

ALCATEL-LUCENT 9500 MICROWAVE PACKET RADIO ANSI

The Alcatel-Lucent microwave transmission portfolio sets the standard for innovation in delivering faster, more efficient microwave links with flexible networking and simplified operations. Proven in more than 500 networks worldwide, the portfolio has been deployed in a wide range of applications, including 2G, 3G and 4G/LTE mobile backhaul, high-capacity long-haul, and mission-critical networks for industries. The Alcatel-Lucent packet microwave solutions support a smooth transition to all-IP networks for increased capacity at a lower total cost of ownership (TCO).



Microwave Service Switch-8 (MSS-8)



Microwave Service Switch-4 (MSS-4)



Microwave Service Switch-1 (MSS-1)



Microwave Packet Transport (MPT-HL)



Multipurpose Outdoor Unit (ODU)



Traditional microwave networks are under pressure to support the growing adoption of packet-based applications and services. Voice demand is shifting to data demand as mobile subscribers surf the Internet, download apps and consume mobile video. Enterprise services are evolving to IP and must support higher-bandwidth applications, including video. To respond, operators need cost-effective and reliable solutions that maximize radio link performance, support advanced packet networking and simplify operations.

BUILD FASTER, MORE EFFICIENT MICROWAVE LINKS

Faster, longer, more efficient radio links enable the delivery of more revenue-generating services to more locations. The unique features of the Alcatel-Lucent microwave portfolio let operators deliver more data with superior performance while using less spectrum and equipment. These features include:

- Advanced packet compression techniques that increase channel capacity by up to 300 percent
- Scalable multichannel microwave links that support increased capacity and reliability
- Adaptive modulation that extends across multiple channels to sustain maximum performance in all environments

BOOST CAPACITY AND RELIABILITY WITH ADVANCED NETWORKING

Advanced networking support drives reliability and scale to ensure end-user quality of experience (QoE) is maintained as network demands increase.

With Alcatel-Lucent microwave solutions, operators get advanced Carrier Ethernet networking capabilities that can double network capacity while delivering high availability. These capabilities include:

- Unique ring and mesh topology configurations that can double network capacity, improve reliability and reduce network costs
- Integrated IP-microwave solutions that reduce space and power consumption
- The ability to support TDM, ATM, Ethernet and IP services on a single packet-based network

SIMPLIFY OPERATIONS WITH AN END-TO-END APPROACH

The Alcatel-Lucent end-to-end portfolio is an industry first: a complete family of microwave solutions that addresses all network sizes and locations including tail, hub and backbone. With an approach that uses common equipment and software across all sites, Alcatel-Lucent helps operators streamline management processes and reduce TCO. Alcatel-Lucent solutions offer:

- Common radio transceivers that reduce the need for spares across all applications
- A flexible range of right-sized Indoor Units (IDUs) optimized to reduce space and power consumption
- Common software and network management that simplify operations across the network

MICROWAVE APPLICATIONS

Mobile backhaul

Microwave access to cell sites is an important building block for the delivery of mobile services. Today, more than 50 percent of the world's cell sites are connected to the network over microwave access. As both macro and small cell sites transition to packet-optimized, higher-speed 4G/LTE services, the Alcatel-Lucent portfolio provides cost-effective solutions to support this evolution.

Long-haul transport

The Alcatel-Lucent portfolio supports long-distance, high-capacity microwave applications. It offers flexible, secure, scalable and highly reliable solutions that also support a seamless TDM-to-packet migration path option.

Mission-critical networks

Wireless transmission is a key requirement for power utilities, transportation and public safety. These industries often need to reach remote areas over difficult terrain. Alcatel-Lucent low-risk, high-availability microwave solutions support these mission-critical requirements. They also provide full support for IP transformation and can be delivered as part of an end-to-end approach that spans fixed and wireless networking.

FEATURES

- Dual receivers option for space diversity
- Highest density and highest reliability in the market: intelligent nodal IDU supporting up to 24 ODUs with built-in redundancy and no single point of failure
- Up to 1 Gb/s of IP traffic in a single carrier, multiservice switching capacity up to 16 Gb/s
- Multichannel aggregation up to 4+4 radios with enhanced bandwidth utilization
- Hitless and errorless service-driven adaptive modulation
- Cross Polarization Interference Cancellation (XPIC), enabling channel reuse and double capacity
- Packet throughput booster/header compression
- 5.8 GHz unlicensed, 6 GHz-38 GHz licensed bands
- 60 GHz and 80 GHz support
- Full outdoor configuration supported (1+0 and 2+0 with XPIC)
- Packet and hybrid mode support for optimized and smooth migration to packet networks
- Multiservice Packet Ring ITU-T G.8032 v2
- Ethernet OAM IEEE 802.1ag and ITU-T Y.1731
- ITU-T G.8261/8262 Synchronous Ethernet
- IEEE 1588v2 tunneling with ultra-low Packet Delay Variation (PDV)
- SDH/SONET transport, up to 8 STM1/OC3 interfaces
- Up to 192 E1/DS1
- Up to 12 DS3 Interfaces
- Up to 54 Gigabit Ethernet (GE) interfaces
- Multiservice aggregator with embedded Circuit Emulation Service (MEF8) capabilities for Carrier Ethernet Transport

TECHNICAL SPECIFICATIONS

Configuration options

- Radio terminal
- Radio repeater
- Multidirectional radio node
- Aggregation shelf (no RF)

Radio-to-MSS connections

- Up to 24 radio transceivers
- Any combination of outdoor or indoor transceivers

Operating frequencies

- Frequency bands:
 - MPT-HC = 5.8/L6/U6/7/8/11/15/18/23/38 GHz
 - MPT-XP = L6/U6/7/8 GHz
 - MPT-HL = 5.8/L6/U6/UU6/7/8/11 GHz
- Modulation supported: adaptive modulation from QPSK to 1024 QAM
- Channel Spacing supported: from 5 MHz to 60 MHz
- System Gain:
 - At QPSK Up to 118 dB
 - At 256 QAM Up to 95 dB
 - At 1024 QAM Up to 106 dB
- Throughput per RF channel:
 - Up to 1 Gb/s with Packet Throughput Booster

Radio frequency transceiver

- Synthesized source

User interfaces

100% front access for all interfaces

- OC-3 access card
 - 2 x OC-3 each
- DS1 access card
 - 32 x DS1 each
- DS3 access card
 - 2 x DS3 each
- Control and switching module
 - 4 x 10/100/1000 BaseT
 - 2 x Small Form Factor Pluggable (SFP)
- 8 x Ethernet access card
 - 4 x 10/100/1000 BaseT
 - 4 x SFP
- MSS-1: 16 E1, 4x 10/100/1000 RJ-45, 2x SFP

Synchronization

- Any synchronization solution in hybrid and packet mode
- Clock distribution options
 - DS1
 - External reference sync-in/sync-out (2 MHz, 5 MHz, 10 MHz)
 - Synchronous Ethernet (Sync E) + SSM G.8264
 - Built-in Stratum 3 clock
 - IEEE 1588v2
- Line clock recovery
 - ACR, DCR

Dimensions and weight

MPT-HL (2.5 RU)

- Weight:
 - 1+1 and 2+0: 12.7 kg (28 lb)
 - 1+0: 8.85 kg (19.5 lb)

IDU (rack, desk or wall-mount)

- MSS-8 (2 RU)
- MSS-4 (1 RU)
- MSS-1 (1/2 RU)
- Weight:
 - Fully equipped: <6 kg (13.2 lb)
 - Basic configuration: 2.5 kg (5.5 lb)

ODU

- Weight: 6.5 kg (14.3 lb)
- Dimensions: 11 in x 11 in x 6.5 in (27.9 cm x 27.9 cm x 16.51 cm)

Power supply

MSS4/8

- Standard: -48 V DC to -60 V DC
- Optional: -24 V DC to -60 V DC

MSS1

- ±24 V DC to ±48 V DC

MPT-HL

- ±24 V DC to ±60 V DC

Services

- Network and transmission design and planning
- Hotline
- Express repair and return, swap and repair, and spare-parts management
- On-site visits, urgent interventions, technical assistance
- Training from theory to installation
 - Alcatel-Lucent University
 - Customer premises
- Bundled services during warranty period and warranty extensions

Standards compliance

- EMC: EN 55022 Class B, EN 301 489-1/EN 301 489-4
- Safety: EN 60950-1
- Ecological: ECMA TR/70
- Temperature
 - IDU: -40°C to +65°C (-40°F to +149°F)
 - ODU: -33°C to +55°C (-27°F to +131°F)
 - MPT-HL: -5°C to +55°C (23°F to 131°F)
- NEBS Level 3
- Telcordia GR-63
- Telcordia GR-1089
- Telcordia GR-3108
- IEEE 802.1p/Q VLAN tagging
- IEEE 802.3 10 BaseT
- IEEE 802.3u 100 BaseTX
- IEEE 802.3x Flow Control
- IEEE 802.3z 1000 BaseSX/LX
- IEEE 802.1d Bridging
- IEEE 802.1ad link aggregation
- IEEE 802.1ag Ethernet OAM
- 1000 BaseT per 802.3ab
- MEF 9
- MEF 14
- MEF 22

Network and element management

- Optional 256-bit AES Encryption compliant to FIPS 140 Standard
- Secure FTP for software download and backups.
- IPv4/IPv6 management
- Integrated network management in a Microsoft™ Windows® environment
- Embedded web browser for NE supervision
- Software-based configuration by PC
- Intuitive supervision systems
- SNMPv2/v3 agent with TCP/IP rerouting capability
- Interoperability with all Alcatel-Lucent wireless microwave and transmission equipment
- Fully compatible with the Alcatel-Lucent TSM-8000 and Alcatel-Lucent 5620 SAM

Traffic management and QoS

- Marking based on:
 - Layer 2 (802.1p)
 - Layer 3 (DiffServ)

