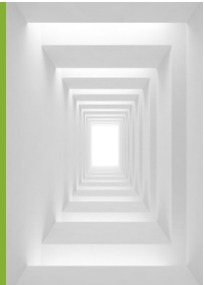Juniper® Validated Design

JVD Solution Overview: Distributed Enterprise Branch EX Series

Executive Summary

Juniper Networks mission is to streamline the deployment and management of enterprise networks. The Juniper Mist™ cloud integrates everything customers need to install, configure, and monitor devices into a single, intuitive interface. Enhanced with advanced artificial intelligence, it empowers enterprise administrators to efficiently manage their networks.
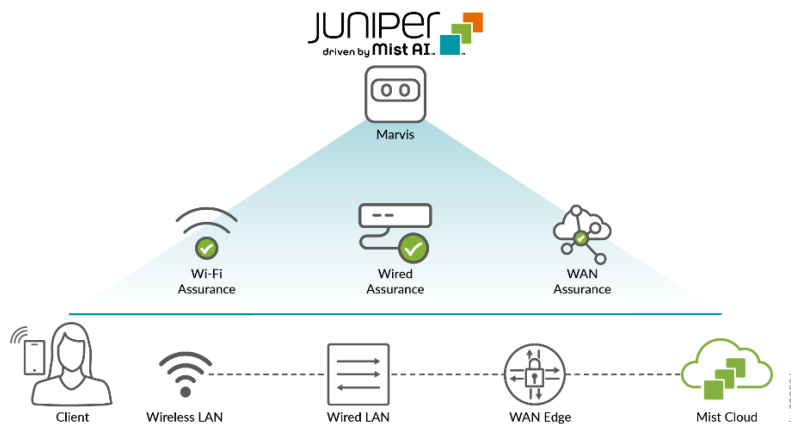
This JVD covers all aspects of the Juniper Wired Assurance offering, focusing on the deployment of Juniper EX Switches at typical corporate branch sites providing network access for wired clients. It details the most common deployment scenarios and topologies used, outlines the tests conducted for these standard enterprise branch deployments, and shares best practices.

The appendix of this JVD provides comprehensive information on all standard Day-0 to Day-2 operations. It includes examples of WAN router and access point integrations as well as troubleshooting tips.

Solution Overview

When deploying Juniper EX Switches at a branch, there may be a demand to use more ports than a single standalone switch provides. In such cases, you can choose one of the following:
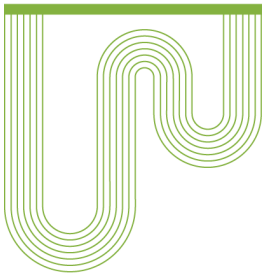
- Multiple standalone switches using traditional Layer 2 technologies such as spanning tree to prevent a loop in the network.
- A Virtual Chassis combining multiple EX switches together to make them appear as a single logical switch. This option allows more then one uplink or downlink to be used simultaneously which is an advantage over spanning tree.
- Multiple standalone switches using a Layer 3 routing protocol such as OSPF or BGP for network loop avoidance.
- A small campus fabric with EVPN/VXLAN for network loop avoidance.

This JVD highlights the three most commonly deployed scenarios, which are easy to implement yet highly robust, allowing the use of multiple links simultaneously. The management traffic of the switch itself is integrated with the uplink VLANs to the Juniper Mist cloud:

- When no link redundancy is used, you can connect a switch directly to the WAN router with one link.
- When a Virtual Chassis is used, we recommend using IEEE 802.3ad link aggregation toward the WAN router for redundancy.
- In larger branch offices, traffic from the access switches may need to be cascaded through a distribution switch layer before reaching the WAN router for better scalability. The distribution layer should then consist of a single Virtual Chassis using IEEE 802.3ad Link aggregation towards uplink WAN router and the downlink attached switches.
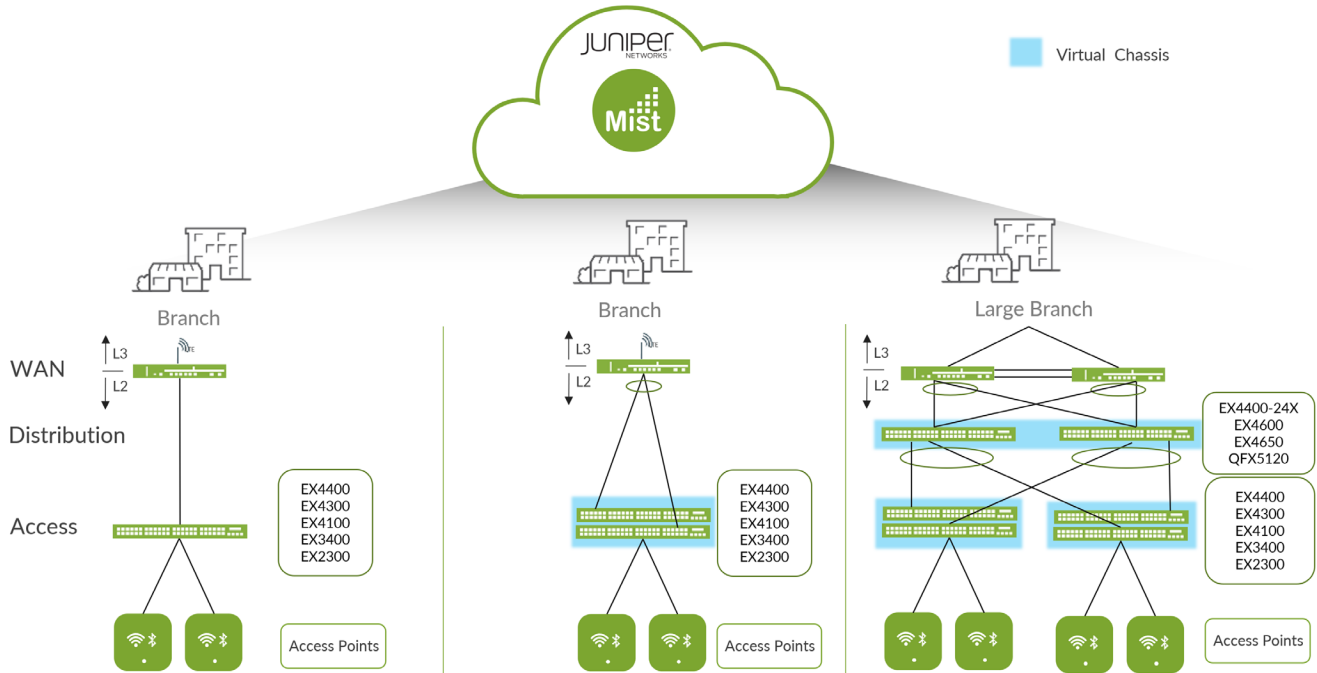
The design of the WAN router can be either redundant or not, depending on customer requirements. Typically, the WAN router at a branch serves as the termination point for the Layer 2 VLANs used by wired switches and attached access points, acting as the default gateway for these devices. Additionally, the WAN router is expected to handle DHCP lease management, either by implementing a DHCP server or by acting as a DHCP relay.