



Deliver Multi-Cloud, Hybrid Cloud and Hybrid Network Solutions with Turnium Managed SD-WAN

Most organizations today use cloud-based applications, data and storage. But delivering networks that connect every site — and every public and private cloud service your customers need — in a cost-effective way isn't easy. Designing and costing networks can include lengthy contract negotiations with multiple carriers. Implementation times can be long and getting Day 2 support or conducting MACD on these networks can be frustrating.

Turnium Managed SD-WAN offers an alternative to traditional telecom services. Our cloud-native solution offers simple, cost-effective connectivity wherever you need it.



Main offices



Home offices



Branches



Cloud services



Data centers

Traditional Telecom Network vs. Turnium SD-WAN

Let's imagine a customer with applications in both public and private clouds, multiple offices with varying staffing levels and the usual stringent cost requirements. This customer needs a WAN solution that can:

Connect multiple cloud providers and sites	Deliver Quality of Service for voice, video and other applications	Design, provision, launch and test the network in a timely fashion
Deliver an easily managed network	Add new sites in the future easily	Provide visibility into WAN performance to support meeting service levels.

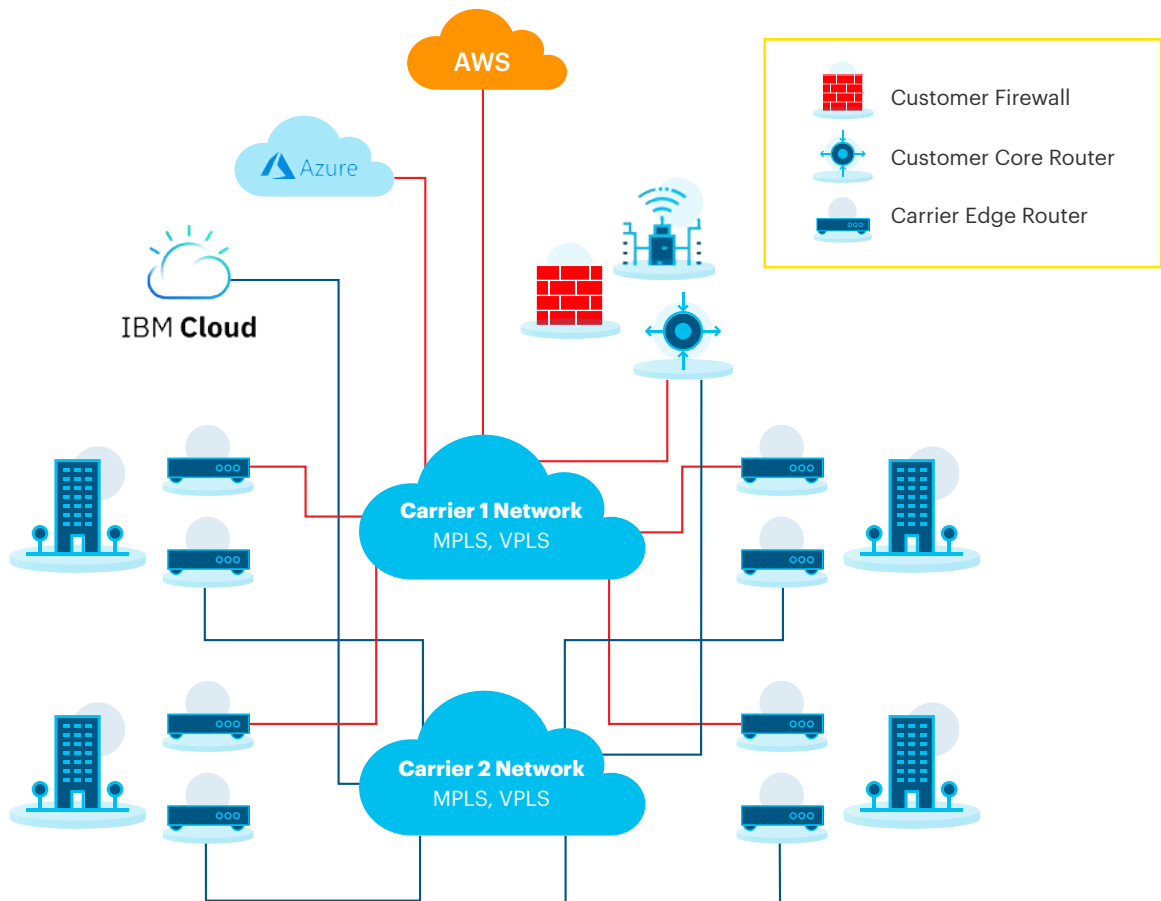
Traditional Network Designs

A typical telecom network solution includes a combination of different carrier networks for failover — often with one carrier providing the primary circuit, sized to fit business requirements, and a second providing a standby circuit, sized for failover use only.

When Failover is Failure

Common network failover designs compromise employee performance. Standby circuits are almost always sized to be smaller than the primary circuit, which means customers can't compute or communicate through an outage without performance impacts.

For our hypothetical customer's setup, there are two carrier circuits at each site, connecting through the customer's core router, to provide redundancy. Circuits from one carrier are used to connect to Azure and AWS while the second carrier connects to IBM Cloud. Circuits from both carriers connect all four customer sites.



Packets are labelled to route traffic in the network based on pre-engineered destinations and paths making networks more static and harder to change.

Failover between primary and secondary (backup) circuits causes a temporary outage for users. Solutions may not be designed and deployed to use both circuits at the same time.

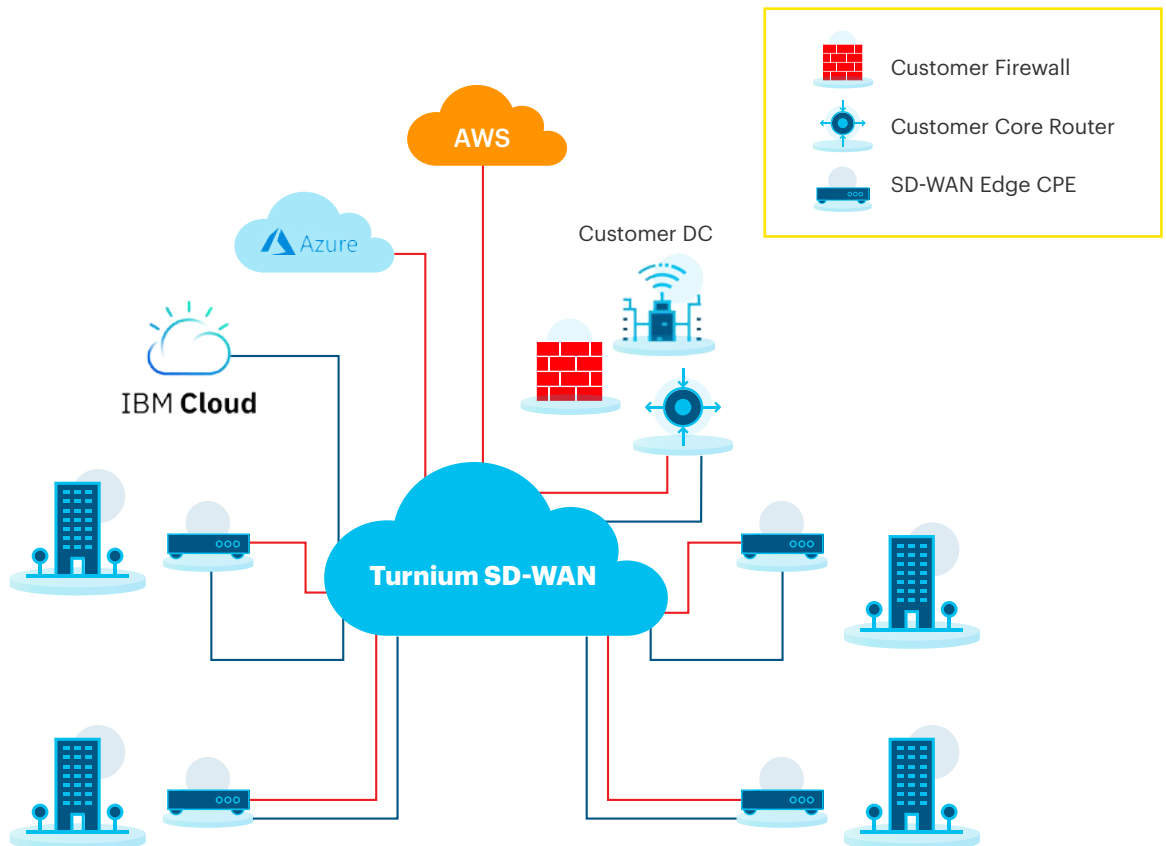
Traffic is not encrypted. Security comes from private networks' segregation from public internet spaces.

Circuit costs are based on allocated bandwidth and may include additional charges for data volume, ingress and egress.



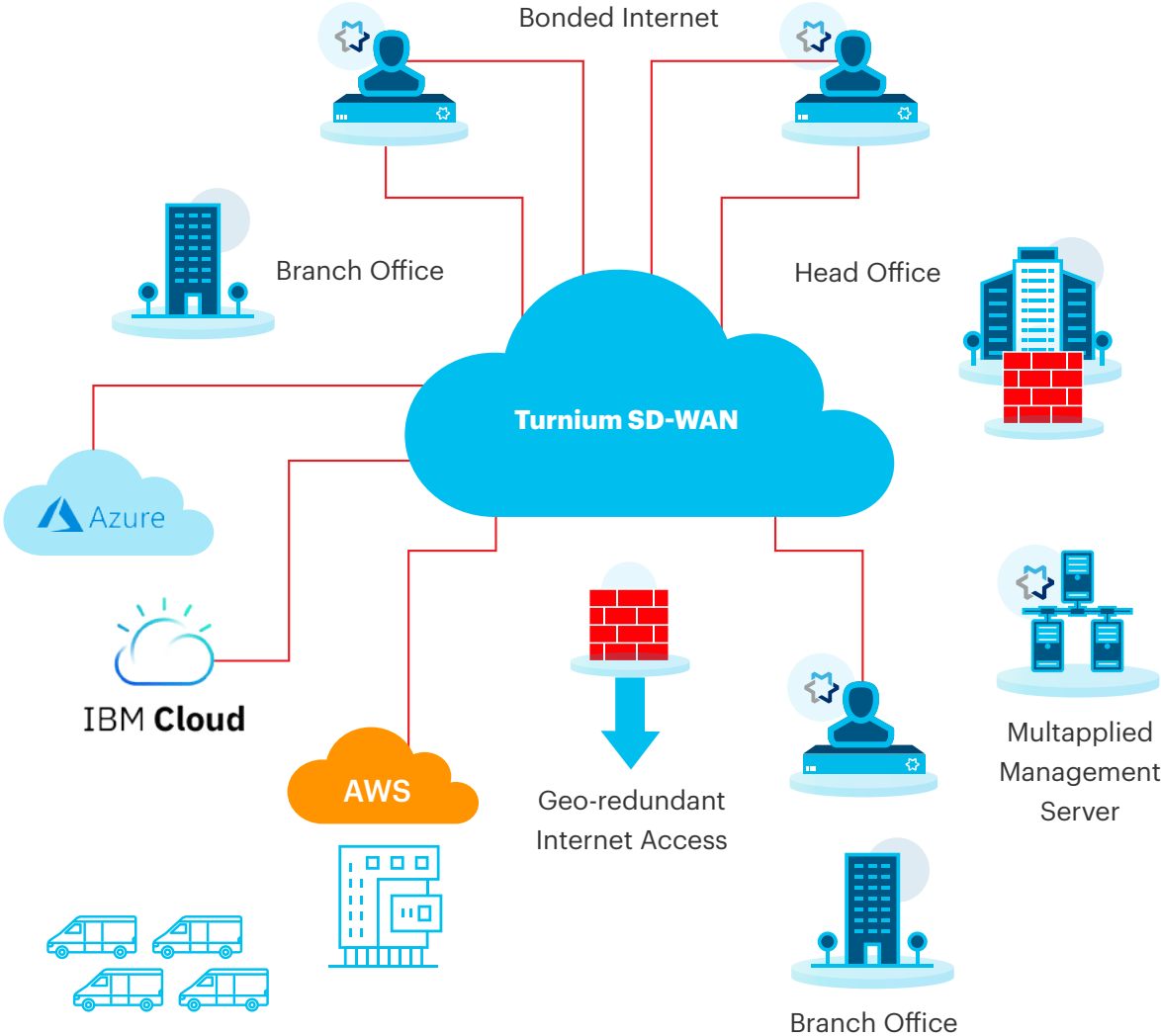
Turnium SD-WAN Solution

Turnium SD-WAN provides a secure way to **achieve the same design** cost-effectively, while **encrypting** data in-transit and providing QoS without the time, effort and cost required to design, quote and deploy carrier solutions.



Turnium's core provides the networking between three of the four customer sites, as well as to the data center. A carrier private network is shown being integrated into this example, to illustrate how Turnum can deploy hybrid networks by integrating carrier-provided circuits in the SD-WAN.

Adding public cloud instances to this design is simple. Turnium simply deploys Edge nodes as **virtual** or **containerized** instances within those cloud facilities to bring them on-net securely and privately and deliver prioritized bandwidth, if needed.



Benefits of Turnium SD-WAN Architecture

Turnium SD-WAN enables service providers — including Managed Service Providers, Telecoms, Voice and Contact Center providers — to deliver turnkey, outsourced secure, private routed networks to their customers.



Geographically Diverse

Our architecture is based on geographically diverse core SD-WAN nodes deployed in Turnium data centers, plus virtual or physical customer Edge CPE or Bonders deployed at customer sites, including data centers or in cloud instances.



Multiple Connections

Turnium SD-WAN can build proprietary SD-WAN tunnels using broadband, Dedicated Internet Access (DIA), Ethernet, MPLS, fixed wireless and LTE, 4G and 5G connections. Satellite connections can also be used.



Performance Enhancement

Add Replify WAN Optimization to increase the performance of your Turnium SD-WAN solution. Replify WAN Optimization delivers byte-based deduplication and optimization for branch offices, data centers and mobile users. Replify is available within a Turnium SD-WAN network at an extra cost per-instance required.



Hybrid Networks

Turnium can also create hybrid networks, supporting customers that need to integrate SD-WAN into their existing network architecture or are seeking to migrate to SD-WAN over time as their carrier contracts expire.



Quality of Service

Turnium also provides QoS to prioritize voice or other applications requiring priority bandwidth on the network. Our prioritization is elastic, meaning bandwidth is only assigned when prioritized traffic is present in the data stream.



Cloud Security

Turnium features cloud security provided by WatchGuard as bundle options. Benefit from an advanced, enterprise-grade network security platform hosted in your SD-WAN that is suitable for any organization, regardless of budget, size or complexity.

Simplicity and Flexibility

To simplify deployment and management, Turnium Edge node or Bonder software can run on Bare Metal dedicated devices as well as in Virtual or Container environments, including VMWare, LXC, QUMU/KVM, Systemd-nspawn and Red Hat OpenShift v6.4 or above.



Deploying Hybrid Networks with Turnium

Turnium makes it easy to convert MPLS networks to full SD-WAN, or augment MPLS networks with SD-WAN to reach small sites, fiber-off-net sites, or to provide highly cost-effective, multi-transport and multi-carrier business continuity solutions.

Customers with MPLS networks or dedicated Layer 2 networks often raise concerns about the cost, bandwidth, performance or carrier lead-times required to deploy. Turnium facilitates the deployment of multiple commodity broadband connections from multiple carriers to gain carrier diversity and add multiple wireless circuits for guaranteed availability.

In addition to these network design characteristics, Turnium customers also benefit from:

Encryption Data in transit between sites (including cloud storage) can be encrypted for higher security.	Packet-Based Link Load Balancing Packets are distributed across multiple circuits in the virtual tunnel for an extra layer of security carriers can't offer.	Sub-Second Failover Fast failover between circuits in the SD-WAN, including wireless connections, enables customers to survive carrier outages, conduit breaks or building issues.
Increased Bandwidth SD-WAN offers more cost-effective, higher performance than traditional telecom networks. Multiple broadband circuits from different carriers gives more bandwidth and built-in network redundancy.	Flexible Contracts Broadband connectivity contracts are flexible, making it easy to add bandwidth and lowering termination costs.	



Turnium SD-WAN Use Cases

Turnium can provide networking solutions for any situation:

Integrate MPLS networks with SD-WAN

Turnium can build a private SD-WAN network to integrate with existing MPLS solutions or install core nodes in client data centers to build a private SD-WAN solution that deliver hybrid network designs and enable secure networks to be extended to sites that need secure, managed access to corporate applications.

Simplify your networks

Turnium SD-WAN simplifies network design, deployment and management. As a software-defined platform, Turnium automates core and edge device programming to speed deployments, eliminate errors and reduce costs. Turnium SD-WAN also eliminates the time and complexity of negotiating and implementing carrier network contracts, and provides a single pane of glass into network performance and statistics.

Contact us to learn more about how Turnium SD-WAN could benefit your organization.

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