



Cisco Enterprise Network Functions Virtualization

BENEFITS

- Deploy or change network services in minutes across all your sites without truck rolls.
- Create multiple virtual branch offices at once.
- Reduce your number of network appliances, which saves CapEx, decreases management complexity, and shrinks real estate requirements.
- Protect your network infrastructure investment with Cisco ONE license portability while getting twice the value of a la carte licensing.

Deploy Network Services in Minutes

Virtualizing traditional appliance-based network infrastructure functions – such as routing, firewalls, and WAN acceleration – lets you roll out new services and modify others right on the spot, even across widely dispersed locations. There's no need to add hardware for every function, and you can use automated, centralized provisioning and management to eliminate costly truck rolls.

To succeed in today's digital marketplace, you need to work faster, cheaper, and smarter than your competition. There is a lot of pressure on your network to deliver the applications and services you need to do it all. As the

demands facing each of your branches grow, you have to keep adding services to your network that deliver results.

Cisco® Enterprise Network Functions Virtualization (NFV) converts your critical network functions into software, making it possible to deploy services in minutes. You can activate those network functions on the platform of your choice: a Cisco 4000 Series Integrated Services Router (ISR) with a Cisco Unified Computing System™ (Cisco UCS®) E-series server module, a Cisco UCS C-series server, or a generic x86 server. We've made it simple and easy to design, provision, and manage services across all your branches.

By redefining your network with software, you can deploy new applications and services on demand. You stay ahead of the game with the edge you need to succeed – no matter how many branches you have.

Transform Network Services into Software

For enterprises today, change is the only constant. And when innovations come fast, you need to be able to make quick changes to your network to keep up.

Traditionally, adding new network services to your branch sites has often meant buying, installing, and testing a new “box” for each new function. That equipment takes up valuable real estate and usually requires expensive truck rolls and special staffing to deploy and run it. The more locations you have, the more expensive and time-intensive it can get.

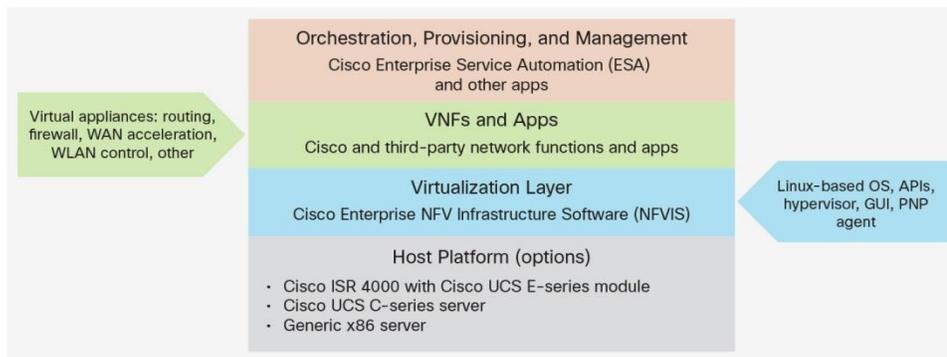
But when you virtualize your network services with Cisco Enterprise NFV, these challenges disappear. You can deploy and manage your various services from a single, central platform. Which means no more truck rolls and physical staff needed to bring up a site. Now you have the stability you need to support your current business needs, and you’ll be better prepared to take on whatever the future might bring.

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What Makes It Possible: Solution Components

True NFV requires a single, fully integrated platform that can run on top of a diverse network of both virtual and physical devices. That’s exactly what you get with Cisco Enterprise NFV. Our robust architecture includes four primary components: the Enterprise Service Automation (ESA) application, which runs on the Cisco Application Policy Infrastructure Controller Enterprise Module (APIC-EM); Cisco Enterprise Network Functions Virtualization Infrastructure Software (NFVIS); a growing list of available virtual network functions (VNFs); and a unified hardware host platform (see Figure 1).

Figure 1. Basic Cisco Enterprise NFV Architecture



Let’s take a look at what each architecture component does:

- **ESA: Automates Service Deployments Across Multiple Sites at Once**

The Enterprise Service Automation (ESA) application automates your ability to deploy VNFs at multiple sites all at once using a convenient interface and preestablished templates. It also allows VNFs to intercommunicate with one another with no integration effort on your part.

The app runs on top of APIC-EM, Cisco’s software-defined networking (SDN) controller.

You can use ESA to map a particular network configuration profile to sites within a region and populate each one with the common attributes they share. You can do this automatically across both virtual and physical branch sites.

You get central, one-touch orchestration for your entire virtualized network, including third-party VNFs. ESA offers a standardized site design, centralized provisioning, service chaining, lifecycle management, and automated monitoring of the Cisco Enterprise NFV solution. Basically everything you need to design, provision, and manage your network is all on a single, fully integrated platform.

- **NFVIS: Create Virtual Appliances**

Enterprise NFVIS provides the Linux-based virtualization layer that allows you to easily add VNFs to your network. An integrated hypervisor lets you create and run network functions as virtual appliances using a graphical user interface. Programmable, open APIs allow enhanced applications, such as the ESA app described earlier, to work in the virtual branch. A Plug-and-Play (PnP) Application agent automatically connects to a central orchestrator in the APIC-EM, from which it downloads profiles to automatically set up WAN interface configuration details for a VNF and then lets the VNF boot right up with that configuration. Lifecycle management capabilities built into NFVIS also manage your VNFs and monitor their performance.

- **VNFs: Virtual Versions of Traditional Network Functions**

Cisco Enterprise NFV supports Cisco’s best-in-class VNFs as well as non-Cisco VNFs. Cisco’s robust services available with Enterprise NFV include Cisco routing (Integrated Services Virtual Router, or ISRV), Cisco firewall (ASA), Cisco WAN acceleration (vWAAS), and Cisco wireless LAN controller (vWLC) functions. Cisco ONE provides license portability from physical devices to software components, protecting your investment and creating the easiest path to virtualization.

- **Host Platforms: Your Choice**

You have your choice of hardware upon which you can deploy Cisco Enterprise NFV. You can use a Cisco ISR 4000 router with a Cisco UCS E-series server module, a Cisco UCS C-series server, or a Cisco-provided x86-based server as your host platform today. Running multiple network infrastructure functions on a single box conserves budget by cutting back capital expenditures and reducing space requirements for housing equipment.

Sample Use Cases

Virtualizing network functions with centralized control delivers benefits to organizations in any industry that want to bring up sites and services quicker. Table 1 provides examples of how the technology is being used in a couple of industries already.

Table 1. Technology Use Examples

| | |
|---------------------------|--|
| Air transportation | <p>Real estate costs at airports to service airlines are increasing. Air transportation services can save on these costs and transform the travel experience by:</p> <ul style="list-style-type: none"> • Designing, managing, and provisioning critical airline services for multiple locations all from a single, central platform with Cisco ESA • Rolling out new services across multiple airports and hubs without the need for expensive truck rolls at each site • Freeing up valuable airport real estate by reducing the number of hardware platforms and delivering services in a faster and easier way with trusted software-based services (Cisco routing, firewall, and WAN acceleration VNFs), orchestration, and management |
| Oil and gas | <p>High IT operational and infrastructure costs, especially for remote locations, have affected the oil and gas industry. An organization within this industry can achieve operational efficiency by:</p> <ul style="list-style-type: none"> • Lowering IT operations and infrastructure costs, especially at remote locations, with NFVIS • Monitoring services at all of its sites with ESA • Consolidating critical services for all locations on a standardized platform with trusted Cisco routing, firewall, wireless LAN controller, and WAN acceleration VNFs • Keeping current operational standards with best-in-class services |

Why Cisco?

Cisco is the only place to find a complete enterprise virtualization solution, all built using our industry-leading, tried-and-tested designs and best practices. Designed with openness in mind, our solution works on the most diverse networks. With fewer devices to manage, you'll have fewer changes to make and will be able to do things faster without having to worry about productivity bottlenecks. That makes controlling your network services easier and allows you to redefine your network with software.

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Financing to Help You Achieve Your Objectives

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Next Steps

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