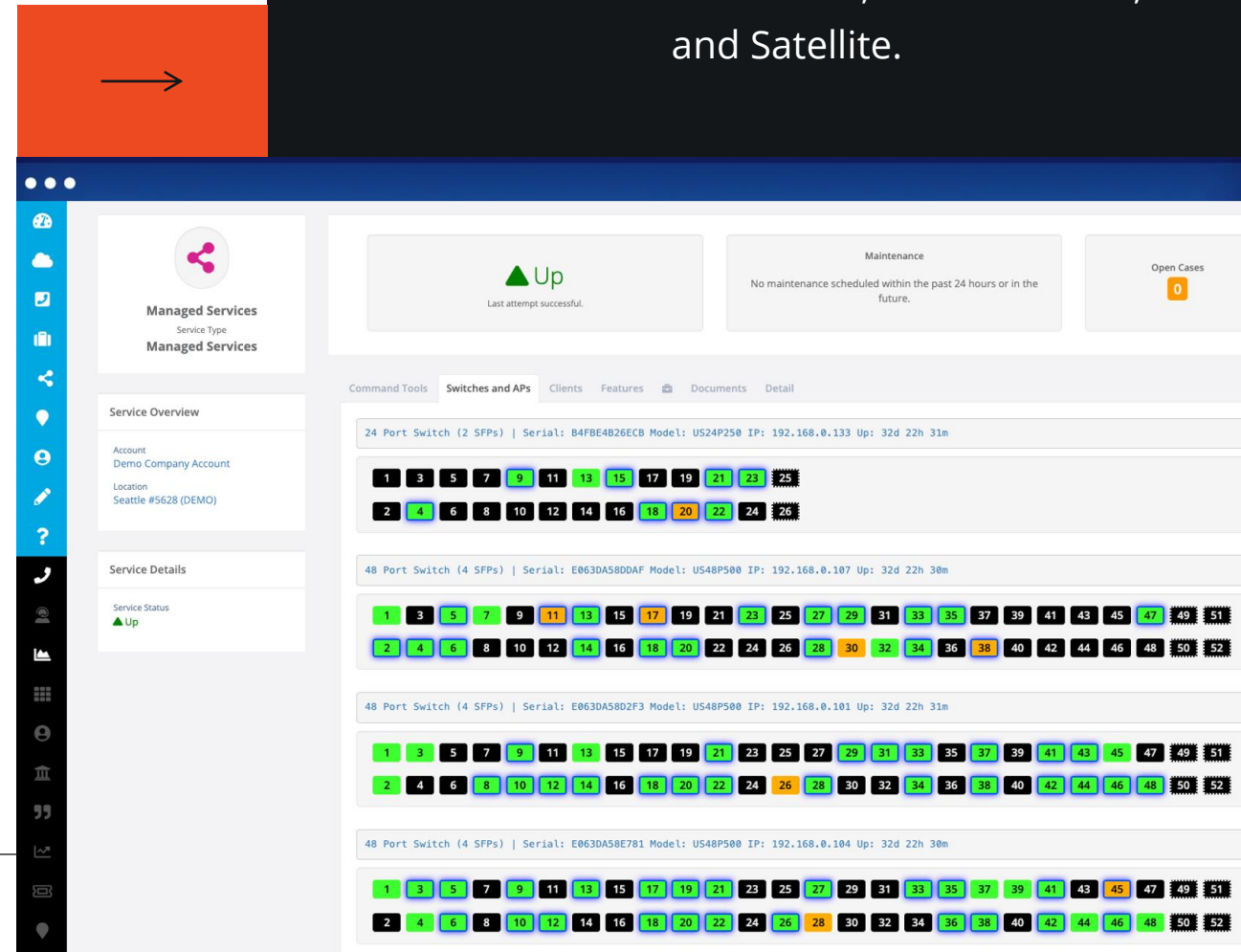
When your list of vendors is massive, none of them want to take ownership. Your team has to fight when you just want someone to own the problem and find the solution. CommandLink's full-stack solution portfolio is your accountability answer. Your POD team becomes your single source of support for all of your services in the CommandLink platform.

SESSION-BASED SD-WAN

- Session-based SD-WAN is a variant of Software-Defined Wide Area Networking (SD-WAN) that focuses on managing and optimizing network traffic at the session level rather than at the individual packet level.
- This approach offers a different set of advantages for handling WAN traffic, particularly in terms of efficiency, reliability, and application performance.



With CommandLink you have access to every carrier and every access type, including: Fiber, Ethernet, Cable, Broadband, 4G/5G/LTE, Fixed Wireless, and Satellite.

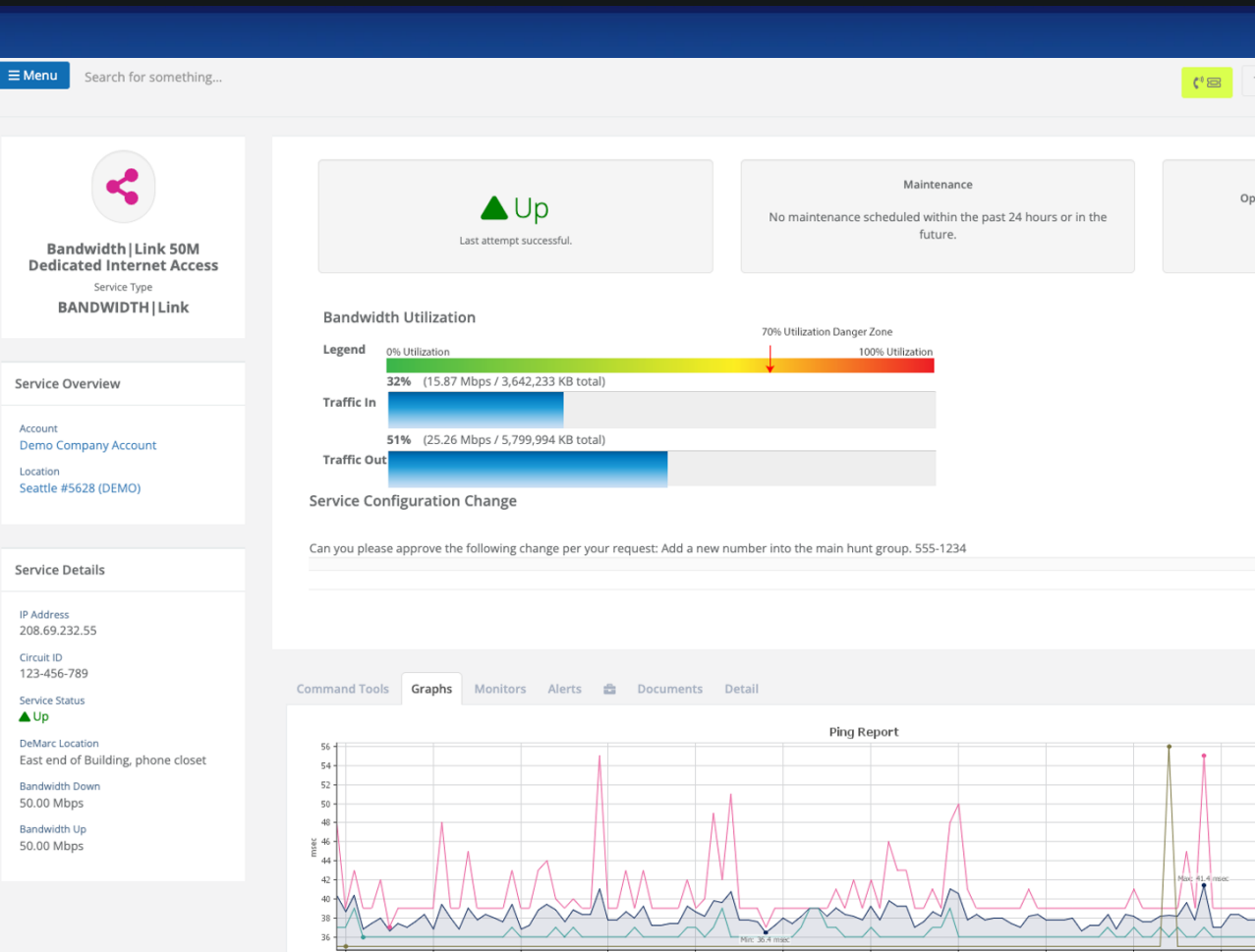


One vendor, one platform, and one MSA for the entire globe



SESSION BASED SD-WAN FEATURES:

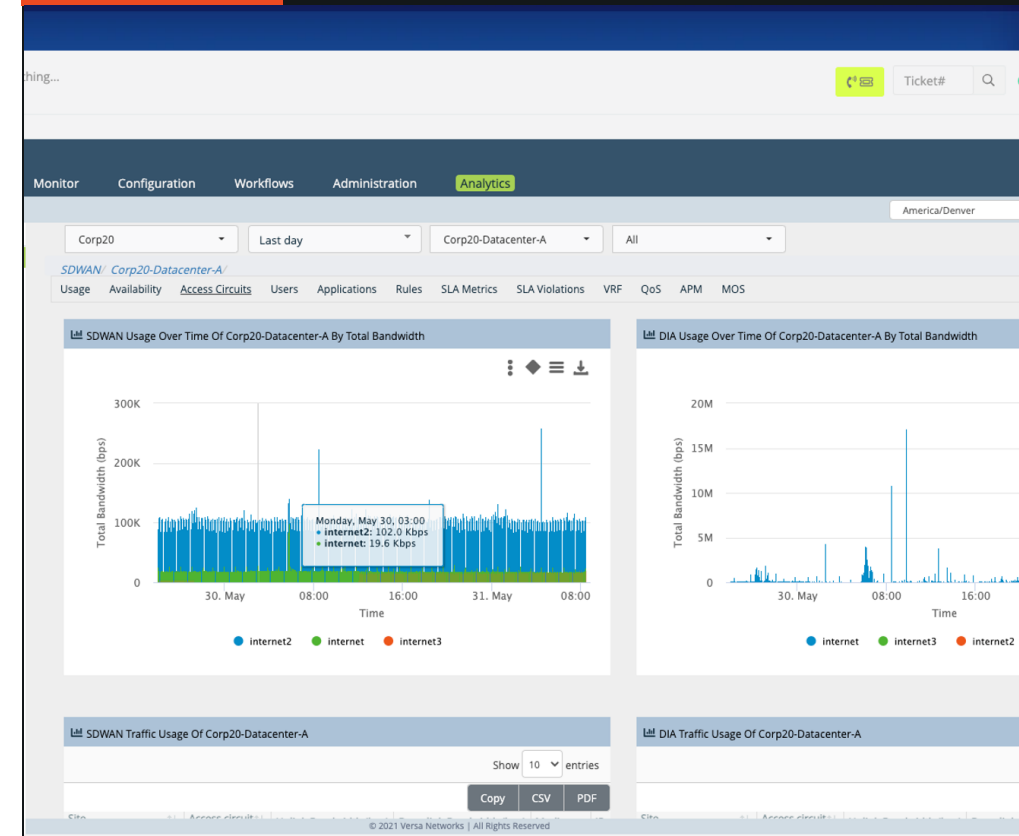
- **Session-Level Optimization:** Manages network traffic by session, not packet, allowing holistic traffic management for activities like file transfers or video calls, ensuring traffic is optimized based on the session's overall needs.
- **Aggregated Traffic Management:** Consolidates multiple data flows into one session, improving bandwidth efficiency and performance for applications needing consistent connectivity.
- **Application-Aware Routing:** Prioritizes traffic based on application importance, ensuring critical apps get necessary bandwidth and performance, enhancing network efficiency and user experience.
- **Dynamic Path Selection:** Chooses the optimal path for each session based on network conditions and requirements, with the ability to adjust paths mid-session if needed.
- **Enhanced Security and Privacy:** Offers better security through session management, enabling end-to-end encryption and simplifying security policy implementation.



SESSION BASED SD-WAN USE CASES:

- **Sustained Business-Critical Applications:** For applications that require stable and persistent connections, like ERP and CRM systems.
- **Secure Transactions:** Ideal for financial transactions or any scenario requiring secure and continuous sessions, thanks to its session integrity capabilities.
- **Streamlined Branch Office Connectivity:** For organizations with multiple branch offices, ensuring all offices have reliable, sustained access to central resources.
- **Remote Workforce:** Providing a stable connection for remote workers accessing corporate resources, maintaining session continuity even with varying network conditions.
- **VoIP and Video Conferencing:** While packet-based may also be used, session-based can ensure a stable session without the need for packet-by-packet decisions.
- **Cloud Services:** Optimizing connectivity to IaaS, PaaS, and SaaS platforms where session integrity and performance are crucial.
- **VPN Alternatives:** As a more dynamic and efficient replacement for traditional VPNs, especially for site-to-site connections.
- **Quality of Service (QoS) for Streaming Services:** Maintaining high-quality streaming for video or media services over the WAN.
- **Large File Transfers:** Ensuring reliable and efficient transfer of large files across the network without session interruptions.

We built the only IT platform for scale that solves ISP vendor sprawl that doesn't exist anywhere else. This is Command | Link. We make it easy for our customers to get more done, maximize uptime and improve the bottom line.



SESSION BASED CHALLENGES

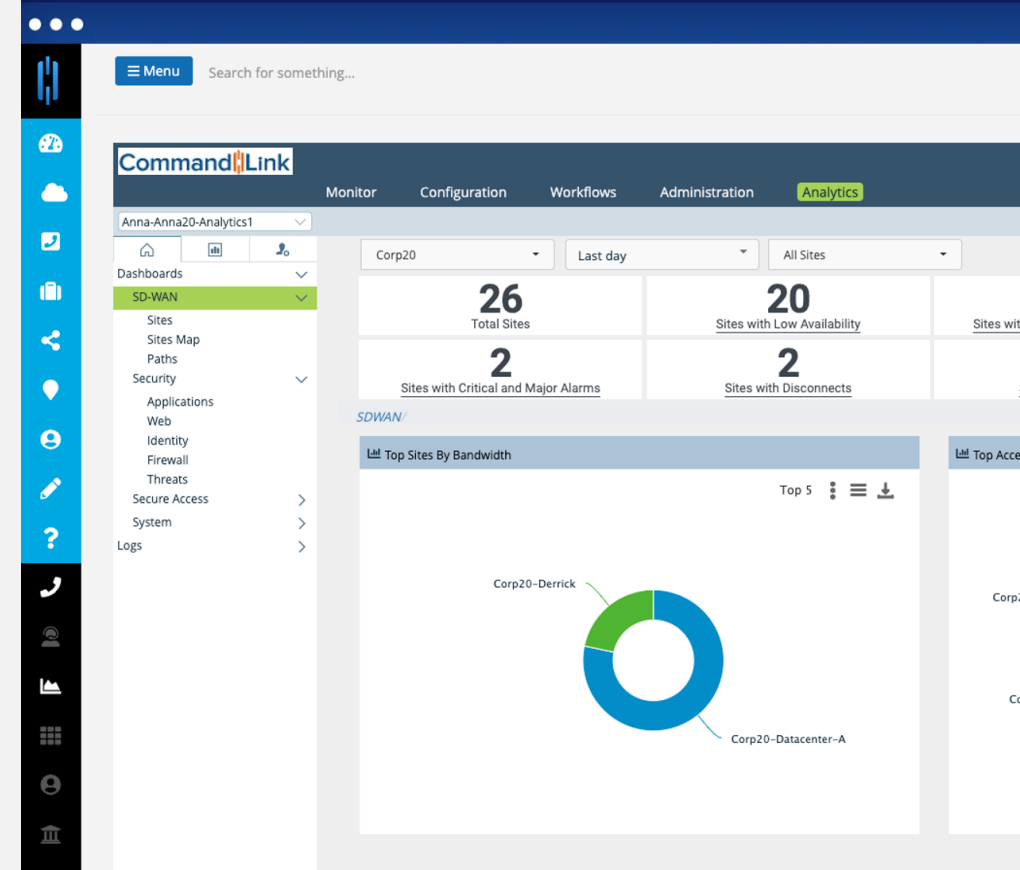
1. **Limited Granularity:** Since decisions are made for the entire session, there may be less granularity in traffic handling compared to packet-based SD-WAN.
2. **Scalability Concerns:** As the number of sessions increases, the SD-WAN must scale to manage these effectively, which can be a challenge for some architectures.
3. **Quality of Service (QoS) for Mixed Traffic:** Ensuring high QoS for mixed traffic that requires both session-based and packet-based handling can be difficult to balance.
4. **Dependency on Long-Lived Sessions:** If sessions are interrupted, this can cause larger disruptions in service than with packet-based routing.
5. **Upfront Costs:** Implementing a session-based SD-WAN solution may involve significant upfront investment in both infrastructure and expertise.
6. **Adapting to Change:** Session-based networks may not adapt as quickly to abrupt changes in network conditions as packet-based systems.
7. **Security Management:** While session-based SD-WAN can enhance security, managing it across all sessions can be challenging.
8. **Vendor Lock-In:** Some session-based SD-WAN solutions may be proprietary, leading to vendor lock-in and limiting flexibility in choosing different technology solutions.

With its focus on session rather than individual packets, session-based SD-WAN aligns closely with an application-centric network approach, which is increasingly relevant as networks evolve to support IoT, video, and virtual reality applications.



SESSION & PACKET BASED SD-WAN?

- **Policy-Driven Framework:** Administrators can define policies that specify when to use session-based routing and when to use packet-based routing. These policies can be based on application types, performance metrics, security requirements, or other criteria.
- **Hybrid Approach:** The SD-WAN can use session-based routing for certain types of traffic that benefit from stable and consistent connections, while using packet-based routing for traffic that requires dynamic, real-time decision-making.
- **Application Optimization:** Some traffic, like bulk data transfers, might be routed at the session level for efficiency, whereas real-time applications like VoIP could be handled at the packet level for performance optimization.
- **Adaptive Algorithms:** SD-WAN platforms may use AI or machine learning algorithms to dynamically select the routing method on a per-session or per-packet basis, adapting in real-time to network conditions.
- **Integrated Control Plane:** The SD-WAN's control plane can intelligently decide which routing mechanism to apply, and this decision-making process is transparent to the end-users.



CommandLink makes it easier for your team to get more done with less effort and time. Your organization gets a dedicated 24/7 engineering POD that handles all your support needs and knows your business and solutions.

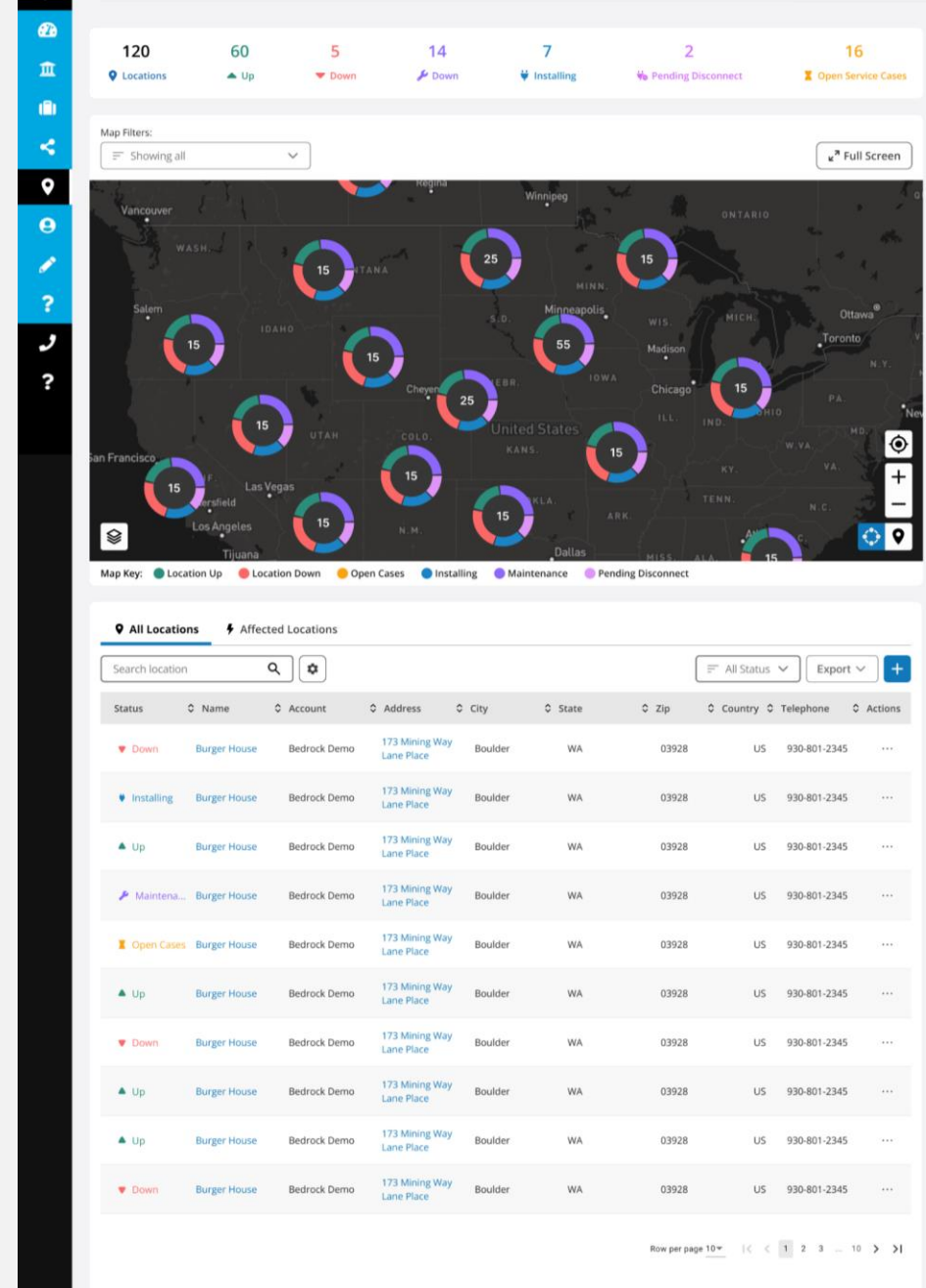
SCHEDULE A CONSULTATION:

After deploying thousands of SD-WAN networks across the globe with a wide variety of SD-WAN vendors, CommandLink is uniquely positioned to guide you in your SD-WAN projects.

www.commandlink.com/sd-wan

- ✓ Which SD-WAN solution is right for me?
- ✓ Do I need managed SD-WAN?
- ✓ How do I transition to SD-WAN?
- ✓ How can I deploy SD-WAN without downtime?
- ✓ How do I ensure my SD-WAN is secure?

Schedule a free consultation with CommandLink to answer all your questions with the world's leading SD-WAN experts.



Global Secure SD-WAN Service Provider

COMMAND LINK

Strategy

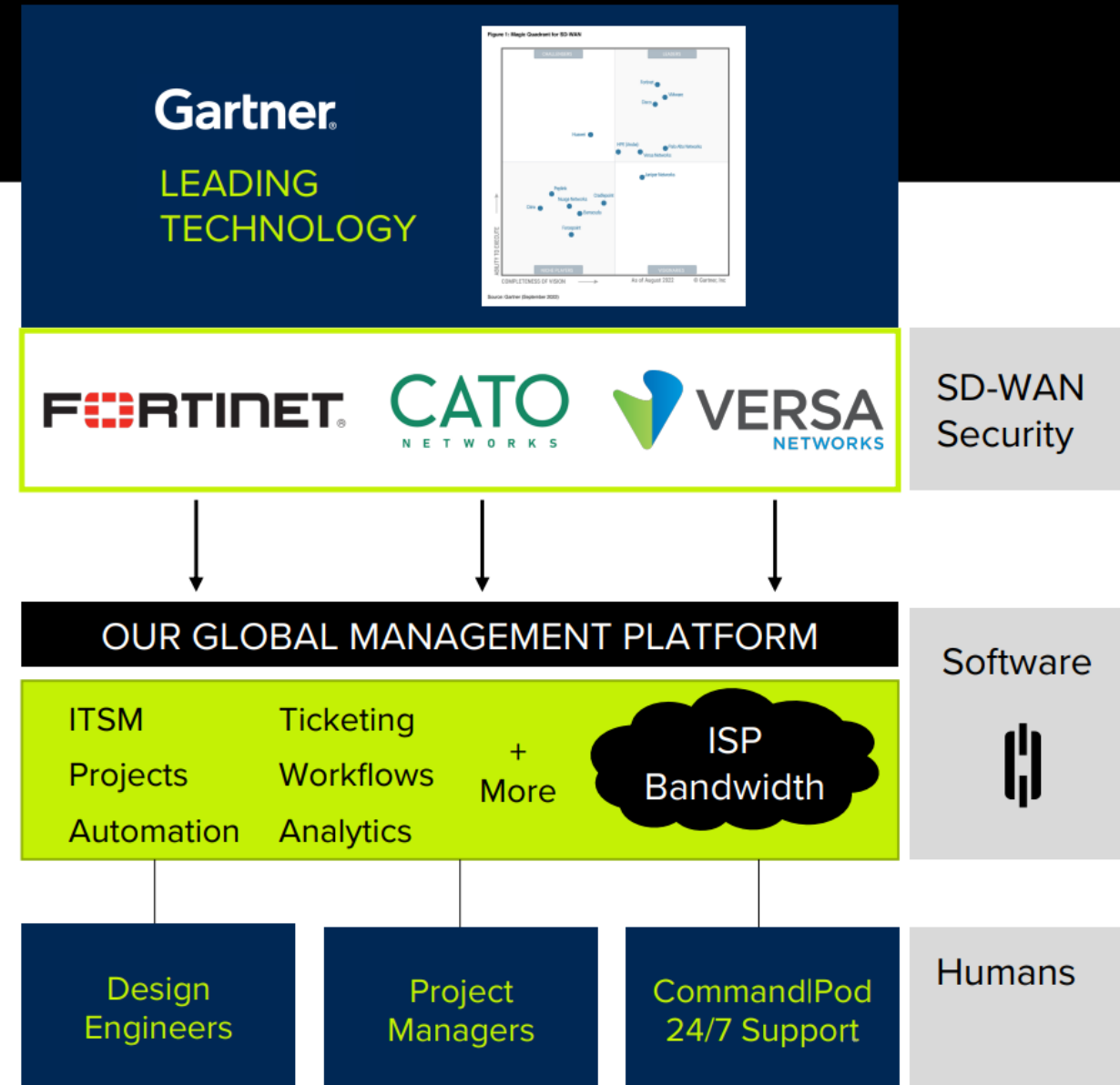
- Any network migration, integration, or situation
- We help accelerate success & de-risk projects
- Trusted by the largest global & domestic companies

Deployment

- Proven Process
- Global Logistics: Onsite Hardware, Installation, & ISP
- All workflows & projects in one software platform

Management

- Pro-Managed or Co-Managed, you choose
- Dedicated engineering pod, software integrated
- Analytics platform covering, networks to tickets





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