Huawei NetEngine AR8000 Enterprise Branch Router Cellular 5G Backup - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

The Huawei NetEngine AR8000 Enterprise Branch Router Cellular 5G Backup represents a purpose-built solution for enterprise headquarters and large branch environments requiring resilient, high-performance WAN connectivity with integrated cellular diversity. As the industry's first enterprise-class access router designed specifically for SD-WAN deployments, the AR8000 series leverages a self-developed SOC chip architecture integrating ARM multi-core processors, NP network processors, and hardware acceleration engines for encryption, traffic management, and FEC codec functions .

The platform's cellular 5G backup capability addresses the critical enterprise requirement for uninterrupted WAN service continuity. By supporting 5G RU (Remote Unit) and 5G SIC (Service Interface Card) modules, the AR8000 enables organizations to deploy high-throughput, low-latency cellular failover that activates seamlessly upon primary link degradation. This architecture is particularly relevant for retail, financial services, and distributed enterprise deployments where primary MPLS or internet circuits require a carrier-grade secondary path .

With forwarding performance reaching 25-30 Gbps (NAT+ACL+QoS, IMIX) and SD-WAN IPsec throughput up to 24 Gbps, the AR8000 ensures that cellular backup does not introduce a performance bottleneck during failover scenarios . The platform's dual-power-module design and hot-swappable component architecture further reinforce its suitability for mission-critical branch connectivity.



ARCHITECTURE & CHASSIS DESIGN

The NetEngine AR8000 series is available in two primary chassis configurations to accommodate varying enterprise scale requirements. The AR8140-12G10XG model occupies a compact 1RU form factor (44.4mm × 442.0mm × 420.0mm) and provides 4 SIC slots, making it suitable for space-constrained branch communications rooms. The AR8700-8 expands to a 2RU chassis (88.1mm ×

442.0mm × 482.8mm) with 8 SIC slots and independent dual MPUs (Main Processing Units), delivering enhanced redundancy and expansion capacity for larger enterprise headquarters deployments .

Both chassis variants feature a non-blocking switching architecture that ensures line-rate forwarding across all interfaces without contention. The fixed WAN port configuration on the AR8140 includes 10×10GE SFP+, 8×GE Combo, and 4 ×GE electrical ports, with all WAN ports capable of being software-switched to LAN operation for deployment flexibility . The AR8700 adds a 1×40GE QSFP+ uplink for high-capacity core connectivity, alongside 8×10GE SFP+ and 8×GE Combo ports .

The chassis design incorporates front-to-rear airflow for thermal management, with hot-swappable fan modules and dual power supply bays (AC or DC) supporting 1+1 redundancy. This mechanical architecture ensures continuous operation during single-component failure events and simplifies field maintenance procedures .

HARDWARE FEATURES

Cellular 5G Backup Integration

The AR8000's 5G backup capability is implemented through dedicated SIC modules that insert into the chassis's service interface slots. The platform supports 5G RU (Remote Unit) configurations, enabling the cellular modem and antenna interface to be deployed remotely from the chassis when signal reception at the equipment rack is suboptimal. This architecture proves particularly valuable in basement communications rooms or shielded enclosures where direct cellular penetration is limited .

When configured in SD-WAN mode, the AR8000 continuously monitors primary link quality through mechanisms including NQA (Network Quality Analysis) and IFIT (In-situ Flow Information Telemetry). Upon detecting degradation or failure, the system executes policy-based traffic steering to the 5G path within milliseconds, maintaining session continuity for critical applications through features such as application identification and intelligent traffic steering .

Performance and Processing

The self-developed SOC architecture integrates a hardware encryption/decryption engine that accelerates IPsec operations without burdening the main processor. This design enables the AR8000 to sustain 22-24 Gbps of SD-WAN IPsec throughput (IMIX) even while the 5G backup path is

active, ensuring that encryption overhead does not compromise failover performance .

The platform's hardware TM (Traffic Manager) engine provides hierarchical QoS (HQoS) capabilities with three-level scheduling and shaping, allowing granular bandwidth allocation across primary and backup links. This proves essential when the 5G path, typically with different bandwidth characteristics than the primary circuit, must accommodate prioritized enterprise traffic during failover .

Expansion and Interface Diversity

Beyond 5G cellular modules, the SIC and WSIC slot architecture accommodates a comprehensive range of interface types: GE/10GE optical cards, E1/T1 voice and data interfaces, POS/CPOS for legacy WAN integration, and GPON/xGSPON for fiber access deployments. This modular approach protects enterprise investments by allowing incremental capability additions without chassis replacement .

COMPLIANCE & STANDARDS

The NetEngine AR8000 series has been validated against comprehensive international standards for electromagnetic compatibility, safety, and

environmental responsibility. EMC compliance includes EN 55032, EN 55035, CISPR 32, CISPR 35, and FCC CFR Part 15 Subpart B, ensuring operational integrity in diverse global deployment environments .

Safety certifications encompass IEC 60950-1, IEC 62368-1, UL 60950-1, and CSA C22.2 No 60950-1, providing assurance of personnel and equipment protection. Environmental compliance with RoHS, REACH, and WEEE directives demonstrates Huawei's commitment to sustainable manufacturing and end-of-life product stewardship .

TECHNICAL SPECIFICATIONS

The following table presents the principal hardware and performance parameters for the two AR8000 chassis variants configured with cellular 5G backup capability.

Parameter	**AR8140-12G10XG**	**AR8700-8**
Form Factor	1RU Chassis	2RU Chassis
Dimensions (H × W × D)	44.4 mm × 442.0 mm × 420.0 mm	88.1 mm × 442.0 mm × 482.8 mm
Forwarding Performance (NAT+ACL+QoS, IMIX)	25 Gbps	30 Gbps

SD-WAN IPsec Performance (IMIX)	22 Gbps	24 Gbps
SD-WAN Typical Performance (IMIX)	15 Gbps	15.5 Gbps
Fixed WAN Ports	10 × 10GE SFP+, 8 × GE Combo, 4×GE Electrical	1×40GE QSFP+, 8×10GE SFP+, 8×GE Combo
5G RU Support	Supported	Supported
SIC Slots	4	8
WSIC Slots (Default/Max)	0/2	0/4
Main Processing Unit (MPU)	Single	Independent Dual MPUs
Memory (SPU / MPU)	16 GB / 16 GB	16 GB / 8 GB
Power Supply	Dual Power Modules (AC/DC), 1+1 Redundant	Dual Power Modules (AC/DC), 1+1 Redundant
TPM	Supported (AR8140-T variant)	Not Supported
WAC Managed APs (Default/Max)	32 / 1024	32 / 1024

ORDERING OPTIONS

Enterprise procurement of the NetEngine AR8000 with 5G backup capability requires configuration of the base chassis, cellular interface modules, power supplies, and software licensing. The AR8140-12G10XG chassis (1RU, 4 SIC slots) serves deployments with moderate expansion requirements and standard redundancy expectations. For applications demanding independent dual MPU redundancy and greater slot capacity, the AR8700-8 (2RU, 8 SIC slots) provides the appropriate platform .

Cellular 5G connectivity requires selection of the appropriate 5G SIC module or 5G RU configuration based on deployment topology and signal availability. Dual power supplies (AC or DC) should be specified for 1+1 redundancy. SD-WAN functionality requires the corresponding software license bundle, which enables application identification, intelligent traffic steering, and IPsec VPN capabilities essential for cellular backup operation .


5G
5G
SIC
SIC