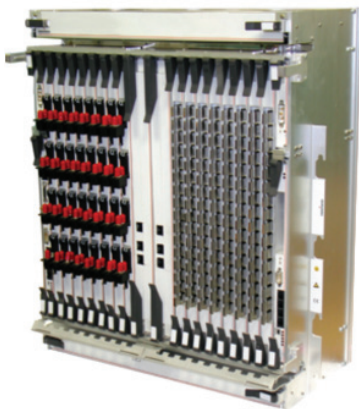


# Alcatel-Lucent 1678 MCC

METRO CORE CONNECT | RELEASE 5.5 (NORTH AMERICAN MARKETS)

The Alcatel-Lucent 1678 Metro Core Connect (MCC) is a powerful, high-density optical transport platform that has been designed to address numerous applications for metro and backbone networks. In addition to its trusted TL-1 control interface, the 1678 MCC supports ring-based functionalities with a migration path to advanced mesh topologies, enabling new data services while increasing network efficiency. This leading edge optical platform combines broadband, wideband and Ethernet-based switching functionality into a single network element. By decreasing the number of network elements required in the central office, capital expense (CAPEX) is significantly reduced. New DWDM interfaces, including SFP and XFP connections, provide multiple colored traffic streams.



## Features

- Most compact system on the market, providing 640 Gb/s and 320 Gb/s matrix capacity in one single rack of 300 × 600 mm footprint
- Data aware functionality: 1 Gigabit and 10 Gigabit Ethernet interfaces, virtual concatenation, generic framing procedure (GFP), link capacity adjustment scheme (LCAS), EPL and EVPL; optimally adapts transport infrastructure to new data traffic patterns
- VLAN aggregation, with VLAN mirroring and per VLAN performance monitoring, with up to 6x20G capacity for packet switching and aggregation between core, service, or edge routers and metro access
- Highly resilient platform offering five 9's service availability for applications such as high quality, high availability Video Multicast

- Evolution path to support GMPLS/ASON, optical transport networks (OTN) and G.709 interfaces
- Alcatel-Lucent 1350 OMS and 1340 INC management systems allow for quick service setup and monitoring

## Benefits

- Reduces CAPEX and operations expense (OPEX) with network and office simplification
- Pay-as-you-grow service capacity increments up to 12,288 STS-1 equivalents
- Ethernet over highly reliable TDM infrastructures to support:
  - ↳ Ethernet Business services
  - ↳ 2G, 2.5G and 3G mobile service evolution
  - ↳ Video multicast services
  - ↳ Storage applications

## Technical specifications

### System specifications

- Type of fiber: single mode, according to ITU-T G.652, G.653, G.654, G.655 & G.656
- Wavelength: 1310 nm, 1550 nm
- Applied standards:
  - ITU-T: G.662, G.663, G.691, G.703, G.707, G.774, G.783, G.784, G.813, G.826, G.828, G.829, G.841, G.957, G.958
  - G.664, G.709, G.798, G.871, G.872, G.873, G.874, G.875, G.959.1
  - G.807, G.8080, G.7712, G.7713, G.7714, G.7715
  - Telcordia: GR-253-CORE, GR-499-CORE, GR-1063-CORE, GR-1244-CORE, GR-1339-CORE, GR-1400-CORE, GR-2914-CORE, GR-2996-CORE
  - ANSI: T1.231 (2003)
- Interface types:
  - STM-256/OC-768/40 Gb/s ready
  - STM-64/OC-192/10 Gb/s
  - STM-16/OC-48/2.5 Gb/s
  - STM-4/OC-12, STM-1/OC-3c, STM-1 el. (main shelf / drop shelf)
  - 10 Gigabit Ethernet
  - Gigabit Ethernet
  - 140 Mb/s, 2 Mb/s (drop shelf)
  - Colored interfaces (CWDM, DWDM): STM-16/ OC-48, STM-64/OC-192
- Full power level and optical wavelength information retrievable on a per wavelength basis

### Matrix

- HO: 320/640 Gb/s matrix (6144/12288 STS-1 equivalents)
- ISA-ES64: 3x20G L2 switch w/ EPS 1:1
- Connectivity: VC-3/ STS-1, VC-4/ STS-3c, VC-4-4c/STS-12c, VC-4-16c/STS-48c, VC-4-64c/STS-192c, 10G cross-connection
- Fully non-blocking matrix
- Drop-and-continue
- Broadcast
- Line and terminal loopback

### ISA ES64

- 6x20G or 3x20G switching capacity per system; 1:0 or 1:1 EPS respectively
- Jumbo Frame (9242 bytes)
- VLAN label stacking
- Per VLAN performance monitoring (PM)
- VLAN service mirroring
- Up to 252 logical ports per board
- GFP-F mapping (framed, G.7041)
- Metering, Policing and Marking MEF compliant
- Traffic management: 2 queues w/ strict priority, 6 queues w/ WFQ (WDRR), W-RED congestion avoidance
- Fully configurable weighting ratio for WDRR
- Best Effort Traffic (PIR > 0, CIR = 0)
- Regulated Traffic (PIR > CIR > 0)
- Guaranteed Traffic (PIR = CIR > 0)
- Packet classification: port, VLAN ID & priority bits
- 8 QoS classes
- Packet Forwarding: port + VLAN tag
- Ethernet Private Line
- Ethernet Virtual Private Line
- Committed information rate (CIR) oversubscription per port
- Preserve p-bits on VLAN push/pop
- PM counters per port, Q: Green/ Yellow discards, current, history (15 m/24 h)
- Link aggregation (LAG), 802.3ad (1:N, LACP)
- Link capacity adjustment scheme (LCAS)

### Synchronization on SDH/SONET

- Compliant to SDH/SONET standards G.703, G.783, ITU-T G.812 (Type III), G.813, EN300 462-5 and Stratum 3E quality according to GR-1244
- Input clock: T1, T3, T6, BITS
- Output clock: T4, T5, BITS
- Clock selection, SSM processing, compliant to EN300 417-6

### Operation

- TL1 secure shell – secure copy (SSH-SCP)
- Station alarms: Urgent, non-urgent

- NM interface: 10/100Base-T, G.773 QB3
- Info model: Optics-IM according to ITU-T (G.774) and ETSI specifications
- Processes:
  - Remote inventory, software download
  - In-service software upgrade
  - Performance monitoring
  - Configuration and provisioning
  - Security
  - Non-volatile databases
- Plug-and-play
- Hot replacements for:
  - Traffic cards and ports without disturbance on other channels
  - Central units (redundant) with no disturbance of traffic
- Distributed configurations

### Protection

- Network protection
  - Linear 1+1, 1:N
  - Single- and dual-ended MSP
  - 100 percent SNCP, SNCP-I, SNCP-N, UPSR path-switched ring
  - Dual node coupling
  - 2fMS-SPRING and 2fBLSR
- Equipment protection
  - Electrical 1:N, 1+1

### Mechanical specifications

- Rack size
  - Height: 2,200 mm (86.6 in.)
  - Width: 600 mm (23.6 in.)
  - Depth: 300 mm (11.8 in.)
- Cooling: forced
- Rack cabling: front access, from top or bottom
- Optical connectors: LC

### Power specification

- Power supply:
  - -48 to -60 V DC
  - Dual return

### Environmental specifications

- Operating conditions
  - NEBS: 0°C to 50°C (32°F to 122°F)
  - Includes ETS 300 019, class 3.1

- Storage conditions
  - NEBS: -40°C to 70°C (-40°F to 158°F)
  - Includes ETS 300 019, Class 1.1
- Transportation conditions
  - NEBS: -40°C to 70°C (-40°F to 158°F)
  - Includes ETS 300 019, Class 2.2
- Laser safety
  - ITU-T G.958 and IEC 60825-2
  - Includes Z136.1
- EMI/EMC conditions
  - ETS 300 386-2, "Telecommunication Center"
  - UR-1089-CORE, SR-3580, US FCC part 15
- CE
  - IEC 950/EN60950
- Earthquake
  - NEBS GR-63-CORE: Zone 4
- Noise
  - NEBS GR-63-CORE: max. 60dB
- Altitude: -100 m to 5,000 m (-109 yd to 5467 yd)
- Humidity 5% to 95%
- ECMA-TR/70
- Alcatel-Lucent Environment-Conscious Design (ECD) program: In accordance with the International Electrotechnical Commission (IEC) TC-108 and TC-111, and the ECMA-341 (2nd Edition, December 2004) Standards \*

### Performance

- 30 µs maximum transmission delay
- Unidirectional path switched ring (UPSR) path switch with less than 50 ms restoration
- Fast controller switch by hot standby
- 99.999% reliability
- Configurable SS-bit for SDH/SONET interworking

\* The ECD guidelines address regulatory, customer and Alcatel-Lucent requirements, and include topics for product lifetime, energy efficiency, electromagnetic environment, noise emissions, and substance content (including restricted materials, batteries and product packaging).

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