turnium

Managed and Unmanaged Mesh

Automated or Manual Control of Core SD-WAN Networking

Managed and Unmanaged Core Node Mesh are two modes available in Turnium SD-WAN for configuring network routing. These modes are available on a per-network basis, giving you options when setting up private networks for your customers. These modes make designing the back-end network for multi-site networks easier and expose tool sets that give you a high degree of flexibility to deploy specific network topologies and meet advanced customer needs.

Control, Integration, Simplification, and Performance

Performance and Reliability	Easy Integration and Custom Solutions	Simplified Deployment and Management
Automatically ensures that customer data is sent over the shortest path (Managed Mesh) or takes a specific path that you define based on unique network design requirements (Unmanaged Mesh).	Integrate existing Layer 2 Ethernet or MPLS networks with Turnium SD-WAN Layer 3 networks.	Capabilities in the Management Server GUI simplify deployment and management, including node, bond and leg management.

Resilience and Flexibility

Managed and Unmanaged Core Node Mesh PWAN designs deliver greater resilience and design flexibility while improving scalability and reducing complexity by eliminating a dedicated PWAN router node type used in previous designs.

WAN Optimization and Wholesale Programs

In addition to these Core Node Mesh options, Replify WAN Optimization can be deployed as part of Turnium SD-WAN to enhance application performance to bandwidth-constrained sites, or mobile devices. Replify can be deployed with Turnium SD-WAN or as a standalone application. Turnium also supports virtually unlimited levels of sub-partners and branding to support expanded wholesale programs.

Benefits of Managed vs. Unmanaged Mesh

Managed Mesh:

- Integrates core elements of a previous node type, the PWAN router, into Aggregator code
- Allows partners to peer Aggregators as well as existing firewalls, edge routers, hosted applications, and devices easily for increased efficiency of data transport
- Automatically creates interfaces, paths and routes between Aggregators included in a customer space to simplify deployment and reduce errors and troubleshooting

Unmanaged Mesh:

- Provides highly granular control over network connections and performance
- Supports highly customized network topologies
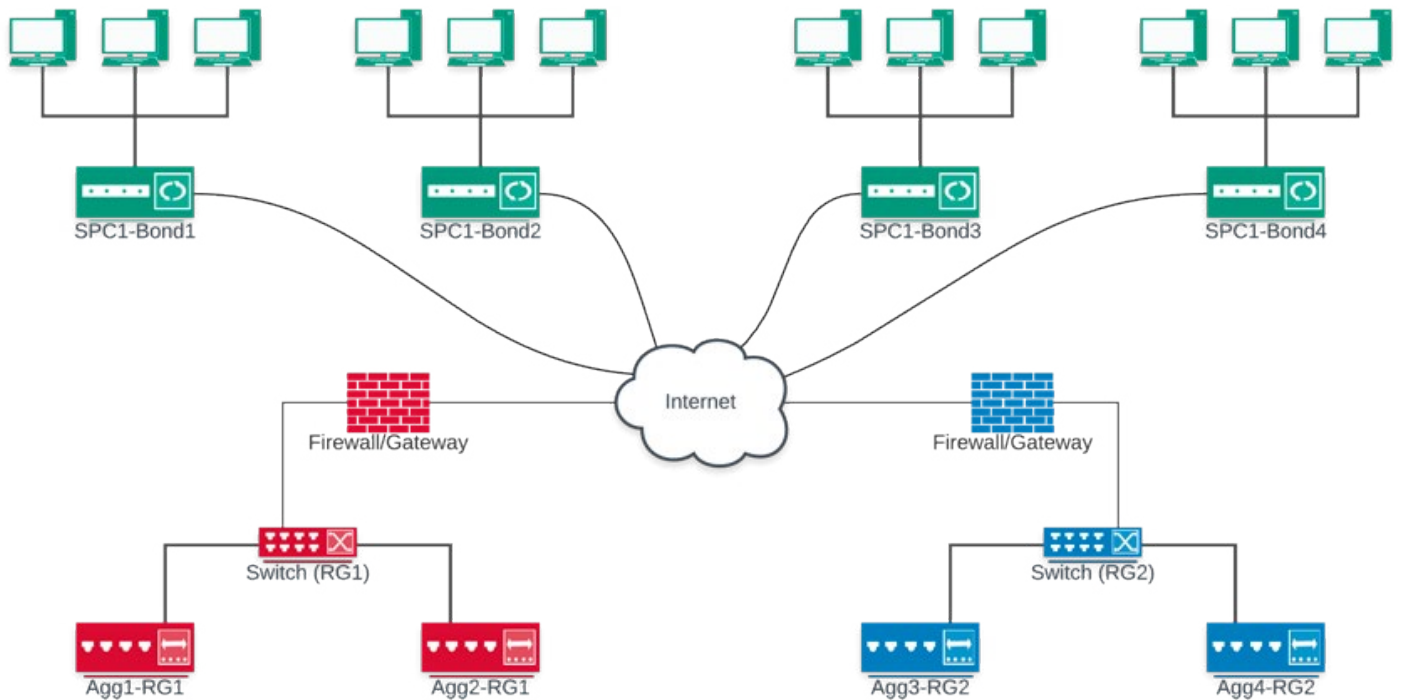- Exposes toolsets for static routing and custom interfaces

Description: Managed and Unmanaged Mesh

Turnium's SD-WAN after release 6.5 contains Managed and Unmanaged Mesh PWAN modes to improve network performance and control.

Managed Mesh

Managed Mesh uses a combination of VXLAN interfaces and dynamic routing protocols to deliver a routed Private WAN (PWAN) architecture on a per-tenant level.
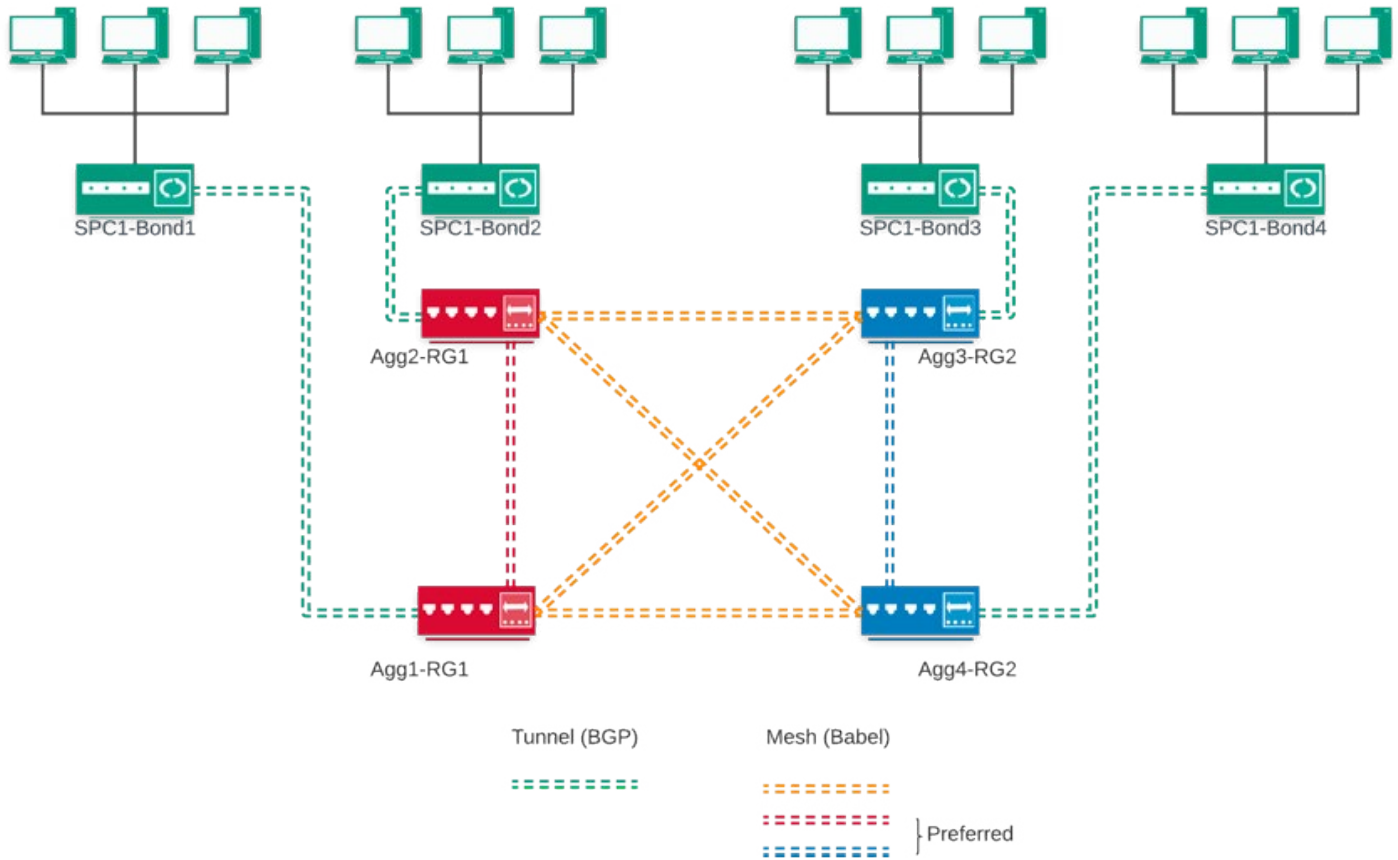
The below example network contains four sites that connect to two data centres using SD-WAN. Each data centre contains a firewall or gateway device, a core switch and two Aggregators.

In the scenario shown in this diagram, data from customer site SPC1-Bond1, which is directly supported by Agg1-RG1, is being sent to customer site SPC1-Bond2, which is supported by Agg2-RG1.

Typically, data from SPC1-Bond1 would flow to Agg1-RG1 and be routed to Agg2-RG1, which would then forward it to SPC1-Bond2.

With Managed Mesh, the path between Agg1-RG1 and Agg2-RG1 uses VXLAN, and Turnium SD-WAN automatically creates the interfaces, paths and routes between Aggregators (Agg1 and Agg2) included in SPC1, like so:

Turnium SD-WAN automatically creates meshed infrastructure for each specific customer space in which Managed Mesh is turned on in the Management Server. Managed Mesh is toggled on within a space's Private WAN settings. Once turned on, all Aggregators added to that space are automatically meshed.

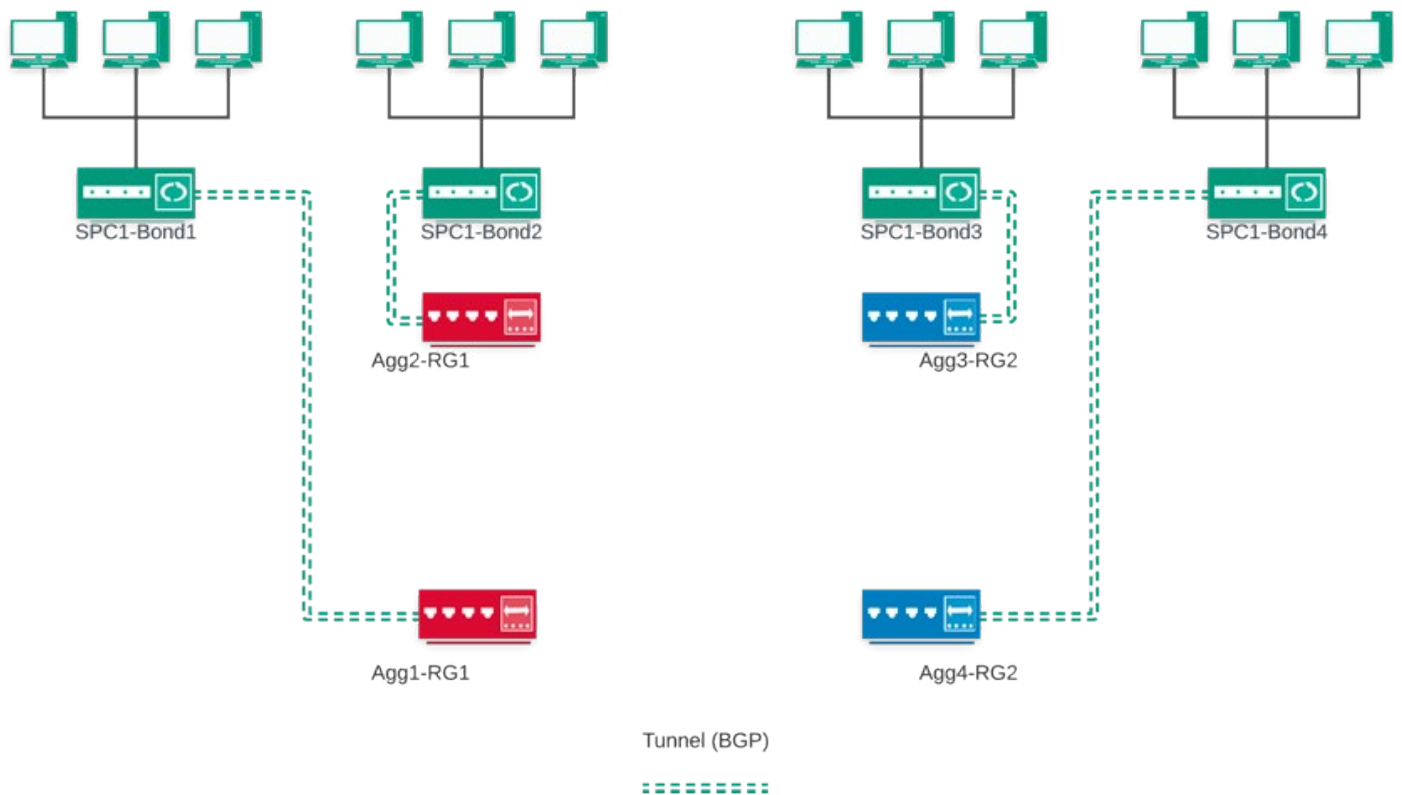## Important Notes About Managed Mech and Turnium SD-WAN

- A distinct mesh, which expands and shrinks to include and exclude Aggregators as needed, is established for each Managed Mesh PWAN space.
- Aggregator interfaces and protocols are created to peer with external routers instead of statically configuring gateways and including PWAN NAT in bonding.
- Managed Mesh PWAN networks are **fully integratable** with other networks using dynamic routing.
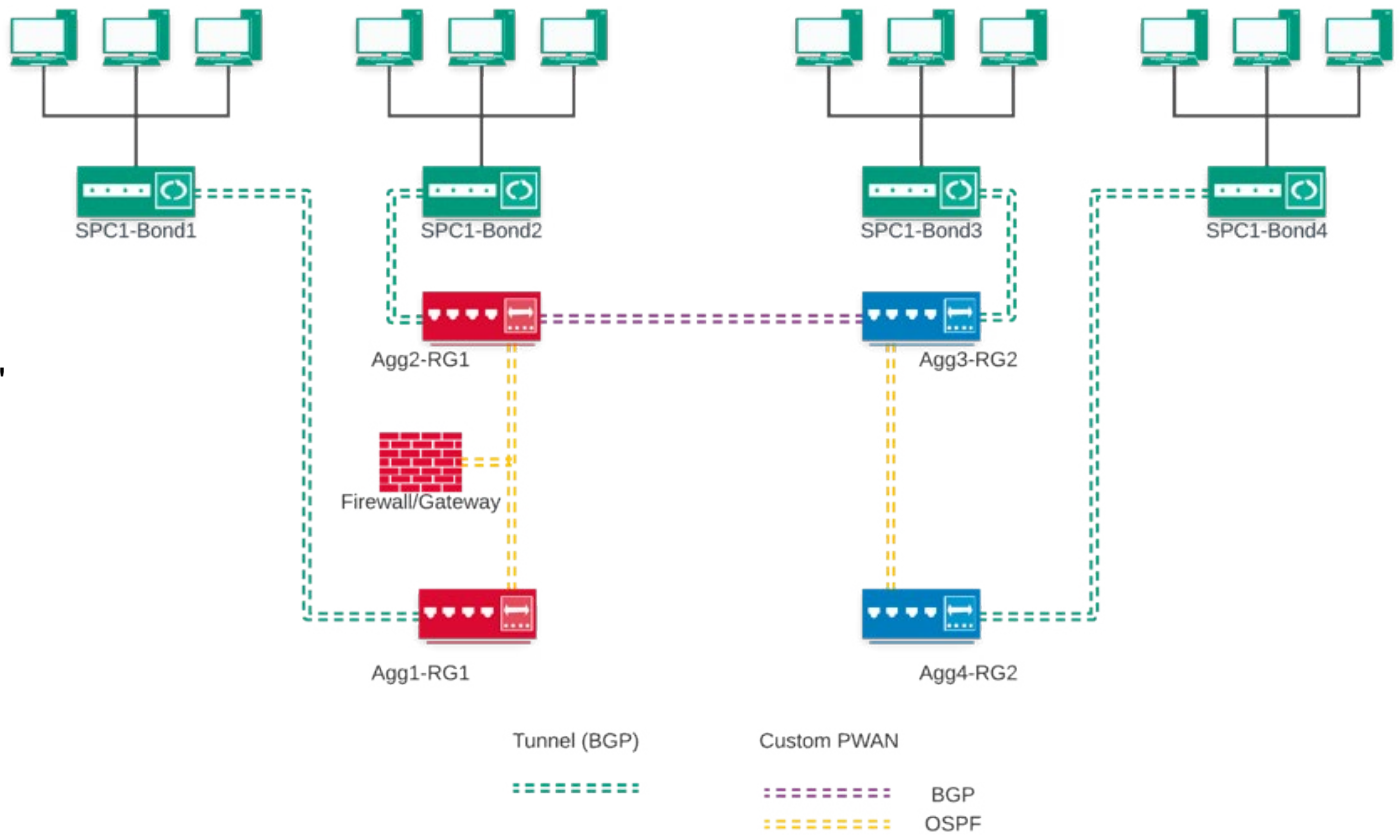
Unmanaged Mesh

Unmanaged Mesh provides Turnium partners with highly granular control over network connections and performance.

Using the same rough topology as shown in the above examples — but deploying it using an Unmanaged Mesh configuration — creates a network that looks like the below example.

In this example network, there is no path between any sites, meaning no data can move between them unless paths are defined manually during PWAN setup.

Using the same PWAN — but with OSPF and BGP manually configured to let selected Aggregators route traffic to each other, Agg1-RG1 can communicate with Agg2-RG1 and Agg2-RG1 can communicate with Agg3-RG2.

Tunnel (BGP)   Custom PWAN

:=======:   :=======:   BGP
             :=======:   OSPF

In this example, this particular routing could be set up to ensure data between RG1 and RG2 uses a specific network path between Agg2-RG1 and Agg3-RG2. This might be done to avoid more costly -- but faster -- routes that would be established using Managed Mesh.

Notes:

- Only Edge devices or CPE/bonders are configured as BGP peers with their Aggregators, and PWAN only creates the link between the CPE and the Aggregator.

- Paths between the Aggregators assigned to a specific customer tenant must be created manually when Aggregators are added to the space. This requires the creation of interfaces on the Aggregators and manual definition of routes.

Integrating Turnium SD-WAN with Existing Layer 2 Networks

Turnium SD-WAN supports integrating with existing Layer 2 MPLS or Ethernet networks. This enables Channel Partners to:

- Sell Private WAN networks to customers with existing core MPLS networks
- Transition sites to more cost-effective Layer 3 SD-WAN services
- Establish a migration path to a full SD-WAN network
- Extend the reach of networks to hard-to-service branch offices.

Deploying Layer 2 Network Integration

Managed Mesh	Unmanaged Mesh
PWAN configures VXLAN and Wireguard encrypted tunnels between all Aggregators. Routing to external networks requires custom protocol configuration to be defined on at least one Aggregator. This is done in the GUI profile page for the required node.	Static routing must be manually configured. This is desirable when specific routing paths are required. This is done using the GUI on the profile for the required node.

Learn More

Our goal is to help Service Providers deliver high-performance, flexible networks and managed services. To learn more about Turnium's channel partner program or our SD-WAN platform capabilities, **contact us** with your questions or **book a demo**.

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