Nokia 7705 Service Aggregation Router-1

Release 26

The Nokia 7705 Service Aggregation Router (SAR)-1 delivers versatile services and applications in a compact, fixed platform. It provides IP/MPLS/Ethernet demarcation and branch office connectivity, ensuring seamless and efficient network operations to meet the demands of evolving mission-critical enterprise and telecommunication provider networks.

Overview

The Nokia 7705 SAR-1 is designed to deliver advanced capabilities, with a fully programmable datapath that provides enhanced features today and the flexibility to evolve with changing requirements. It uses the Nokia Service Router Operating System (SR OS), which powers some of the most demanding and dynamic Ethernet and IP/MPLS networks. In addition, comprehensive built-in security features enable network operators to safeguard against cybersecurity threats and help protect sensitive data.

Versatile capabilities

The 7705 SAR-1 is built with a fully programmable datapath that enables it to meet current feature requirements while accommodating new services and standards as they evolve. This enables network operators to protect their investments by integrating new capabilities as they emerge and adapting to evolving network requirements. Industry-proven IP/MPLS service functions, security, and reliability are delivered by SR OS, the operating system of the 7705 SAR-1.

The 7705 SAR-1 inherits the reliability and ongoing evolution of SR OS, supporting the industry's move toward automation, programmability, and agility for scalable and secure network connectivity.



7705 SAR-1

Compact and power saving

All interfaces and power supply inputs on the 7705 SAR-1 are accessible from the front. Featuring a front-to-back airflow design and a rack-mountable 1 RU form factor with a depth of 18.9 cm (7.4 in.), the 7705 SAR-1 provides a compact footprint for easy and efficient deployment. Additionally, the system offers significantly low power consumption while providing redundant power inputs for enhanced reliabilit.

Granular services offering

Maintaining end-to-end Quality of Service (QoS) for different types of traffic is critical, as not all traffic has the same requirements. Hierarchical QoS, traffic classification, traffic management policies, and QoS statistics and monitoring are among the capabilities of the 7705 SAR-1. These features make the 7705 SAR-1 well suited for multi-tenant applications and service provider deployments that require high-performance, SLA-compliant services and efficient network resource utilization.

Network security

The Nokia 7705 SAR-1 offers a multifaceted approach to security. It supports traffic encryption through IPsec, NGE, and MACsec[1]. NAT capabilities enhance security by obfuscating internal addresses and providing firewall-like functionality. It also incorporates Trusted Platform Module (TPM) 2.0 technology and supports secure and measured boot to strengthen system integrity.

Automation

The 7705 SAR-1 simplifies and automates network operations by leveraging the model-driven network management capabilities of Nokia SR OS. It is managed by the Nokia Network Services Platform (NSP), which provides an extensive suite of service management features to automate end-to-end service provisioning, operations, administration, and maintenance. In addition, the system offers zero-touch provisioning (ZTP), which enables automatic node configuration. These capabilities enhance the end-user experience while reducing operating costs.

The model-driven management capabilities of SR OS enable configuration and state management using a YANG-based CLI, the NETCONF protocol, and gRPC/gNMI interfaces. They also support real-time streaming telemetry through gRPC and gNMI subscriptions, enabling automated operations and simplified network monitoring.

Hardware features

The 7705 SAR portfolio of products is available in a range of variants to suit a broad range of mission-critical enterprise and telecommunication providers applications. Please visit the 7705 SAR web page to learn more about the different variants available.

1 Future software deliverable

Technical specifications

Table 1. Nokia 7705 SAR-1 platform specifications

Feature	7705 SAR-1
System throughput: Full duplex (FD)	Up to 50 Gb/s
Ports	• 10 x 10G SFP+/SFP, including 4 x MACsec-capable 10G ports* • 6 x 1G SFP
Control interfaces	Console, management, USB
Indicators	• Management, power supply status LEDs • Per port link and activity status LEDs • System (Stat), fan status LED
Hardware redundancy	Power inputs, cooling fans
Dimensions	• Height: 4.3 cm (1.7 in); 1 RU • Width: 44.45 cm (17.5 in) • Depth: 18.9 cm (7.4 in) • Fits in standard 19-in rack
Power	• AC input (rated): 100 V to 240 V • DC input (rated): -48 V to -60 V
Cooling	• Internal non-replaceable fans • Front-to-back airflow
Normal operating temperature range	0°C to +40°C (up to 1800m) (32°F to +104°F) sustained
Shipping and storage temperature range	-40°C to +70°C (-40°F to +158°F)
Normal humidity	5% to 95%, non-condensing

* MACsec is a future deliverable

Software features

The 7705 SAR-1 supports, but is not limited to, the following SR OS software features[2].

Services

- Eth PW and VPLS with tLDP over MPLS/GRE
- Eth PW and VPLS with BGP over MPLS/GRE
- EVPN-VPWS (including MH'ing, All Act, single Act)
- EVPN-VPLS (including MH'ing, All Act, single Act)
- R-VPLS
- Pseudowire redundancy
- Dual-homed VPWS/VLL
- STP, RSTP, MSTP
- IGMP/MLD snooping in VPLS services
- GRE Termination on Interface IP Address
- Null, dot1q, and QinQ SAPs
- VPLS FDB management
  - Per Service, per SAP
  - MAC learning toggle
  - MAC limit
  - MAC discard-unknown destination
  - MAC protect
- Internet access (IES services)
- RFC 4364 IPv4 VPNs over MPLS / GRE
- RFC 4659 IPv6 VPNs over MPLS / GRE
- IPv6 Provider Edge (6PE)

2 This section provides an overview of key features supported. Consult Nokia documentation for detailed feature support, interdependencies, exclusions and exceptions.

- IP VPN inter-AS option B
- GRT lookup and VPRN-to-GRT route leaking
- VPRN and IES spoke-SDP IP interface
- DHCP client on VPRN SAP interfaces
- VLAN translation on L2 Services (including TLDP-based, BGP-based, and EVPNs)
- IP Transport for raw sockets
- L2CP tunneling

Tunnels

- LDP for IPv4 FECs
- LDP LFA, rLFA
- IPv4 SR-ISIS
- IPv4 SR-OSPF
- LFA, rLFA, ti-LFA for Segment Routing
- RSVP-TE LSPs with FRR protection
- MPLS RSVP Fast Reroute (FRR)
- LDP-over-RSVP
- IPv4 SR-TE LSPs
- IPv4 SR policy
  - BGP signalled and static
- PHP for implicit-null or explicit-null
- Implicit-null label
- RSVP-TE LSP and LDP FEC
- BGP label-unicast IPv4 (BGP RFC 3107)
- IPv6 Provider Edge (6PE)
- BGP shortcuts to IPv4 indirect next-hop
- IGP Shortcuts
- LSP redundancy
  - primary, standby and secondary LSPs
- ECMP for MPLS
- LFA, Remote LFA, and TI-LFA
- Local CSPF for RSVP-TE and SR-TE LSPs
- Binding SID for RSVP-TE and SR-TE LSPs
- Advertising Link Delay to the IGP LSDB for RSVP-TE and SR-TE
- IS-IS SR-MPLS MT2
- µloop avoidance
- IGP delay normalization

Quality of service (QoS)

- Up to 8 forwarding classes
- Ingress classification based on 802.1p, DSCP, MPLS TC (EXP), IP criteria-based
- Ingress hierarchical policing
  - Multi-tier
  - Flexible mapping to arbiters
- Egress marking of 802.1p, DSCP, or MPLS EXP
- Egress queuing and scheduling based on PIR and MBS
- Egress H-QoS with queue parenting to port scheduler and multi-tier aggregate scheduler
- Flexible mapping of queues to schedulers
- Strict priority and Weighted round robin (WRR) schedulers
- Eth-Bandwidth Notification (BN) driven egress-rate adjustment

Filters

- Ingress IPv4 and IPv6 filters
- Egress IPv4 and IPv6 filters
- IP filter override for R-VPLS services
- All common L3/L4 match criteria
- Ingress PBR actions
- Filter logging
- Filter Rate-Limit Action
- Management Access Filter
- dCPU policers including dynamic instantiation

IP security (IPsec)

- IKEv1/v2 tunnels
- IKEv2 authentication methods
- Remote-access address assignment
- DES/3DES/AES encryption
- MD5/SHA authentication
- Diffie-Hellman groups

Network address translation 44

- Source address and port translation
- NAT pools
- 1:1 NAT
- Traffic steering
- Port forwards
- Multiple NAT pools
- NAT mapping logs
- Interface IP based NAT

Network Group Encryption

- SDP encryption
- VPRN encryption
- MP-BGP VPRN encryption
- L2 pseudo-wire template
- Service encryption over MPLS/GRE
- Router interface L3 encryption
- AES128/256
- SHA256/512

IP routing

- Static routes
- OSPFv2/v3
- IS-IS
- RIP/RIPng
- BGP4 and MP-BGP
- Edge PIC
- ARP/ND
- ICMP/ICMPv6
- ECMP
- Weighted ECMP
- BGP routes over RSVP-TE
- VRRP
- IGMP v1/v2/v3
- MLDv1/v2
- PIM

Platform

- Local and remote mirroring
- NTP
- LAG
- LACP
- MC-LAG
- IEEE 802.1Q VLANs
- IEEE 802.1ad QinQ
- Jumbo frames
- Interface statistics
- Network port
- Hybrid port
- Access port

OAM

- IEEE 802.1ab LLDP
- TWAMP/STAMP reflector
- TWAMP-light/STAMP launch and reflector
- OAM tools - lsp-ping/trace, sdp-ping/sdp-mtu, sdp-keepalive, icmp-ping/traceroute
- IEEE 802.1ag/Y.1731 ETH-CFM FM and PM functions
  - Down MEPs, up MEPs
  - CCM
  - Link trace, Loopback
  - AIS and ETH-TST on down MEPs
  - ITU-T Y.1731 ETH-SLM
  - ITU-T Y.1731 ETH-DM
- ITU-T Y.1731 ETH-BN
- IEEE 802.3ah EFM-OAM
- Link loss forwarding
- Down-when-looped
- LSP BFD
- Single-hop BFD
- Multi-hop BFD
- BFD with 10ms timers, single-hop, multi-hop

System management

- Simple Network Management Protocol (SNMP)
- Model-driven (MD) management interfaces
  - NETCONF
  - MD CLI
  - Remote Procedure Call (gRPC)
- Model-driven (MD) management interfaces
- Comprehensive management with Nokia NSP

Standard compliance[3]

Environmental

- ETSI EN 300 019-2-1; Storage Tests, Class 1.2
- ETSI EN 300 019-2-2; Transportation Tests, Class 2.3
- ETSI EN 300 019-2-3; Operational Tests, Class 3.2
- ETSI EN 300 753; Acoustic Noise, Class 3.2
- GR-3160-CORE

Safety

- AS/NZS 62368.1
- IEC 60529 IP20
- IEC/EN 60825-1
- IEC/EN 60825-2
- IEC/EN/UL/CSA 62368-1

Electromagnetic compatibility

- AS/NZS CISPR 32 (Class A)
- BSMI CNS 15936 (Class A)
- BT GS-7
- EN 300 386
- EN 55032 (Class A)
- EN 55035
- ETSI EN 300 132-1 (AC)
- ETSI EN 300 132-2 (LVDC)
- ETSI ES 201 468
- FCC Part 15 (Class A)
- ICES-003 (Class A)
- IEC 61000-3-2
- IEC 61000-3-3
- IEC 61000-6-2
- IEC 61000-6-4
- IEC CISPR 32 (Class A)
- IEC CISPR 35
- 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 61000-4-11 Voltage Interruptions
- ITU-T K20
- KS C 9832
- KS C 9835
- VCCI (Class A)

Directives and regional approvals

- Directive 2011/65/EU RoHS (including Commission Delegated Directive EU 215/863)
- Directive 2012/19/EU WEEE
- Directive 2014/30/EU EMC
- Directive 2014/35/EU LVD
- BSMI Mark: Taiwan
- CE Mark: Europe
- CRoHS: China RoHS
- KC Mark: South Korea
- RCM Mark: Australia
- VCCI Mark: Japan
- UKCA: United Kingdom

3 System design intent is according to the listed standards. Refer to product documentation for detailed compliance status.



About Nokia

At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering networks that sense, think and act by leveraging our work across mobile, fixed and cloud networks. In addition, we create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs.

Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable and sustainable networks today – and work with us to create the digital services and applications of the future.

Nokia operates a policy of ongoing development and has made all reasonable efforts to ensure that the content of this document is adequate and free of material errors and omissions. Nokia assumes no responsibility for any inaccuracies in this document and reserves the right to change, modify, transfer, or otherwise revise this publication without notice.

© 2026 Nokia

Nokia OYJ
Karakaari 7
02610 Espoo
Finland
Tel. +358 (0) 10 44 88 000

Document code: (October) CID214663