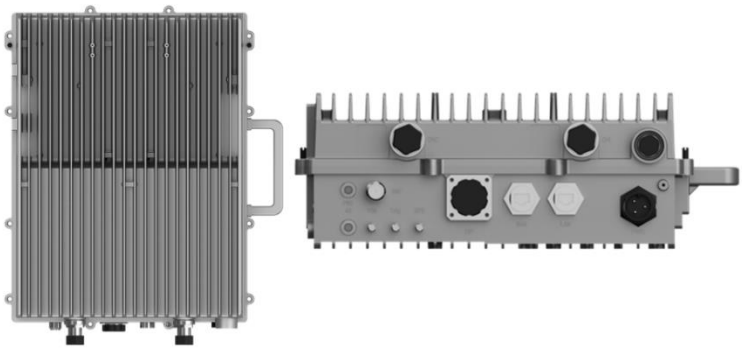
Node-H

Node-H T&W 5G Outdoor Small Cell

Node-H T&W 5G SA Outdoor Small Cell



Deployment specialist brings 5G to market

Carrier-grade RAN solutions for rapid deployment

Node-H has a proven track record of wide-scale deployments at senior operators, and works closely with end-to-end eco-system vendors so operators can source complete or disaggregated solutions for their RAN.

Node-H carrier-grade software powers this standalone, fully-integrated, low-cost T&W 5G Outdoor Small Cell, which operates in the widely-used n78 frequency band.

Node-H brings deep technical know-how to solving real-world issues which has allowed carriers worldwide to deploy millions of cells based on Node-H software.

By working closely with technology partners, Node-H supports end-to-end and disaggregated solutions with different gateways and management systems.

Node-H's LTE and UMTS software suites are widely deployed at operators. This complements the 5G offering to provide a full portfolio of RAN technologies.

The Node-H T&W 5G Enterprise Small cell brings turnkey disaggregated cells to public mobile operator uses cases. It also provides the foundation to rapidly address Private 5G networks in vertical markets such as nomadic networks, real-estate, Industry 4.0 or Campus networks.

The 5G Software Suite supports Centralized Unit (CU) and Distributed Unit (DU), with a clear Control-Plane (CP) and User Plane (UP) split that can be configured in various ways to build 5G RAN technology for small cells.

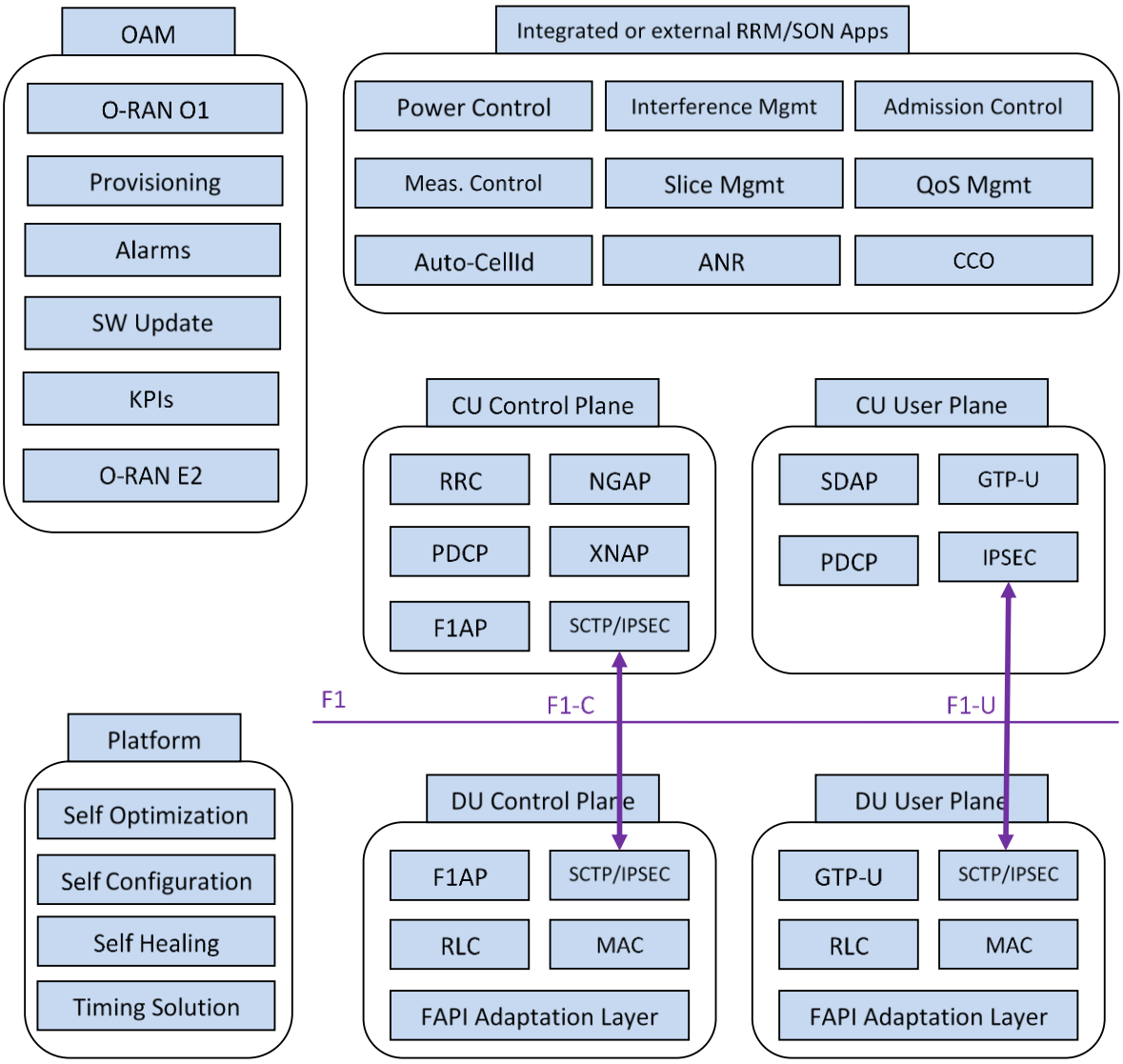
Node-H software follows the standards-based 3GPP architecture, as well as O-RAN and Small Cells Forum defined interfaces, to support interoperability with other vendors. Node-H has focused much effort on interoperability, having integrated Node-H based cells with infrastructure from all of the major network equipment vendors, and received the Chairman's Award from the Small Cell Forum for work on Interoperability.

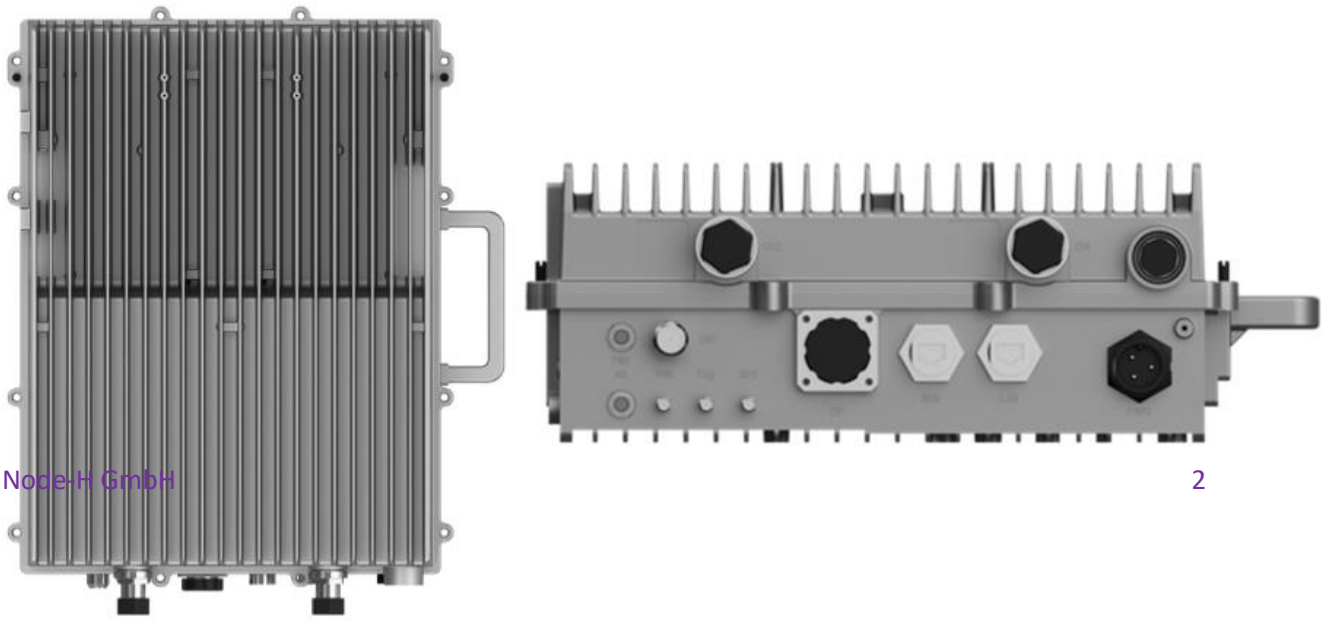
Choose Node-H because…

Node-H has a uniquely experienced team of specialists who cover all of the major technologies required to implement complete RAN solutions.

Node-H integrates its system software, including a comprehensive security solution, management software, SON and RRM, scheduler and L2/L3 protocols, with T&W's hardware design to deliver a ready-to-deploy solution with the lowest TCO.

gNB 5G Application





Features

SA Architecture	The Node-H Askey 5G Standalone Small Cell supports the Option 2 – NR Standalone architecture
Carrier Bandwidth	Up to 100MHz.
Power Management	Configurable up to 40dBm in steps of 0.1dBm.
Voice Calls and Quality of Service	5G VoNR in accordance with 5QI. Comprehensive 5QI support in UL and DL and association with vLAN configuration for end-to-end QoS.
Interference Management	Automatic interference management, ANR for establishing neighbor lists, Admission control.
Mobility	Measurements allow the cell to support 5G inter and intra Cell handovers, core based NG and cell-based Xn handovers are supported.
Network slicing	Multiple slices with network resource isolation.
Operations and Maintenance	Management of the cell is via the O-RAN O1 service models using Netconf/YANG in accordance with the relevant O-RAN specifications. E2 is also supported for research projects.
Security	The security of the platform is assured using the relevant O-RAN specification through the O1 interface. Ciphering with hardware acceleration, Signaling integrity checking. IPSEC uses hardware acceleration, IKE v2 key management, AES, certificate-based security.
Timing Solution	The timing solution supports GNSS and PTP.
3GPP Release	The 3GPP message support corresponds to the 3GPP Release 16 specifications.

Protocol compliance

3GPP Standards (rel16)

TS 38.300 5G; NR; Overall Description; Stage-2
TS 38.321 5G; NR; Medium Access Control (MAC)
TS 38.322 5G; NR; Radio Link Control (RLC)
TS 38.323 5G; NR; Packet Data Convergence Protocol (PDCP)
TS 38.331 5G; NR; Radio Resource Control (RRC)
TS 38.401 5G; NG-RAN; Architecture Description
TS 38.413 5G; NG RAN; NG Application Protocol (NGAP)
TS 38.423 5G; NG RAN; Xn Application Protocol (XnAP)
TS 38.425 5G; NG RAN; NR User Plane Protocol
TS 38.473 5G; NG RAN; F1 Application Protocol (F1AP)
TS 38.474 5G; NG RAN; F1 Data Transport
TS 37.324 5G; NR; Service Data Adaptation Protocol (SDAP)

Small Cell Forum, O-RAN, IETF

SCF 222 5G FAPI
SCF 223 P19 RF Control
SCF 224 Network Monitor Mode
SCF 225 5G nFAPI
O-RAN-WG1-O-RAN Architecture Description
O-RAN A1 interface: Application Protocol Version
O-RAN Near-RT RIC Architecture
O-RAN Near-RT RIC E2 Application Protocol
IPv4/V6 – IETF RFC 791/2460
UDP – IETF RFC 768
SCTP – IETF RFC 4960

Hardware

Category	Sub Category	Item	Specification
5G (FR1) system specification			
Chipset Solution (NPU+QCM)	NPU	Network processor	NXP LS1046A
	Processor	Baseband Processor	FSM10056
	RF	RFIC	SDR9000
		PA	SKY66318-11
		Duplexers/Filter	LFB213G60SG8B831, Murata
	Others	DDR	4 GByte DDR4 , None-ECC
		Flash	4 GByte eMMC, QSPI flash 64MB
		PMIC	PM8005 PMX50
		Clock	PMK8002, CTS VCTCXO
Synchronization	Synchronization scheme	Sync Sources	GPS IEEE 1588
5G Sub-6G RF	Frequency Bands	Frequency Range	n78, from 3700 to 3800MHz
		Standard	3GPP 5G-NR Rel-15
		Duplex	TDD
		Band width (MHz)	100MHz
	Antenna	MIMO Configuration	2 x 2
		Antenna type	N-K
	TX specification	Output power	37dBm (per antenna port)
	Radio conformance	Radio conformance spec.	3GPP TS 38.104, 3GPP TS 38.141-1
Miscellaneous			
	Power	Power Consumption	less than 200W
		External Power Supply	AC/DC power adaptor
	Ethernet		RJ-45 x 2 - 1 Gbps WAN Ethernet : for backhaul - 1 Gbps LAN Ethernet SFP x 1 (10Gbps, for optical backhaul)
	Weight		< 13 Kg
	Operating Temperature		-40 °C ~ +55 °C
	Humidity		5%~95%
	Ingress Protection Rating		IP65
	Lightning Protection		GB/T 17626.5 standard
	User capacity		64 users, VoNR
	3GPP Standard		3GPP 5G-NR Rel-15
	Dimensions	(HxWxD)	355X295X151m

Product specifications are subject to change