Small Cell Solutions

Enterprise In-Building Solution

E-RAN SN-9000 Service Node

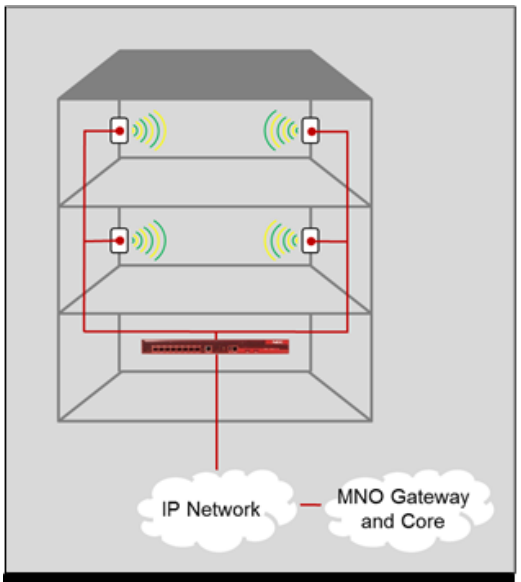
SERVICE NODE CAPABILITIES

- Multi-mode UMTS and LTE coverage
- Enterprise optimized easy installation
- Core network integration
- Self Optimising Networks (SON)
- Carrier grade security
- User and traffic prioritization
- Automatic RF planning
- Ongoing RF optimization
- Onboard applications and managed services
- Backhaul sharing between applications

Scalable Small Cell Services Node for Enterprises and Venue Deployments

Multiple Air Interface Technologies
Multiple Small Cell Applications
One Powerful Enterprise Services Platform

The Enterprise Radio Access Network consists of a Services Node, which controls and manages up to 100 Radio Nodes powered via Ethernet (PoE), providing coverage and capacity for over 1,000,000 sq. ft. of office space. Using a single Services Node, operators can mix many Radio Nodes and deploy targeted coverage for UMTS and LTE to medium and large enterprises within days. The unique architecture dramatically simplifies configuration, RF management, intra-cell mobility and traffic aggregation.



Enterprise RAN connected to operator gateway

The self-organising-network design greatly reduces interference, and supports seamless handovers between small cells. The enterprise-optimised design provides the same ease of installation as that of traditional Wi-Fi equipment, and greatly reduces the time to bring up new small cell sites. Using a common backhaul connection via any Ethernet LAN and an integrated network management system, operators can manage multiple access networks, selectively offload traffic directly to the Internet, and apply traffic policy across access technologies.

NEC's end-to-end E-RAN solution is first to bring to market a small cell Services Node providing 3G UMTS and 4G LTE functionality inside a single, integrated, enterprise premises-based appliance. In addition, the Services Node includes a powerful application hosting platform. These applications use the E-RAN API to access the data, signaling and local intelligence embedded in the wireless network. With the Services Node, wireless operators can offer managed services and new applications across all three wireless interfaces.

With rapid adoption of mobile and cloud computing, the evolving enterprise is shifting rapidly from traditional CAPEX oriented IT infrastructure to more OPEX oriented business models that deliver new applications across smartphone and tablet platforms, using virtualised infrastructure that works across multiple access technologies. Mobile Operators are in a very unique position to enable this new enterprise and build valuable applications and services. With NEC's powerful and flexible Services Node and E-RAN platform, operators can address enterprise demand for reliable coverage and capacity, and also provide managed services to medium to large enterprise customers.

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Key Product Features

Feature	Specification	Feature	Specification
Key Features	Simultaneous multiple air interfaces support up to 100 small cells for each air interface 1,000,000 sq. ft. seamless coverage capacity Auto discovery and provisioning of small cells Self Organising Network for all air interfaces Backhaul Network Sharing and QoS Admission Control and Prioritisation Coordinated Radio Environment Monitoring (REM)	**System Management**	Configuration: remote management and auto configuration using TR-069 Faults and events: TR-069, SNMPv2c, SNMPv3, Syslog Performance: 3GPP counters, KPIs, standard MIBs and NEC MIB Command Line Interface (CLI) via console port and remotely using SSH
HW Features	300K+ hours overall system MTBF Component Redundancy IEEE 1588v2 PTP synchronisation server VLAN traffic separation	**Physical Specification**	Interfaces - 8 x Gbps Ethernet ports - 2 x Gbps SFP Ethernet ports - 1 x RJ45 Console Port (RS-232) - 1 x 10/100 management port Mounting: 1RU (standard 19-inch rack)
Security	Trusted Platform Module (TPM) Secure boot and secure key storage Encrypted file system IPSec encryption X.509 certificate-based authentication (core network and small cells)		Dimensions: 603 x 448 x 44 mm (23.7 x 17.6 x 1.7 in) Weight: 10.7 kgs (23.5 lbs) Electrical: - Power: 450 W rated - Voltage: 100 - 240V - Max Current: 4.5 A Environmental: - Altitude: 0 to 3000 meters (0 to 9843 ft.) - Operating Temp: 0 to 40°C - Storage Temp: -40 to 70°C - Humidity: 7 to 93% non-condensing - Cooling: 5 x speed controlled, hot swappable fans LEDs: 1 x power, 3 x status
Networking Protocols	DHCP server, DHCP proxy IPv4, UDP, TCP, RTP, GTP, IPSec		
UMTS	2400 simultaneous sessions 1000 session-setups per minute 250 Mbps aggregate 3G throughput Inter small-cell soft handover Auto assignment of primary scrambling codes Macro Handover to UMTS and GSM (inter/intra-frequency) Cell Re-Selection from UMTS to LTE CS Macro Hand-in from UMTS Access Overload Control Emergency call prioritization Cell Broadcast (CMAS) Multi-Operator Core Network support Iuh, Iu over IP (IuCS and IuPS) 3GPP Kasumi ciphering	**Regulatory Compliance**	CISPR 22:2008 Class A; EN 55022:2010/AC:2011; EN 55024:2010; EN 61000-3-2:2006/A2:2009; EN 61000-3-3:2008; EN 60950-1:2006/A12:2011 VCCI V-3/2012.04 CAN/CSA-C22.2 NO. 60950-1A-07 (R2012)
LTE	8000 simultaneous sessions 2000 session-setups per minute 1 Gbps aggregate 4G throughput Intra-E-RAN Fast Handover Centrally-Coordinated Dynamic Fractional Frequency Reuse Handover to and from Macro LTE Circuit Switched Fallback (CSFB) Voice over LTE (VoLTE) S1 (S1-C and S1-U) S1-Flex (connectivity to MME/SGW pools) SNOW 3G and AES encryption		