

Accelerate Cisco IWAN deployment with NCX Network Service Orchestration

Cisco IWAN Introduction:

Cisco IWAN is an integration platform for all WAN control functions. Cisco IWAN helps enterprises cut down WAN costs through smarter utilization of MPLS, Business Internet, Cellular and other low costs links without compromising performance, reliability and security. For instance, Cisco IWAN ensures that business critical applications such as Email, SAP, SharePoint will be routed via the MPLS network while the non-critical traffic such as Social Media, Netflix etc. will be routed using inexpensive internet connections.

Configuration Challenges:

Cisco IWAN configuration requires provisioning Hub and Spoke with all the 10 features that adds up to 300+ lines of configuration per spoke.

Administrators have to configure 1000s of lines of CLI per IWAN domain.

Each of these configuration requires CCIE level expertise. The process is tedious and often results in human errors and security violations. Further, the entire on-boarding process takes months to ensure the features are properly configured and validated. Apart from the initial provisioning, subsequent policy updates require the same CCIE level expertise thus introducing delay and complexity.

Due to the complex configuration, troubleshooting Cisco IWAN is a nightmare. Ultimately, customers are not able to realize the benefits of Cisco IWAN technology to implement new policies as per the business requirements.

Customers are currently repurposing generic automation solutions as a Band-Aid to this problem. However, these automation solutions use scripts and tools that are rigid, do not scale, do not support multi-tenancy, do not support service assurance and they use proprietary models that require vendor assistance for every change.

Anuta NCX Solution:

NCX 5.0 has out of the box support for Cisco IWAN services. Administrators can automate the configurations for all the IWAN features for all the various deployment combinations. Unlike scripting, NCX uses industry standard IETF YANG models. Customers and system integrators can easily modify or extend the NCX YANG models as per their business requirements without requiring vendor assistance.

The solution supports Zero Touch Deployment, Role Based Access Control, Configuration Reconciliation, introduces Self-Service and scales to thousands of branches. Further, NCX supports Multi-Tenancy so that MSP (Managed Service Providers) can automate multiple IWAN domains for their managed enterprises.

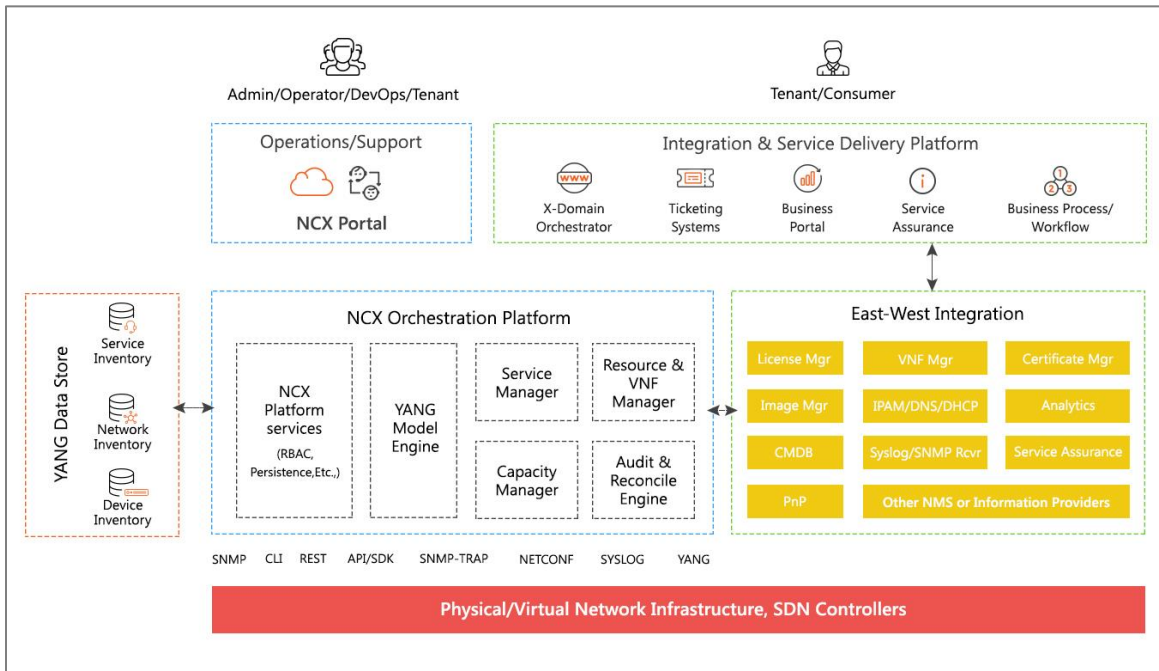
NCX enables Cisco IWAN customers to on-board hundreds of branches within days instead of months.

Once the branches are up-and-running, NCX provides a simple, easy-to-use GUI; so that any network operator or MSPs can quickly deploy network policies in multi-tenant environment without touching thousands of network elements individually. The self-service GUI avoids human errors, improves security posture and makes the network adapt to dynamic business requirements.

Best of Breed Network Service Orchestration:

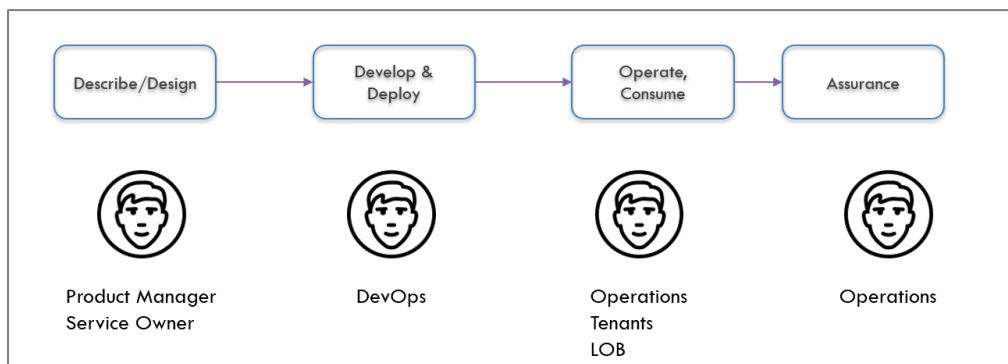
Anuta Networks NCX is an industry leading software solution designed to deliver complete network service orchestration for campus, branch, and data center networks by leveraging both physical and virtual devices across network infrastructures.

NCX uses modeling framework to abstract multi-vendor physical and virtual infrastructure and it provides self-service portal. NCX integrates with the rest of the enterprise software including Assurance, Compliance and Ticketing systems.



Service Delivery Lifecycle

NCX matches with the current enterprise service delivery lifecycle. Product managers can design the services and devops team will help customize the designs. Operators and Line of Business owners consume and operate the infrastructure. NCX also helps with assurance activities.



NCX Features:

Feature	Description
Extensible Service Models	NCX has out of box service package for IWAN. The IWAN package has all the Cisco recommended configuration parameters for QoS, PFR, IPsec and DMVPN features etc Further, customers and partners can easily customize it by updating the YANG model and re-importing the package.
Brownfield Discovery of Hubs and Spokes	<p>NCX discovers existing infrastructure and provides a map layout as well as network topology. NCX uses the IWAN package to discover existing hubs.</p> <p>NCX supports all flavors of hub design - Dual Hub with hybrid WAN; Dual hub with dual internet etc. NCX supports all the spoke designs - single spoke with hybrid WAN, single spoke with dual internet, dual spoke with hybrid WAN, dual spoke with dual internet etc. Both HA and Non-HA options are available.</p>
IWAN Templates for hub & spoke	NCX enables operators to add new spokes within minutes by loading the template provided by the admin. Operator has to give the spoke router where it needs to be deployed. NCX will take care of configuring all the policies including DMVPN, QoS, IPsec policies, PFR etc.
Approvals workflow	NCX is also integrated with ticketing systems to introduce approval workflows. The operations are sent to admin for review. After review, admin can approve the operation. Admin can schedule right away or deploy later.
Service Validation	NCX helps with validating the IWAN service. Service validation can be triggered on-demand or scheduled periodically. NCX can validate DMVPN tunnel status, PFR status, routing status and many more.
MACD – Incremental Policy Updates	Once the spoke is up and running, NCX also automates incremental policy updates such as adding static routes to an existing spoke router. Using a simple GUI, operator can enter the routes.
Compliance via Reconciliation	NCX supports compliance through reconciliation. If someone goes and manually updates the device configuration, NCX reconciles the policy with underlying device configuration. Admin can then overwrite NCX policy or overwrite the device configuration. Either way NCX ensures that the policy is consistent with the device configuration. This will help ensure compliance.
KPI based Service Assurance	Anuta NCX utilizes Key Performance Indicators (KPI) driven orchestration to ensure Service Monitoring and Service Assurance. Administrators can define KPI metrics from multiple nodes and links. For example, KPI may include CPU, RAM usage, the number of sessions in one or multiple network functions (Router, FW, LB, SBCs) along with link parameters such as utilization, jitter and delay. The KPI will be defined

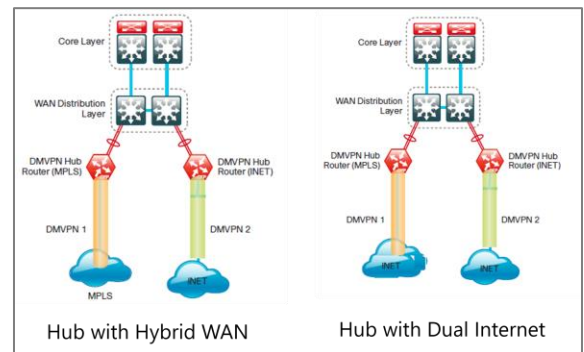
	using Yang data models that include a workflow or sequence of events. NCX will execute the data model and automate the necessary corrective actions.
Multi-Tenancy, RBAC	NCX offers comprehensive support for role based access control and integrates with existing identity stores such as AD and LDAP to enforce authorization policies. Roles and permissions can be customized to satisfy various organizational structures. Users can be restricted to a small set of actions, given complete control or any other variations in between.
Distributed Architecture for Scalability	NCX distributed architecture scales to several tens of thousands of devices in the network. The distributed deployment with Micro-services based architecture coupled with distributed cluster database makes expansion of NCX's reach as easy as creating a new virtual machine (VM). NCX supports flexible deployments from small (single VM – 4 GB RAM, 20 GB HD, 1 vCPU, 100s of branches) to hyper scale that support more than 10,000 branches).
REST API for Northbound integration	The NCX Controller is deployed in the data center and the NCX Remote Agents are geographically spread and deployed closer to the network infrastructure. The agent runs as a VM on a router compute blade or on an external host, or as a stand-alone application. The NCX controller has a REST API, allowing it to integrate with existing enterprise or MSP (Manager Service Provider) self-service portals. Also, NCX itself can be used as a self-service portal.

Supported Cisco IWAN Deployments:

The Cisco IWAN can be deployed in multiple architectures:

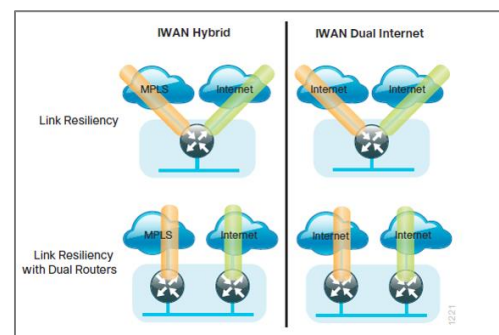
Hub Types:

- Dual Hub with Hybrid WAN (MPLS and Internet)
- Dual Hub with Dual Internet
- Dual Hub with Dual MPLS Circuit



Spoke Types:

- Single Spoke with Hybrid WAN (MPLS and Internet)
- Single Spoke with Dual Internet
- Dual Spoke with Hybrid WAN
- Dual Spoke with Dual Internet



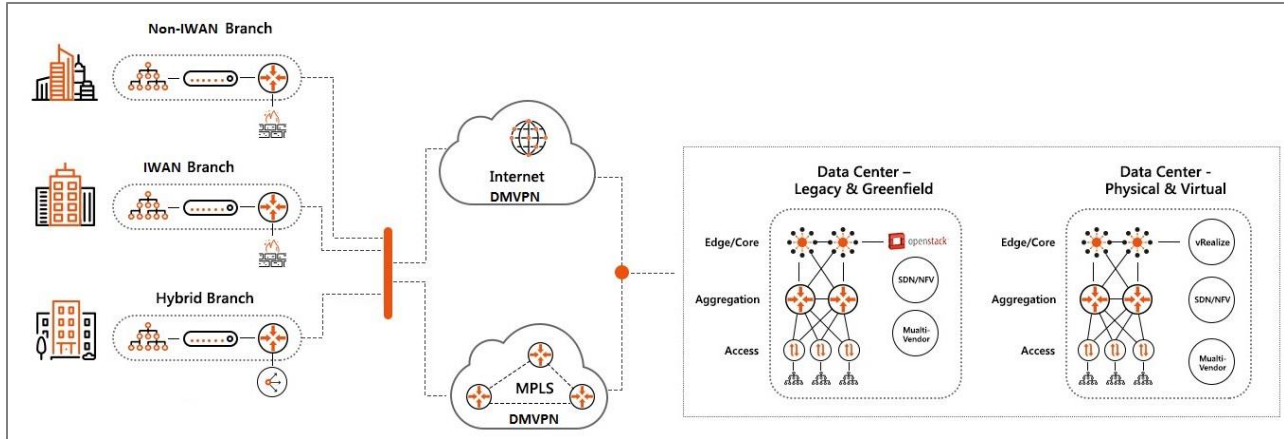
Supported Cisco IWAN Features

NCX automates all the configurations including Day-0 and Day-1-N configurations.

<p>Branch Service Chaining and Dynamic Services</p>	<ul style="list-style-type: none"> • AVC, Performance Routing (PfR), Per Tunnel QOS, NAT • MPLS L3 VPN, DMVPN over MPLS or Business Internet, IPsec IKEv2 • WAN Optimization - Cisco (v)WAAS or Riverbed (v)Steelhead • Security - Zone Based Firewall, Web Security through Scan Safe • Port Security, IP DHCP Relay • Layer-2 Networks - Traditional STP, Fabric Path, Hybrid Networks • Static and Dynamic Routing (RIP, OSPF, BGP etc) • First Hop Redundancy - HSRP, VRRP, GLBP • Policy Based Routing, Router Redistribution and Route Filters • Site to Site IPsec, Remote Access VPN
<p>Day-0 and Other Services</p>	<ul style="list-style-type: none"> • PnP, Bulk Configuration • Virtual Appliance Deployment • Branch Resource Management - Capacity, health and metrics • Audit Log
<p>Day-1 to Day-N Branch MACDs</p>	<ul style="list-style-type: none"> • Add/Update/Delete Firewall Zone Rules on all Branches • Add/Update/Delete WAN Optimization Policy • Add/Update/Delete of Layer2, Layer3, Security and other configuration

Multi-Vendor Hybrid CPE Orchestration

In addition to IWAN branches, NCX automates branches with traditional physical CPE devices (Non-IWAN) as well as Virtual CPE devices. The same NCX solution orchestrates Data Centers consisting of Multi-Vendor Physical, Virtual and SDN devices.



NCX Deployment Requirements

Anuta NCX can be installed on a Virtual Infrastructure in the Management Domain. NCX will be provided as VM (compatible with vSphere 5.0 or later) or an ISO. The controller requires 8GB RAM, 100 GB Hard Disk, 4 vCPU. The agent requires 8 GB RAM, 20 GB Hard Disk and 4 vCPU.

NCX works with external databases such as Oracle, MS SQL and PostgreSQL to store server state. NCX also uses MongoDB (NOSQL) to store historical data such as CPU, Memory Utilization and Capacities.

Pricing

Anuta Networks offers perpetual as well as subscription licensing options for NCX. The total price depends on the deployment size (charged per number of devices) and the specific use-case. Please contact us for detailed pricing options.

Summary

Configuring Cisco IWAN is very complex. Because of the complexity, Network administrators require months to on-board new branches. Existing automation solutions use scripts and tools that are rigid, do not scale, do not support multi-tenancy, do not support service assurance and they use proprietary models that require vendor assistance for every change.

NCX 5.0 has out of the box support for Cisco IWAN services. Administrators can automate the configurations for all the IWAN features for all the various deployment combinations.

NCX enables Cisco IWAN customers to on-board hundreds of branches within days instead of weeks. After the branches are up-and-running, NCX provides a simple, Easy to use GUI so that network operator can quickly deploy network policies without touching hundreds of network elements individually. The self-service GUI avoids human errors, improves security posture and makes the network adapt to dynamic business requirements.

After NCX is deployed, network services will be delivered within minutes using self-service portal instead of months, all network operations will be automated, security violations will be detected and remediated, troubleshooting will become simpler and operating expenses will reduce dramatically.