

Juniper® Validated Design

JVD Solution Overview: Collapsed Data Center Fabric with Juniper Apstra

JVD-DCFABRIC-COLLAPSED-01-01

Executive Summary

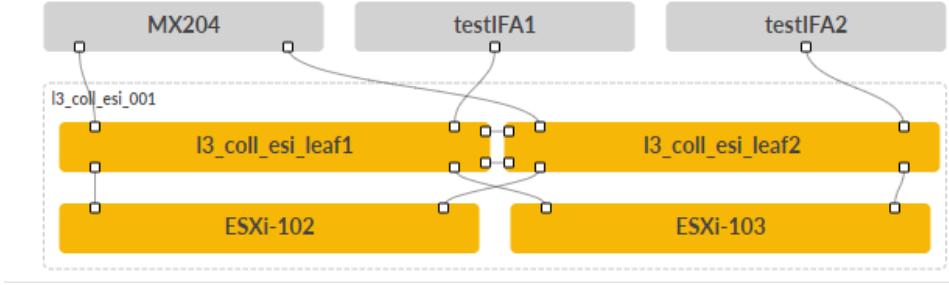
Data center operators must deliver and maintain network infrastructures at various network scale sizes. Small data center networks, in particular, are often bespoke network designs optimized for cost efficiency, which introduces a unique troubleshooting burden on networking teams. *The Collapsed Data Center Fabric with Juniper Apstra* is a Juniper Validated Design (JVD) that provides organizations with a widely deployed small data center network that is reliable, cost-effective, and uses the skills networking teams have built with larger-scale Juniper data center JVDs.

Solution Overview

The *Collapsed Data Center Fabric with Juniper Apstra* is Juniper's best practice data center network architecture for small networks and offers comprehensive guidance on deploying a modern collapsed fabric (also known as collapsed spine) with EVPN-VXLAN. As with all Juniper data center JVDs, this solution is based on best practices as determined by Juniper's subject matter experts, including Juniper support teams.

All JVDs are regularly reviewed to ensure they continue to represent best practices, and this solution is the result of extensive consultation and testing to find the balance between capability, performance, and cost efficiency to meet the needs of small data center deployments. The JVD itself consists of only two switches; however, there are five switch platforms to choose from, depending on your needs. [Figure 1](#) shows the recommended setup.

Figure 1: Collapsed Data Center Fabric with Juniper Apstra



This JVD supports several different use cases, having proven its value to customers in scenarios where a full 3-stage fabric is too much network for the job. The *Collapsed Data Center Fabric with Juniper Apstra* is particularly well suited to edge deployments, remote office/branch office scenarios, test labs, and single-rack fabrics. As a Juniper Apstra-managed fabric, this JVD makes a great starter network to help networking teams discover the benefits of Juniper Apstra.

This JVD is extensively tested by Juniper and is deployed by customers across the globe. Advanced JVD testing combined with widespread adoption simplifies troubleshooting and shortens the support cycle, leading to a more stable data center fabric and reduced operational costs.

The *Collapsed Data Center Fabric with Juniper Apstra* consists of an ERB-based network architecture, with spine, leaf, and border leaf switches collapsed into a two-switch, high availability configuration. All hardware components and software versions are tested extensively with both simulated and real-world traffic.

Benefits

- Repeatability—Prescriptive designs, where all JVD customers benefit from lessons from worldwide deployments.
- Reliability— Integrated best practice designs tested with real-world traffic and described with measured results.
- Velocity—Streamlined deployment with step-by-step guidance, automation, and prebuilt integrations.

Solution Components

Supported switch platforms are:

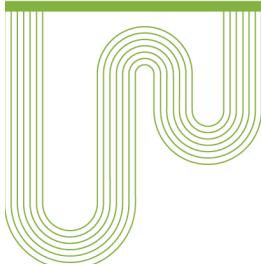
- QFX5130-32CD
- QFX5120-48Y
- QFX5700
- ACX7100-48L
- PTX10001-36MR

The *Collapsed Data Center Fabric with Juniper Apstra* is a two-switch fabric that can provide up to 30 high-availability ports of 400GbE while retaining expected functionality. Juniper Apstra version 4.2.1 and Junos OS Release 23.4R2-S3 are the software components.

About Juniper Validated Designs

JVDs represent a cross-functional collaboration between Juniper's top subject matter experts, including product teams, solutions architects, support, development, and testing. The goal of the JVD program is to develop well-characterized, multidimensional solutions that reduce the complexity and support burden of networking teams. Network designs selected for validation are based on industry standards and target the most common use cases with practical, economical designs that are fully tested and supported.

Juniper Data Center JVDs are customer-driven. Network designs in frequent use by customers are identified and then undergo use case and best practice analysis based on end-to-end validation testing. Juniper fully characterizes and quantifies the design in the Juniper JVD test labs, including extensive testing by multiple teams. Once Juniper builds the physical infrastructure required to support the JVD, the design undergoes rigorous validation to prove solution viability, with test results provided in JVD test reports. Throughout the validation process, our engineers engage with software developers to quickly address any found issues, and ongoing regression testing confirms functionality, performance, reliability, and security in new software versions.



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