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7850 NETWORK SERVICES GATEWAY-E200/300 SERIES

Why choose the
7850 NSG-E200/300 series

- SDN-based branch networking for the cloud IT era
- SFP-based Gigabit Ethernet (GigE) optical uplinks
- Integrated LTE uplink option
- Integrated Wi-Fi access point option
- Flexible configuration of GigE ports
- Policy-based branch traffic offload
- Encryption services for ingress/ egress traffic
- Future expansion support using USB port

front 7850 NSG-E200/300 back

front 7850 NSG-E202 back

front back
7850 NSG-E206/306/207/307/208/308

Nuage Networks 7850 Network Services Gateway (7850 NSG-E200/300 series) enables branch office networking to evolve to meet the challenges of wide area network services in Cloud IT environments. Based on the industry's most comprehensive software-defined networking (SDN) solution, the 7850 NSG-E200/300 series seamlessly integrates into the Nuage Networks Virtualized Network Services (VNS) solution. The 7850 NSG-E200/300 series is used to connect private and public datacenters to branch locations. The solution offers multiple service scenarios, namely Layer 2 VPN, Layer 3 VPN, and Internet breakout. The 7850 NSG-E200/300 series is one of the models and form factors for the NSG series, including the 7850 NSG-C, NSG-E, 7850 NSG-X, and the virtual NSG. Using the NSG-V software image, the virtual NSG can be deployed as a software-only form factor on a customer-provided appliance or as a virtual machine.

The Nuage Networks 7850 NSG-E200/300 series has a small footprint, and can be shipped and installed at an enterprise branch location without requiring any network engineering expertise. Because the 7850 NSG-E200/300 series 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-E200/300 series 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.

The 7850 NSG-E200/300 series easily connects to any provider's IP underlay network (private, public or hybrid) over any access using its WAN-facing 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). Thus, 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 branch locations that have high availability requirements, the 7850 NSG-E200/300 series can be deployed in a high-availability configuration providing device, link, and subnet-level resiliency models. The 7850 NSG-E200/300 series also supports network uplink redundancy for protection of WAN services.

The LAN-facing ports of the 7850 NSG-E200/300 series can be used for logical and physical isolation and 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-E200/300 series has built-in hardware-based cryptographic acceleration capabilities, ensuring optimized forwarding for both unencrypted and encrypted communications. The 7850 NSG-E200/300 series supports path selection to ensure that priority traffic is forwarded over the desired underlay network with selectable failover modes.

Features

Small branch optimized density - The small footprint and energy efficiency of the 7850 NSG-E200/300 series provides flexibility for both cabinet (rack mount) or desktop installations. With the flexibility for dual WAN uplink and four dedicated LAN ports, the 7850 NSG-E200/300 series provides options for both logical and/or physical separation of network services within the branch.

Proven operating system - The 7850 NSG-E200/300 series utilizes the widely used network operating system of the Nuage Networks VNS SDN solution. Operators can be confident that the 7850 NSG-E200/300 series 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-E200/300 series is centrally managed. Network engineering expertise is not required at the branch during installation or for day-to-day operation. Configuration changes are centrally administrated and pushed to the branch 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 branch-specific requirements, the 7850 NSG-E200/300 series supports advanced functions such as DHCP server, quality of service, and advanced firewall rules. The flexibility of SDN provides the opportunity for deployment of third-party functions on the 7850 NSG-E200/300 series should market demands arise.

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

Selective uplink forwarding - Today's Cloud IT consumption models are straining traditional IP-VPN uplinks. With the 7850 NSG-E200/300 series, the option to split traffic across a primary WAN uplink and a secondary link, such as business internet services, is possible. With options to encrypt this traffic based on the transport method, the 7850 NSG-E200/300 series provides flexibility to grow the bandwidth to the branch without compromising corporate integrity.

Traffic security - The 7850 NSG-E200/300 series and the Nuage Networks VNS solution support per-connection encryption based on IPsec. Through the solution's central policy engine, the enterprise has complete control of which traffic is encrypted.

Multiple WAN uplink support - As an SDN-based solution, the 7850 NSG-E200/300 series 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 the Internet or mobile broadband.

High availability at the branch - For branch locations that have high availability requirements, the 7850 NSG-E200/300 series 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 multiple LAN ports, the 7850 NSG-E200/300 series provides the versatility to assign specific ports to individual hosts within the branch environment. This can provide isolation for IP voice trunks (IP-PBX) or IP security cameras. It can also be used to provide completely separated network environment(s) from the business LAN, which could then be used for public kiosk access or public Wi-Fi® networking.

Software features

Automation	■ Secure activation and authentication (X.509) ■ Software lifecycle management ■ Policy server northbound ReSTful API and push-based notification-driven event bus
Management	■ Unified management plane for datacenter (Nuage Networks Virtualized Services Platform) and WAN (Nuage Networks 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 ■ 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
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 reflexive ACL ■ Advanced dynamic security policy creation ■ Policy auditing through template inheritance
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	■ Central usage statistics collection for ports, flows, QoS queues ■ Event-based logging ■ Secure syslog integration ■ Remote port mirroring
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 with per subnet resiliency ■ WAN uplink redundancy options with selective uplink forwarding ■ Independent active/active management and control plane connections per system

NSG-E200/300 series models

Model	Part number	CPU	Memory	Storage	802.11ac Access point	Cat 6 LTE uplink
NSG-E200	3HE11897AB	C2558 (4 cores, 2.4 GHz)	4 GB	16GB		
NSG-E202	3HE13533AA				■	
NSG-E206	3HE13959AA				■	■
NSG-E207	3HE14989AA				■	■
NSG-E208	3HE15341AA				■	■
NSG-E300	3HE11898AB	C2758 (8 cores, 2.4 GHz)	8 GB			
NSG-E306	3HE13960AA				■	■
NSG-E307	3HE13961AA				■	■
NSG-E308	3HE15342AA				■	■

Hardware specifications

CPU	Intel C2000 Series
Interfaces	■ 2 x dual PHY (10/100/1000BASE-X or 10/100/1000BASE-T) GigE ■ 4 x 10/100/1000BASE-T GigE (RJ45) ■ 1 x USB 2.0 Standard-A female ■ 1 x RS-232 RJ-45 console
Wireless capability	■ 802.11 b/g/n/ac access point ■ Cat 6 LTE HSPA+ uplink with dual SIM
Dimensions	250 mm x 190.4 mm x 44 mm/9.8 in. x 7.5 in. x 1.7 in. (width x depth x height)
Wi-Fi access point	■ Supports 2.4 GHz or 5 GHz channel operation ■ 2.4 GHz channels: 1 to 13 ■ 5 GHz channels: 36, 38, 40, 42, 44, 46, 48, 149, 151, 153, 155, 157, 159, 161, 165 ■ Antenna: Omni-directional Dual Band Antennas ■ Standards: 802.11a/b/g/n/ac ■ Max BSSID: 8 SSIDs (7 configurable) ■ Encryption: AES, TKIP, CCMP ■ Authentication methods: PSK (Pre Shared Key) – WPA/WPA2, WEP, Open, Passthrough Captive Portal
Integrated LTE uplink	■ Bands supported NSG-E206/306: 1, 2, 3, 4, 5, 7, 8, 12, 13, 20, 25, 26, 29, 30, 41 ■ Bands supported NSG-E207/307/208/308: 1, 3, 5, 7, 8, 11, 18, 19, 21, 28, 38, 40, 41 ■ Antenna: Omni-directional Antennas ■ Standards: LTE Category 6, HSPA+, UMTS ■ SIM interface: □ Dual (primary/backup) slots, Standard size □ Tamper resistant
Weight	2.3 kg/5.06 lb
Operating temperature	0° to 40°C / 32° to 104°F
Operating relative humidity	5% to 90%, non-condensing
Storage temperature	-20° to +70°C/-4° to +158°F
Power	■ Draw: 60 W (maximum) ■ Input: 100 to 240 V at 50-60 Hz ■ Connector: C14
Cooling	1 x fan; maximum 37.5 dBA
Security	Built-in Trusted Platform Module to ensure integrity of system, operating system, and confidentiality of management and data-plane encryption
Installation	Optional rack mount kit that mounts the 7850 NSG-E200/300 in 1 Rack Unit

Compliance agency certifications

Type	Standard	200	202	206	207	208	300	306	307	308
Safety	EN 60950-1 2nd Ed CE-Mark	■	■	■	■		■	■	■	
	IEC 60950-1 2nd Ed CB Scheme (all National Deviation, including the Australia AS/NZS 60950.1)	■	■	■	■		■	■	■	
	CSA/UL 60950-1 2nd Ed NRTL	■	■	■			■	■		
	FCC OET/ RSS-102/ EN62311 RF Exposure		■	■	■			■	■	
	CCC	■	■			■	■			■
EMC	EN 55032 class B	■	■	■	■		■	■	■	
	CISPR 32 class B	■	■	■	■		■	■	■	
	IC ICES-0003 Class B	■	■	■			■	■		
	FCC Part 15 Class B	■	■	■			■	■		
	EN 55024	■	■	■	■		■	■	■	
	IEC 61000-3-2	■	■	■	■		■	■	■	
	IEC 61000-3-3	■	■	■	■		■	■	■	
	EN 301 489-1		■	■	■			■	■	
	EN 301 489-17 (WiFi)		■	■	■			■	■	
	EN 301 489-52 (LTE)			■	■			■	■	
	AS/NZS CISPR 32 Class B	■	■		■		■		■	
	VCCI- CISPR32 (Japan)	■	■		■		■		■	
	BSMI CNS 13438 (Taiwan)	■	■		■		■		■	
	TCVN 7189 (Vietnam)	■	■		■		■		■	
	KN32, KN35 (South Korea)	■	■		■		■		■	
	KN 301 489-1		■		■				■	
	KN 301 489-17 (WiFi)		■		■				■	
	KN 301 489-52 (LTE)				■				■	
	CCC	■	■			■	■			■
WiFi	RSS-GEN		■	■				■		
	RSS-247		■	■				■		
	FCC Part 15C (802.11b/g/n)		■	■				■		
	FCC Part 15E (802.11a/n, bands 1 and 4)		■	■				■		
	FCC Part 15E (802.11ac)		■	■				■		
	EN 300 328 (2.4GHz)		■	■	■			■	■	
	EN 301 893 (5GHz)		■	■	■			■	■	
	SRRC(MII)		■			■				■
LTE	FCC Part 22			■				■		
	FCC part 24			■				■		
	FCC part 27			■				■		
	FCC part 90			■				■		
	RSS-GEN			■				■		
	RSS-132 (Band 5)			■				■		
	RSS-133 (Band 2)			■				■		
	RSS-139 (Band 4)			■				■		
	RSS-199 (Band 7)			■				■		
	RSS-130 (Band 12 & 13)			■				■		
	EN 301 908-1 (WCDMA+LTE)			■	■			■	■	
	EN 301 908-2/13 (LTE)			■	■			■	■	
	AS/CA S042.1, AS/CA S042.4				■				■	
	SRRC(MII)					■				■

Compliance agency certifications (cont.)

Type	Standard	200	202	206	207	208	300	306	307	308
Directives, Regional Approvals, and Certifications Compliance	EU Directive 2014/53/EU (RED)	■	■	■	■		■	■	■	
	EU Directive 2014/30/EU (EMC)	■	■	■	■		■	■	■	
	EU Directive 2014/35/EU (LVD)	■	■	■	■		■	■	■	
	EU Directive 2012/19/EU (WEEE)	■	■	■	■		■	■	■	
	EU Directive 2011/65/EU (RoHS2)	■	■	■	■		■	■	■	
	China RoHS	■	■			■	■			■
	China: CCC, NAL	■	■			■	■			■
	China: SRRC		■			■				■
	Taiwan: BSMI Mark	■	■		■		■		■	
	Australia/NZ: RCM Mark	■	■		■		■		■	
	South Korea: KC Mark	■					■			
	Japan: VCCI Mark	■	■		■		■		■	
	Europe: CE Mark	■	■	■	■		■	■	■	
	USA: FCC	■	■	■			■	■		
	Canada: IC	■	■	■			■	■		

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