Centellis™ 2000, R1.0 & R2.0

AdvancedTCA Platform Core

■ Embedded Computing for
Business-Critical Continuity™

Flexible configurations and power options make the Centellis 2000 the ideal choice for both central office and data center applications

■ Two-slot, 3U, 19" form factor (horizontal slots)

■ Targeted for central office and data center environments

■ Front-to-rear cooling - CP-TA B.4 compliant

■ SpiderWare®M³ platform management software included

■ Integrated shelf management and Base switching infrastructure

■ Direct cross-connect circuitry for the Fabric Interface (1G/10G/40G)

■ AC and DC power configurations available

■ Simplex and duplex configurations available

■ Two user slots for OEM customization

■ RoHS 6/6 compliant

■ Designed for NEBS/ETSI compliance (DC variants only)

The Emerson Network Power Centellis™ 2000 platform core is a high availability platform ideally suited for data intensive, central office and enterprise networking applications. The low profile makes the Centellis 2000 the optimal candidate for distributed networking functions, low density subscriber areas, or specialized applications. Target applications include distributed control plane functions, IMS/IPTV subsystems, 4G wireless applications, and edge networking and routing.

This compact platform integrates chassis, cooling, power distribution and shelf management into an off-the-shelf solution for small and medium size network element deployments. The small form factor AdvancedTCA® chassis enables reuse of existing, larger scale AdvancedTCA (ATCA®) hardware and software elements providing a significant reduction in development cost and reducing time-to-market for deployments.

The Centellis 2000 is available in simplex and duplex configurations with regard to power, shelf management and base interface switching. Further flexibility is achieved by offering both DC or AC power input modules. Future blade bandwidth requirements are addressed with a sophisticated 1G/10G/40G capable fabric cross-connect backplane. This will allow the simple upgrade of 40G ATCA blades when available without a chassis fork-lift upgrade.
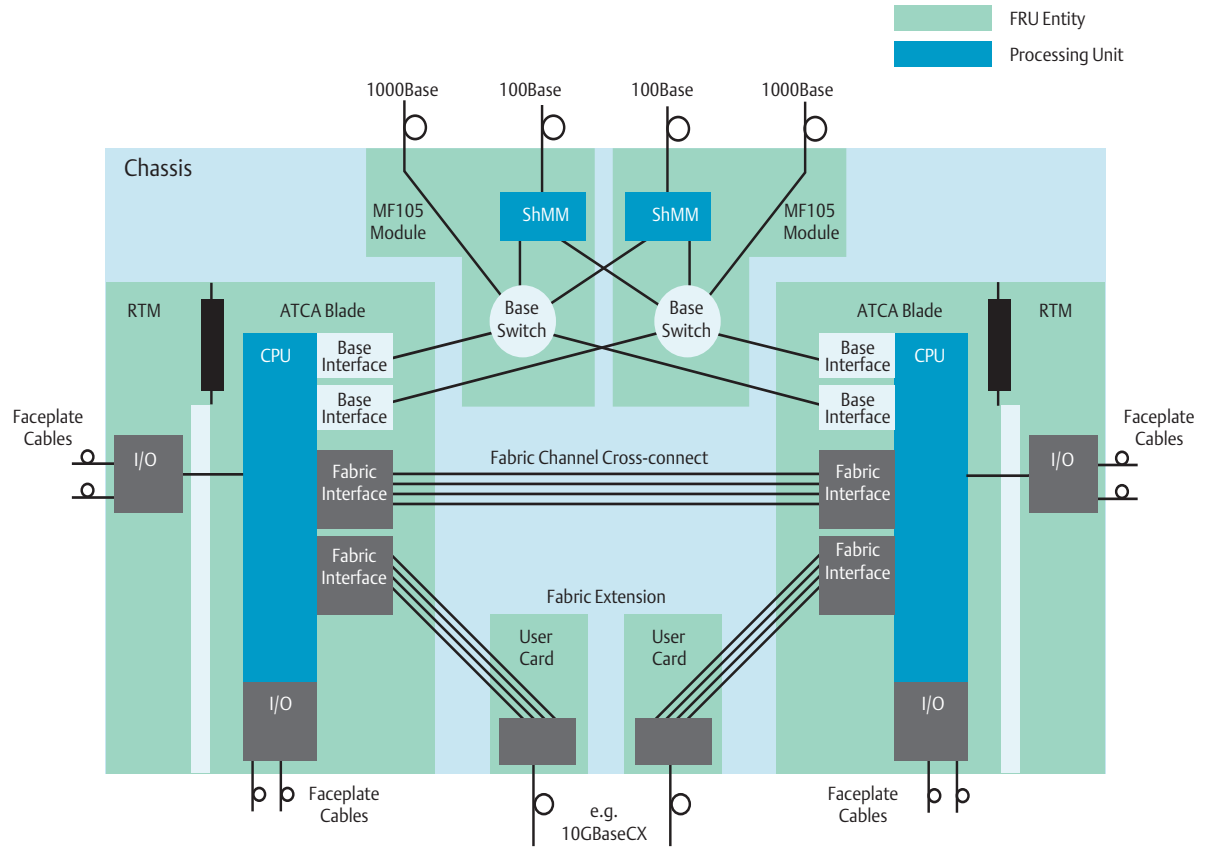
Designed to meet NEBS and ETSI environmental requirements, the Centellis 2000 features front-to-rear cooling, and is designed to meet the stringent Communications Platform Trade Association (CP-TA) B.4 thermal profile. This superior cooling performance enables any combination of ATCA blades and rear transition modules (RTMs) within the ATCA specification limits.

EMERSON™
Network Power

AdvancedTCA®

RoHS 6/6 COMPLIANT

Block Diagram with Two ATCA Blades

FRU Entity

Processing Unit

Chassis

1000Base 100Base 100Base 1000Base

MF105 Module

ShMM ShMM

MF105 Module

RTM ATCA Blade Base Switch Base Switch ATCA Blade RTM

CPU

Base Interface

Base Interface

Base Interface

Base Interface

CPU

Faceplate Cables

I/O

Fabric Interface

Fabric Channel Cross-connect

Fabric Interface

I/O

Faceplate Cables

Fabric Interface

Fabric Interface

Fabric Extension

User Card

User Card

I/O

I/O

Faceplate Cables

e.g. 10GBaseCX

Faceplate Cables

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Shelf Overview

ENCLOSURE

- Two (2) slots for 8U AdvancedTCA blades
- Two (2) slots for 8U RTMs
- Two (2) user card slots for custom modules
- 40G backplane
- Front-to-rear cooling architecture
- ESD and earth ground points

ENCLOSURE DIMENSIONS

- Height – 132 mm
- Width – 445 mm
- Depth – 420 mm

Note – Dimension figures do not include mounting ears and cable trays unless specifically noted

PRODUCT WEIGHT

- CENT-2000-DCB: 12.70 lbs.
- CENT-2000-DC2B: 14.20 lbs.
- CENT-2000-AC: 12.74 lbs.
- CENT-2000-AC2: 14.28 lbs.

OPERATING ENVIRONMENT

- Operating temperature range (DC): -5 °C to 55 °C @ 90% non-condensing humidity
- Operating temperature range (AC): -5 °C to 50 °C @ 90% non-condensing humidity
- Storage temperature range: -40 °C to 70 °C @ 95% relative humidity

POWER REQUIREMENTS

- CENT-2000-DCB nominal/maximum: 29.9/153.1 Watts
- CENT-2000-DC2B nominal/maximum: 30.1/155.6 Watts
- CENT-2000-AC nominal/maximum: 32.1/176.2 Watts
- CENT-2000-AC2 nominal/maximum: 33.0/177.0 Watts

BACKPLANE

- Zone 1
  - Redundant, bussed IPMI to all blade slots
  - Redundant, bussed -48 VDC to all blade slots
- Zone 2
  - Dual star configuration for the base interface
  - Direct cross-connect routing between blade slots for fabric connectivity
  - Fabric Channel 2 of AdvancedTCA Slot 1 is routed to User Card 1
  - Fabric Channel 1 of AdvancedTCA Slot 2 is routed to User Card 2
  - Update channel routing for all slots
  - Three redundant, bussed telecom clock signals to all hub/node slots
  - Update channel routing
- Zone 3
  - PICMG 3.0 defined open area, application specific

* Fabric interface configurations support 1G, 10G and 40G operation

SHELF MANAGEMENT

- N+1 redundancy architecture
- Two (2) shelf management slots
- Integrated Base switch infrastructure

POWER DISTRIBUTION

- 2N redundancy architecture
- CENT-2000-DCB: One (1) power entry module (PEM) slot
- CENT-2000-DC2B: Two (2) PEM slots
- CENT-2000-AC: One (1) power supply unit (PSU) slot
- CENT-2000-AC2: Two (2) PSU slots

COOLING

- N+1 redundancy architecture
- Front-to-back cooling architecture
- Single (1) front/right fan tray module slot

RELEVANT STANDARDS

- PICMG 3.0 (form factor, IPMI, base interface, hot swap, RTM)
- PICMG 3.1, Options 1 and 9 (1G, 10G operation)
- PICMG 3.1 R2 (40G operation) – Future, pending specification release.
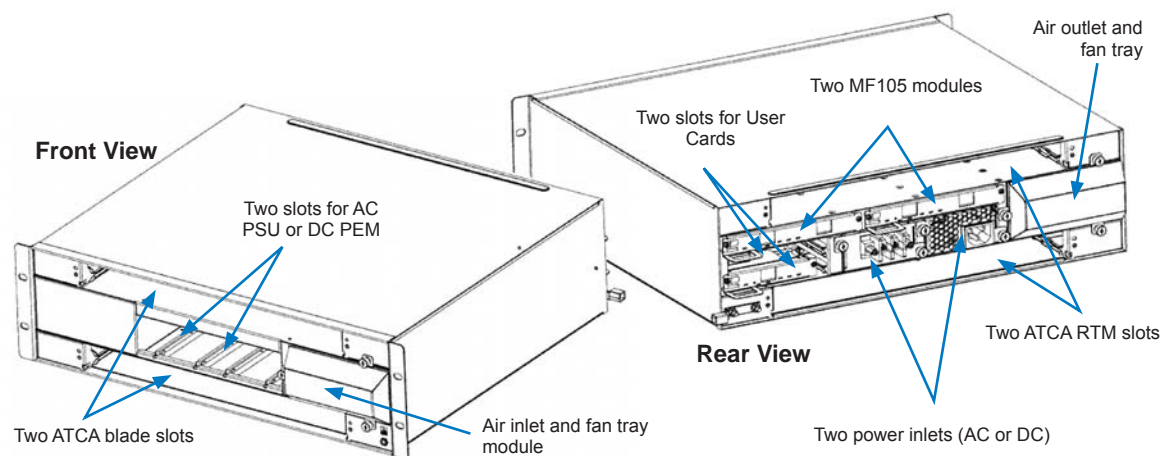- CP-TA B.4

Shelf Layout

FRONT (TOP TO BOTTOM)

- Six (6) horizontal, 8U blade slots
- Front cable management system
- Two (2) vertical, Shelf Management Modules slots
- Four (4) power module slots (AC/DC)
- Air inlet area

REAR (TOP TO BOTTOM)

- Six (6) horizontal, 8U RTM slots
- Rear cable management system
- Telco Alarm interface (DB-15)
- Four (4) AC input receptacles
- Three (3) fan tray module slots
- Two (2) sets of DC input lugs

Front View

Two slots for AC PSU or DC PEM

Two ATCA blade slots

Air inlet and fan tray module

Air outlet and fan tray

Two MF105 modules

Two slots for User Cards

Rear View

Two ATCA RTM slots

Two power inlets (AC or DC)

Shelf Management

The purpose of shelf management, as defined by the PICMG 3.0 standard, is to assure proper operation of AdvancedTCA blades and other components within the shelf. The shelf management module continually monitors all low-level, hardware functionality (inventory, sensor, status data, etc.) and reports status to the system manager. It also provides control access to these attributes. Management access to this information is provided via local console and Ethernet interfaces as well as the Service Availability™ Forum (SA Forum) defined HPI interface. Each blade and major shelf component has an Intelligent Platform Management Controller (IPMC) that is responsible for providing this information to the shelf management module. The Centellis 2000 provides redundant shelf management functionality utilizing an active/standby architecture. Visual indicators, as well as physical interfaces, are provided for direct front panel access.

The Base Interface switch functionality is integrated into the MF105 Shelf Management module. The switch infrastructure supports IEEE 802.3 1000BASE-T,

100BASE-TX, 10BASE-T connectivity to both AdvancedTCA slots as required by PICMG 3.0. One external 1000BASE-T Ethernet interface is available on the face plate for external connectivity.

PROCESSOR

- Freescale MPC852T @ 100 MHz

MEMORY

- 64MB, DDR2 SDRAM
- 64MB boot flash, single-bank architecture

PANEL ACCESS & INTERFACES

- One (1) 1.0G Base Interface port, RJ-45
- One (1) 10/100BaseT management Ethernet, RJ-45

SHELF MANAGER LED STATUS INDICATORS

- In service (OK)
- Out of service (OOS)
- ACT (Activity Shelf Manager)
- Link (Ethernet link/activity)

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Fan Tray Module

The Centellis 2000 utilizes a fault-tolerant, push-pull cooling architecture and is implemented using front and rear fan tray modules. The cooling system is designed to provide CP-TA B.4 cooling performance for the most demanding, next generation packet processing based ATCA blades. An integrated shelf manager function monitors and controls the speed of each individual fan for optimal performance. Fan control decisions are made based on air intake temperature, air exhaust temperature and thermal data provided by the blades. In the event of communication failure between the shelf management entity and the fan tray modules, all fans automatically run at full speed to ensure maximum cooling until the failure is eliminated.

GENERAL CHARACTERISTICS

- CP-TA B.4 compliant cooling architecture
- Front-to-back cooling architecture
- Front blade cooling capacity: 40 cubic feet per minute (CFM) at 55 °C
- RTM cooling capacity: 5 CFM at 55 °C
- Automatic fan speed control

Power Entry Module (PEM)

Power conditioning for the DC variant of the Centellis 2000 shelf is provided by one or two PEMs. They provide power to the backplane on the redundant -48 VDC power rails for blades, RTMs and other shelf components. The actual power connection is located in the rear of the chassis and for safety reasons is a fixed, non-field replaceable unit.

GENERAL CHARACTERISTICS

- Input voltage range (-40 VDC to -72 VDC)
- 30 amp (max.), single-feed design
- Power infrastructure capable of supporting up to 350 Watts/slot
- EMI filtering
- Transient voltage suppression

LED STATUS INDICATORS

- Reverse (polarity detection)
- In (Input power available)
- Backplane (power available to the backplane)

Power Supply Unit (PSU)

Power conditioning for the AC variants of the Centellis 2000 shelf is provided by two or four AC PSUs. Standard AC receptacles are provided for simple installation; the PSU output provides DC power to the backplane on the redundant -48 VDC power rails for blades, RTMs and other shelf components. The actual power connection is located in the rear of the chassis and for safety reasons is a fixed, non-field replaceable unit.

GENERAL CHARACTERISTICS

- Input voltage range (100 - 240 VAC, 50/60Hz @ 8.5 amps)
- Power infrastructure capable of supporting up to 350 Watts/slot
- EMI filtering
- Transient voltage suppression

LED STATUS INDICATORS

- Status (red/green)

User Cards

Two User Card slots are provided to allow customers the ability to integrate custom functions into the platform. Examples include Telecom clock generators, 10GB fabric uplinks, or telecom alarms. Each User Card is 110 mm deep x 70 mm wide x 20 mm high and accesses redundant power, IPMC, and clock connections and fabric channel connectivity.

GENERAL CHARACTERISTICS

- Two (2) slots for User Cards in the rear of chassis
- Direct connection to backplane:
  - ▲ Redundant -48 V power
  - ▲ Redundant intelligent peripheral management controllers (IPMC)
  - ▲ Redundant CLK1, CLK2 and CLK3
  - ▲ One fabric channel to one ATCA blade (Four LVDS ports)

Software

SpiderWare®M^3 platform management software is included with the Centellis 2000 platform core. SpiderWareM^3 runs on Linux and can be hosted locally (on a payload blade) or externally. See the SpiderWareM^3 data sheet for more details.

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Ordering Information

Product	Description
Platform Core Products	
CENT-2000-DC	2-slot ATCA chassis, 1X DC PEM, 1X MF105 SHMM (Silver)
CENT-2000-DC2	2-slot ATCA chassis, 2X DC PEM, 2X MF105 SHMM (Silver)
CENT-2000-DCB	2-slot ATCA chassis, 1X DC PEM, 1X MF105 SHMM (Black)
CENT-2000-DC2B	2-slot ATCA chassis, 2X DC PEM, 2X MF105 SHMM (Black)
CENT-2000-AC	2-slot ATCA chassis, 1X AC PSU, 1X MF105 SHMM (Black)
CENT-2000-AC2	2-slot ATCA chassis, 2X AC PSU, 2X MF105 SHMM (Black)
Optional Platform Core Products	
CENT-2000-UC-10GE	CENT-2000 user card with 10G port (SFPP module not included)
C2000-UC-TA-10GE	CENT-2000 user card with 10G port (SFPP module not included) & Telco Alarm
CENT-2000-UFP	CENT-2000 user card filler panel
CENT-2000-PFP	CENT-2000 PEM/PSU filler panel - Silver
CENT-2000-PFP-B	CENT-2000 PEM/PSU filler panel - Black
C2000-SWM3-CD	CENT-2000 SpiderWare®M^3 management software CD
C2000-RKMT-M	CENT-2000 19/23" frame mid mounting bracket kit (set of 4)
C2000-RKMT-E	CENT-2000 ETSI 600MM frame mounting bracket kit
C2000-RKMT-A	CENT-2000 ANSI 24" frame mounting bracket kit
C2000-RKMT-23	CENT-2000 23" frame mounting bracket kit
C2000-CBLTR	CENT-2000 cable tray bracket (one unit)
AXP-F-FILL-PANEL	Blank filler panel, AXP1620, AXP1440, AXP1410, C2000 - Front
AXP-R-FILL-PANEL	Blank filler panel, AXP1620, AXP1440, AXP1410, C2000 - Rear
AC-PC-15A-US	AC power cord, 15 Amps, 125 Volts, US & Canada connector
AC-PC-15A-AUS	AC power cord, 15 Amps, 250 Volts, Australia & New Zealand connector
AC-PC-15A-UK	AC power cord, 15 Amps, 250 Volts, UK connector
AC-PC-15A-EU	AC power cord, 15 Amps, 250 Volts, EU connector
AC-PC-15A-JAP	AC power cord, 15 Amps, 125 Volts, Japan connector
FRUs	
CENT-2000-PEM	CENT-2000 DC power entry module - Silver
CENT-2000-PEM-B	CENT-2000 DC power entry module - Black
CENT-2000-MF105	CENT-2000 M100 style SHMM module with integrated Base switch
CENT-2000-FFTM	CENT-2000 front fan tray module - Silver
CENT-2000-FFTM-B	CENT-2000 front fan tray module - Black
CENT-2000-RFTM	CENT-2000 rear fan tray module
CENT-2000-PSU	CENT-2000 AC power supply unit - Black
CENT-2000-SFM	CENT-2000 replacement air filter (one unit)

Regulatory Compliance

Item	Description
Designed to comply with NEBS (DC variants only)	Telcordia GR-63-CORE, NEBS Physical Protection, Level 3
	Telcordia GR-1089-CORE, Electromagnetic Compatibility and Electrical Safety — Generic Criteria for Network Telecommunications Equipment. Level 3, Equipment Type 2
Designed to comply with ETSI	ETSI Storage, ETS 300 019-2-1, Class 1.2 equipment, Weatherprotected, not Temperature Controlled Storage Locations
	ETSI Transportation, ETS 300 019-1-2, Class 2.3 equipment, Public Transportation
	ETSI Operation, ETS 300 019-1-3, Class 3.1(E) equipment, Partly Temperature Controlled Locations
	ETSI EN 300-132-2 Environmental Engineering (EE); Power supply interface at the input to telecommunications equipment; Part 2: Operated by direct current (dc)
	ETS-300-753, Equipment Engineering (EE); Acoustic noise emitted by telecommunications equipment
EMC	ETSI EN 300 386 Electromagnetic compatibility and Radio spectrum Matters (ERM); telecommunication network equipment; ElectroMagnetic Compatibility (EMC) requirements, Telecommunication equipment room (attended)
	FCC 47 CFR Part 15 Subpart B (US), Class A
	ECISPR 22, Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment
	AS/NZS CISPR 22 (Australia/New Zealand), Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment
	VCCI Class A (Japan), Voluntary Control Council for Interference by Information Technology Equipment
	Industry Canada ICES-003 Class A
Safety	Compliance to UL/CSA 60950-1, EN 60950-1 and IEC 60950-1 CB Scheme. Marked with U.S. NRTL, Canadian Safety and CE Mark.
RoHS/WEEE compliance	DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)
	DIRECTIVE 2002/96/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on waste electrical and electronic equipment (WEEE)
CE Conformity	Directive 2004/108/EC, Directive 2006/95/EC

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