Alcatel-Lucent 7356 ISAM FTTB REM

INTELLIGENT SERVICES ACCESS MANAGER | RELEASE 4.2

The Alcatel-Lucent 7356 Intelligent Services Access Manager (ISAM) Fiber-to-the-Building (FTTB) Remote Expansion Module (REM) is a compact 19-inch full-service IP access node for remote deployments, supporting DSL, P2P Ethernet, and voice.

The 7356 can be deployed either as a standalone node, or as part of Alcatel-Lucent's unique Distributed DSLAM concept. In Standalone DSLAM mode, the 7356 is equipped with a dedicated Mini-NT controller. In Distributed DSLAM mode, the 7356 does not have a dedicated controller and is controlled by a 7330 host system, allowing operators to deploy and manage up to 24 small remote DSLAMs as remote line cards of a 7330 host, resulting in considerable OPEX and aggregation CAPEX savings.

The Alcatel-Lucent 7356 ISAM FTTB REM offers 3-slot and 4-slot configurations: 2 slots for ISAM DSL, P2P Ethernet, or voice line cards, and 1 or 2 slots for splitters (the 2nd splitter slot is added by expanding the 7356 with an optional Splitter Expansion slot). It is hardened for indoor and outdoor deployments, making it suitable for FTTN and FTTB deployments.

Key features

- Can be deployed as Standalone DSLAM with NRNT-A Mini-NT
- Can be deployed as part of a Distributed DSLAM (with line cards managed as remote line cards of 7330 host)
- Two slots for ISAM line cards (DSL/voice/P2P), plus one splitter slot (2nd splitter slot via Splitter Expansion Module)
- Up to 96 VDSL subscribers or 48 Combo (VDSL and voice) subscribers
- Up to 36 FE/GigE subscribers
- Up to 144 multi-ADSL subscribers, or 72 Combo (multi-ADSL and voice)
- Synchronous Ethernet support for clock critical applications
- Compact: 19" form factor, 300 mm deep
- Temperature hardened and actively cooled with field-swappable fans

Key benefits

- Flexible standalone node for DSL, voice, and Ethernet
- Distribute DSLAM concept reduces OPEX and CAPEX
- Full feature and service intelligence parity with the ISAM family — same service from any line, any ISAM
- High density and small footprint
- Hardened for remote deployments

Technical specifications

Full service platform

Multiservice access support

- Distributed DSLAM
  - ¬ 7356 REM acts as a remote shelf with three slots for line card, splitter, and voice for a Distributed DSLAM host (7330 ISAM FTTN or 7330 ISAM RA)
- Standalone DSLAM
  - ¬ 7356 REM acts as a mini-DSLAM with three slots for line card, splitter, and voice

Network connectivity

- Distributed DSLAM
  - ¬ One GigE uplink to 7330 host for 48-port configuration
  - ¬ Two GigE uplinks to 7330 host for 96-port and combo (DSL/voice) configurations
- Standalone DSLAM (with NRNT-A mini-NT)
  - ¬ Two uplinks (SFP) supporting both optical 1 Gb/s and 2.5 Gb/s
  - ¬ Four downlinks (SFP) supporting only optical 1 Gb/s
  - ¬ One dedicated 10/100/1000 BASE-T, typically used for local power management

Service intelligence

- Distributed DSLAM
  - ¬ Same service intelligence as provided by the controller in the 7302 ISAM, 7330 FTTN and 7330 ISAM RA
- Standalone DSLAM
  - ¬ Same service intelligence as provided by NANT-A controller

DSLAM interfaces

First-mile interfaces

- Up to 2 x 48-port VDSL2
- Up to 36-port FE/GE (2 line cards with 18 single SFPs)
- Up to 2 x 72-port Multi-ADSL
- Or combination of line cards

Uplinks

- 1 GigE uplink to 7330 ISAM host
  - ¬ 2 GigE uplinks when extending towards 96-port SB-REM or 48-port Combo
- Optical interfaces (for uplink to host)
  - ¬ GigE SX MM 850 nm (550 m reach)
  - ¬ GigE LX SM 1310 nm (10 km reach)
  - ¬ GigE EX SM 1310 nm (40 km reach)
  - ¬ GigE ZX SM 1550 nm (80 km reach)
  - ¬ GigE BX10/20 1490 nm (bi-directional SFP)
  - ¬ GigE BX10/20 1310 nm (bi-directional SFP)
- For NRNT-A (mini-NT) following optical interfaces on each of the possible uplinks (up to two), aggregating traffic of all LTs:
  - ¬ FE 100Base-FX multimode and single mode, full duplex
  - ¬ FE 100Base-FX optical SFP module with 29 dB optical link budget (40 km)
  - ¬ GigE 1000Base-SX SFP LC full duplex 850 nm (500 m)
  - ¬ GigE 1000Base-LX SFP LC full duplex 1310 nm (10 km)
  - ¬ GigE 1000Base-EX SFP LC full duplex 1310 nm (40 km)
  - ¬ GigE 1000Base-ZX SFP LC full duplex 1550 nm (80 km)
  - ¬ GigE, coarse wavelength division multiplexing (CWDM) SFP

Management

- Distributed DSLAM
  - ¬ Managed as a remote line card of the Alcatel-Lucent 7330 ISAM FTTN or Alcatel-Lucent 7330 ISAM Remote Aggregator (RA)
  - ¬ Common management with the Alcatel-Lucent 5520 Access Management System (AMS)
- Standalone DSLAM
  - ¬ Common management with the Alcatel-Lucent 5520 Access Management System (AMS)

Operations, Administration, Maintenance and Provisioning (OAM&P)

Control board or NRNT-A to handle following functionality:

- External alarm DB15 connector, identical as for 24-port REM (with optional adaptor cable to DB9)
  - ¬ Five alarm inputs
  - ¬ Two alarm outputs
- Visual indicators
- If control board: SFP interface with host: one per LT
  - ¬ One for xDSL LT 1
  - ¬ One for xDSL LT 2 or voice LT
- If NRNT-A: SFP interface per uplink, aggregating traffic of all LTs
- Optical/electrical conversion
- Fan monitoring/control
- SFP monitoring/control
- DC/DC power supply + monitoring + distribution
- Environmental/external alarms
- Over-temperature shutdown
- Dying gasp (not supported on NRNT-A)

Standards compliance

- Environmental
  - ¬ ETS EN 300 019-1-1 storage – Class 1.1 weather-protected, partly temperature-controlled locations
  - ¬ ETS EN 300 019-1-2 transport – Class 2.3 public transportation
  - ¬ ETS EN 300 019-1-3 stationary use – Class 3.1E and Class 3.4
  - ¬ ETS EN 300 132-2
- Protection: ITU-T K.20 enhanced and K.45 basic
- Safety: IEC 60950, EN60950 Class 1, AS/NZS 60950.1
- Electromagnetic compatibility (EMC)
  - ¬ ETS EN 300 386 for telecommunications center installation environment, including EN-55022 Class B
  - ¬ ETS ES 201 468
- Acoustic noise: ETS 300 753
- European directive 2002/95/EC on the restriction of the use of certain hazardous substances (RoHS)

Operation conditions

- Operating temperature range: -40°C to +70°C (see also datasheets of boards used)
- Relative humidity: 5% to 93% (non-condensing)
- Over-temperature sensors and over-temperature shutdown

Power

Power input

- DC-powered; wide-voltage range (48V and 60V)
- Separate BATA/BATB
- 5.08 mm pitch Phoenix connector

Dimensions and construction

Dimensions

- 19" and ETSI rack mountable
- Dimensions of "base system" (48-port SB-REM):
  - ¬ Height: 111.1 mm (2.5 RU)
  - ¬ Width: 448 mm (19 in.)
  - ¬ Depth: Less than 300 mm (11.81 in.) including front cabling (and 246 mm [9.68 in.] for the shelf-only)
- Dimensions of "DSL splitter expansion module":
  - ¬ Height: 380 mm (< 1 RU), such that total height is 150 mm (5.90 in.)

Construction

- Integrated fan pack and power/controller card
  - ¬ Field-replaceable fan unit
  - ¬ Field-replaceable controller card
  - ¬ Optional dust filter
- Cabling outgoing to the right
- Hardware architecture (in case of VDSL2oISDN 48-port and 96-port)
  - ¬ Two LT slots available (for one or two xDSL LTs or for xDSL/POTS combo)
  - ¬ One NT slot available (for NT or controller board, with 2 GigE optical SFPs [1G/2.5G] and alarm interfaces)
  - ¬ One slot for DSL splitter, and extendable with a second splitter slot

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