

Use Cases

Public and Private Cloud

- > Secure overlay networks, ingress load balancing and encryption for VMs and containers in sync with application platforms like Kubernetes
- > NetOps and SecOps as code, strong multi-tenancy, abstracted for developers
- > Secure overlay networks to any virtual, container or server-based workload orchestrated in sync with your IaaS layer
- > Virtual or physical overlay, and physical underlay management

Hybrid and Multicloud

- > Seamless, secure, and connection among data centers and clouds

Telco Cloud and NFV

- > Provide infrastructure orchestration for network and security layers and devices
- > Enable typical VNF applications like vEPC, vIMS, and vCPE for virtualization of Mobile, Residential, and Enterprise Service Provider infrastructure and services

Tungsten Fabric is an open source multi-cloud, multi-stack software-defined networking (SDN) platform. It is built to meet the critical performance and security standards of Tier One service providers and enterprises with global operations, whether they're using public cloud, operating their own infrastructure, or both.

Tungsten Fabric is hardened, production-proven, massively scalable, and supported by a global community of developers and users. Service providers use it to accelerate deployment of new services, including edge cloud networking to support 5G and IoT deployments, while enterprises use it for secure multi-stack and multicloud networking, enabling unified policy and connection under diverse application platforms and across their data centers and public cloud deployments.

Tungsten Fabric integrates with popular orchestration platforms like Kubernetes, OpenShift, OpenStack, and vSphere, and it works with public clouds like AWS, Google Cloud, Azure, and Alibaba.

Get going with Tungsten Fabric and Kubernetes on AWS in less than 10 minutes with the Carbide Quick Start. Join our community to learn more, or download the software.

For Enterprises

Enterprises use Tungsten Fabric to accelerate value by simplifying migration of apps across public and private environments. It offers a virtual networking overlay that delivers virtual routing, bridging, and networking services over any existing physical or cloud IP network.

For Service Providers

Service providers use Tungsten Fabric to support rapid deployment of new services and generate revenue while reducing expenses. Tungsten Fabric automates network resource provisioning and orchestration to dynamically create virtual networks and chain virtualized network functions (VNFs) and physical network functions (PNFs). Its integration with edge technologies such as Akraino makes Tungsten Fabric the go-to choice for high-availability 5G and IoT deployments.

A Brief History of Tungsten Fabric

Tungsten Fabric (formerly OpenContrail) was launched in 2011 as Contrail, a proprietary product built by Contrail Systems, which was acquired by Juniper Networks in 2012. Juniper open sourced Contrail in 2013 as OpenContrail. In 2017, Juniper moved the project to the Linux Foundation to diversify the community of upstream developers and enterprise users, and the project was rebranded as Tungsten Fabric. Today, several community members offer distros, support, and extensions.

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Analytics

Tungsten Fabric has always-on, advanced analytics to provide deep insights into application and infrastructure performance. Centralized analytics nodes collect, store, correlate, and analyze packets, flows, and block security threats. It can be consumed through the northbound REST API or Apache Kafka, or analyzed with SQL-style queries.

Control

Tungsten Fabric control and management systems deliver highly available, container-based microservices that support live upgrades. This means Tungsten Fabric can orchestrate virtualized, automated networking for the most demanding use cases. Control nodes maintain a scalable, highly available network model by federating among at least three such nodes and peering with physical or virtual networking devices.

Configuration

Configuration nodes accept requests from the API to provision workflows like adding new virtual networks and endpoints. The software converts these high-level requests into low-level directions that map to the internal data model.

Key Features

- > **Routing and Bridging:** The vRouter forwarding plane provides overlay L3 routing and L2 bridging in multitenant environments. Overlay orchestration is agnostic to the underlay network.
- > **Load Balancing:** Equal-cost multipath (ECMP) load balancing with session affinity is built into the vRouter's forwarding plane, distributing traffic across endpoints like VNF network services.
- > **Security and Multi-tenancy:** tenant domains and L3 VPNs to create virtual networks inherently provides a secure, segregated environment. Virtual networks can only talk to each other when policies provide for it.
- > **Gateway Services:** gateway the overlays on most physical or VM-based routing and switching equipment.
- > **High Availability:** Active/active redundancy is built in to all control and management components.
- > **API Services:** REST APIs for configuration, operation, and analytics provide seamless integration with popular or customized orchestration systems.
- > **Plug-Ins for Cluster Orchestrators:** Set up networks manually or with APIs. Plug-ins for third-party cluster orchestrators use the API to automate network and security in conjunction with workload orchestration for Kubernetes, OpenStack, OpenShift, and VMware vSphere.
- > **Web Interface and Dashboard:** An intuitive user interface provides easy navigation. Provision services and visualize status and network state for efficient troubleshooting.

Functionality

- > **Open Standards for Seamless Interoperability:** Tungsten Fabric delivers interoperability in multi-vendor physical, virtual and cloud network infrastructures. Use what you already have, and decouple future infrastructure decisions from your SDN.
- > **Network Virtualization with Overlays and Underlays:** Tungsten Fabric provides robust network virtualization based on internet-scale and proven protocols. Layer-3 IP overlays, L2 overlays and a multitude of data encapsulation standards allow it to work on any underlay network—public, private, or across wide-area networks.
- > **Network and Security Policy:** Tungsten Fabric provides high-level simple policies with sensible defaults, as well as plenty of provisioning options for advanced network professionals. Virtual network segments provide simple microsegmentation security.
- > **Dynamic Service Chaining:** Tungsten Fabric simplifies VNF integration via dynamic service chaining to support dynamic scale-out routing and load balancing. Create, delete, and deploy VNFs with OpenStack.
- > **Analytics and Visualization:** Analytics are designed for large-scale ingestion and querying of structured and unstructured data via Cassandra. With the analytics dashboard and query interface or the analytics API, diagnose issues with real-time and historical information on application usage, infrastructure utilization, and network statistics.

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