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7850 NETWORK SERVICES GATEWAY-C

Why choose the 7850 NSG-C

- SDN-based branch networking for the cloud IT era
- Flexible configuration of Gigabit Ethernet ports
- Policy-based branch traffic offload
- Encryption services for ingress/egress traffic
- Future expansion support using USB interfaces

Front

Back

The Nuage Networks 7850 Network Services Gateway (7850 NSG-C) is optimized for compact branch networking to drive the connectivity required by today's cloud IT environments.

Based on the industry's most comprehensive software-defined networking (SDN) solution, the 7850 NSG-C seamlessly integrates into the Nuage Networks Virtualized Network Services (VNS) solution. The 7850 NSG-C is used to connect small branch locations to the enterprise SD-WAN with optimal network efficiency and centralized configuration management from the Nuage Networks Virtualized Services Platform (VSP). The solution offers multiple service scenarios, namely Layer 2 VPN, Layer 3 VPN, and internet breakout.

The 7850 NSG-C is a small desktop device, and can be shipped and installed at an enterprise location without requiring any network engineering expertise. Because it is centrally managed, it improves the efficiency and productivity of branch operations while eliminating the need for any on-site IT support. The 7850 NSG-C is on-boarded using a secure bootstrapping process that uses zero-, one-, or two-factor authentication depending on the branch and installer trust-model and security posture. Once bootstrapped, it enables instant networking capabilities at the branch.

What's more, the 7850 NSG-C easily connects to any provider's IP underlay network (private, public, or hybrid) over any access using its WAN-facing Gigabit (RJ-45) Ethernet ports. The policy-based network automation capabilities are seamlessly extended to the branch allowing users to automatically connect to any applications in any cloud (public or private). As a result, the delivery and consumption of network services is greatly simplified.

In addition, multiple network functions can be service chained and, using policy-based routing, traffic can be routed to one or more appliances, (such as firewalls or IDS/IPS systems), or virtualized functions at any location before being forwarded to the final destination.

For locations that have high availability requirements, the 7850 NSG-C can be deployed in a high-availability configuration providing device, link, and subnet-level resiliency models. It also supports network uplink redundancy for protection of WAN services.

The Gigabit Ethernet LAN-facing ports of the 7850 NSG-X can be used for logical and physical isolation, as well as segmentation of users or applications to support creation of security zones aligned to the enterprise's IT practices.

For enterprises that require IPsec encryption for overlay traffic, the 7850 NSG-C has a built-in hardware-based crypto acceleration capability, ensuring optimized forwarding for both unencrypted and encrypted communications. The 7850 NSG-C supports Application Aware Routing (AAR) to ensure that each type of application traffic is forwarded over the most efficient underlay network with selectable failover modes.

Features

Small location optimized density - The desktop footprint and energy-efficient design of the 7850 NSG-C provides flexibility for desktop installations. The 7850 NSG-C expands the 7850 NSG portfolio with a cost-effective system optimized for sites with bandwidth requirements up to 100Mbps while retaining the flexibility and functionality of the larger 7850 NSGs. With the flexibility in the base system to reconfigure the three Gigabit Ethernet ports for LAN or WAN operation, 7850 NSG-C provides options for both logical and/or physical separation of network services within the branch.

Proven operating system - The 7850 NSG-C utilizes the widely used network operating system of the Nuage Networks VNS SDN solution. Operators can be confident that the 7850 NSG-C is completely interoperable with global IP network services and that its robust networking environment has been field proven.

Management efficiencies - As part of the Nuage Networks VNS, the 7850 NSG-C is centrally managed. Network engineering expertise is not required during installation or for day-to-day operation. Configuration changes are centrally administered and pushed to the location using policy.

Network function optimization - The Nuage Networks VNS solution provides SDN-based optimization of network functions. With Nuage Networks VNS, complex functions can be virtualized and chained into the branch office connection. For location-specific requirements, the 7850 NSG-C supports advanced functions such as DHCP server, quality of service, and advanced traffic filtering rules.

Selective uplink forwarding with Application Aware Routing - Today's cloud IT consumption models are straining traditional IP-VPN uplinks. With the 7850 NSG-C, the option to split traffic across a primary WAN uplink and a secondary WAN link, such as business internet services, is possible, allowing enterprises to match application traffic to the best-fit WAN link. Links and paths are continuously monitored by network performance monitoring probes that record delay/loss/jitter histograms, allowing for centralized analysis and reporting of the SD-WAN. With options to encrypt SD-WAN traffic over any transport method, the 7850 NSG-C provides flexibility to grow the bandwidth to the branch without compromising corporate integrity.

Traffic security - The 7850 NSG-C and the Nuage Networks VNS solution support encryption based on IPsec. Through the solution's central policy engine, the enterprise has complete control of which traffic is encrypted. In addition to the enterprise SD-WAN IPsec features, the VNS environment can integrate using standards-based IPsec into other IPsec gateways such as those offered by SaaS vendors or legacy VPN concentrators for migration compatibility.

Multiple WAN uplink support - As an SDN-based solution, the 7850 NSG-C supports a mix of multiple WAN uplinks. These can include a primary link using private and alternative (either active/active or active/standby) connections over diverse access IP technologies, such as IP/MPLS-based VPNs, the internet, or mobile broadband. WAN uplink usage policies can be statically defined, or dynamically used based on application policies and uplink performance.

High availability - For locations that have high availability requirements, the 7850 NSG-C may be deployed in active/standby pairs, allowing for protection of WAN/LAN services in the event of device or circuit failure. Seamless failover and recovery of all failure scenarios provide WAN administrators with peace of mind.

Physical LAN isolation - With reconfigurable Ethernet ports, the 7850 NSG-C provides the versatility to assign specific ports or VLANs to individual subnets at the location. This can provide isolation for specific hosts, DMZs, or isolated subnets.

Nuage Networks VNS

Nuage Networks VNS provides a comprehensive networking service that removes the limitations that exist with traditional wide area networks. Nuage Networks VNS offers:

- Extensive service functionality that enables flexible branch networking

- Unlimited geographic reach by abstracting the virtualized network service from the underlying IP connectivity, enabling freedom to use more than a single connectivity service

- Ability to adapt to the dynamic business environment and respond quickly to simple move, add, and change requests

- Support for virtualized network functions, which eliminates the need for additional hardware (firewalls and routers) and associated professional services.

Software features

Automation	■ Secure 7850 NSG-C activation and authentication (X.509) ■ 7850 NSG-C software lifecycle management ■ Policy server northbound RESTful API and push-based notification-driven event bus
Management	■ Virtualized Services Platform enables a unified management plane for cloud datacenter services (VCS) and software-defined WANs (VNS) ■ Centralized, template-based policy management for all managed objects, (including service, security, and QoS) ■ Multi-tenanted with role-based administration, optional LDAP integration
Network services	■ Full-mesh and hub-and-spoke topologies ■ Layer 2 and Layer 3 Virtual Private Network (VPN) services ■ Local internet breakout service ■ 802.1Q locally significant VLANs ■ Overlay services supporting VXLAN and VXLANoIPsec encapsulation with integration into other IPsec environments (IKEv1/v2) ■ DHCPv4 server, PAT, 1:1 NAT, underlay offload ■ Dynamic NAT traversal ■ Flow-based WAN uplink load balancing, advanced traffic steering ■ IPv6-ready hardware with software support in future releases ■ Integration with Border Router and Underlay Border Router functions deployed within the VNS environment to provide boundaryless SD-WAN connectivity
Traffic steering	■ Application Aware Routing (AAR) with Application Detection (AD) to redirect traffic to best fit uplink based on policy ■ Network Performance Measurement (NPM) monitors overlay performance (round trip delay, packet loss, jitter) and make an intelligent forwarding decision based on application-based SLA requirements
Quality of Service	■ DSCP-based classification with DSCP rewrite options ■ Ingress QoS classification and rate limiting ■ Hierarchical QoS color-aware egress shaping based on 4 WRR queues ■ Network control queue for control plane traffic
Security services	■ Directional Layer 2 to Layer 4 traffic classification with accept/deny/redirect actions ■ Template-based domain-wide ingress and egress stateful and reflexive ACL ■ Advanced dynamic security policy creation ■ Policy auditing through template inheritance ■ Integration with Nuage Networks Virtualized Security Services (VSS) to detect, prevent, and respond to security events in the SD-WAN
Encryption	■ Secure key generation and distribution ■ IPsec authentication: SHA1, SHA2 ■ IPsec encryption: 3DES, AES-128, AES-192 and AES-256 ■ Authenticated and encrypted control plane connections
Analytics and visibility	■ Real-time analytics engine integrated within the Nuage Networks Virtualized Services Directory (VSD) ■ Central usage statistics collection for ports, flows, QoS queues ■ Event-based logging ■ Secure syslog integration ■ Remote port mirroring ■ Centralized CLI access for centralized diagnostics with the ability to enable/disable remote CLI access
High Availability	■ Cluster-based policy and statistics collection infrastructure ■ Policy federation supporting geo-redundancy and load-balancing ■ Scale-out control-plane architecture leveraging federation based on MP-BGP ■ High availability configuration for 7850 NSG-C with per-subnet resiliency ■ WAN uplink redundancy options with selective uplink forwarding ■ Per-7850 NSG-C Active/Active management and control plane connections

Hardware specifications

CPU	Intel E3825 (2 cores, 1.3 GHz)
Memory	2GB
Storage	16GB
Interfaces	■ 3 x 10/100/1000BASE-T Gigabit Ethernet (RJ45) ■ 1 x USB 2.0 Standard-A female ■ 1 x USB 3.0 Standard-A female ■ 1 x RS-232 RJ-45 console
Dimensions	124.26 mm x 19.4 mm x 119.66 mm/4.8 in. x 0.76 in. x 4.7 in. (width x depth x height)
Weight	0.5 kg/1.1 lb
Operating temperature	0° to 40° C / 32° to 104° F
Operating relative humidity	5% to 90% at 40° C
Power	■ Draw: 36 W (maximum) ■ Input: 100 to 240 V at 50-60 Hz, full range ■ Connector: C5
Cooling	Passive cooling
Crypto-Acceleration	CPU integrated Intel® QuickAssist
Compliance agency certifications	Safety: ■ EN 60950-1 2nd Ed CE-Mark ■ IEC 60950-1 2nd Ed CB Scheme ■ CSA/UL 60950-1 2nd Ed NRTL EMC: ■ ICES-003 Class B ■ FCC Part 15 Class B ■ EN 55032 Class B ■ CISPR 32 Class B ■ AS/NZS CISPR 32 Class B ■ VCCI Class B ■ KCC Korea-Emissions & Immunity (in accordance KN32/35) ■ IEC/EN 61000-3-2 Power Line Harmonics ■ IEC/EN 61000-3-3 Voltage Fluctuations and Flicker ■ EN 55024 ■ IEC/EN 61000-4-2 ESD ■ IEC/EN 61000-4-3 Radiated Immunity ■ IEC/EN 61000-4-4 EFT ■ IEC/EN 61000-4-5 Surge ■ IEC/EN 61000-4-6 Conducted Immunity ■ IEC/EN 61000-4-8 Magnetic ■ IEC/EN 61000-4-11 Voltage Interruptions ■ EN 55011 Class B ■ EN 55022 Class B
Security	Built-in Trusted Platform Module to ensure integrity of system, operating system, and confidentiality of management and data-plane encryption
Installation	Desktop installation