The E6000 Converged Edge Router (CER) is a next-generation CCAP-ready platform that provides cable operators unprecedented advances in channel density, power efficiency, and cost savings in a redundant, integrated architecture designed from the ground up for high availability. Operators deploy the E6000 today as a dense, high-availability CMTS for data and voice services. ARRIS will deliver a series of software upgrades beginning in early 2015 that will provide for Integrated Edge QAM (IEQ) functionality with today’s E6000 CER hardware. The E6000 CER software is based on that of the C4 CMTS, meaning that the E6000 benefits from over ten years of refinements in stability, hitless failover, and performance at high scale. This software re-use also provides the E6000 CER with a proven set of features for IPv6. No other CCAP-ready platform today enjoys a proven software code base for these critical functional areas.
Release 1.1 provides an additional set of CMTS capabilities for the E6000 CER. Operators deploying the E6000 CER with Rel. 1.1 software will be able to double their downstream channel density – with no hardware changes – simply by applying a license available for ARRIS. This is another example of the tremendous advantages in rack space savings, power efficiency, and price per downstream that the E6000 CER provides. A number of additional features in Rel. 1.1 provide operational enhancements for cable operators, including Multi-Protocol BGP with IPv6 Address Family Support, Automated Hitless Patching, Multi-Tuner Cable Modem Support, and others.

**Features**

- Enhanced Scaling
- 32 Annex B / 24 Annex A QAMs per F
- Extended modem Tx power for USCB
- Dual Shared Secret
- Enhanced USCB Scaling per CAM
- Integrated Service Class Agility
- Dynamic Service Class Modifications
- IPv6 PCMM for Voice Services
- Upstream Drop Classifier Support
- Support for Modem Loss of AC Power
- Improved Partial Service
- PBR Recursive Next Hop
- DSG Reset to Null
- TCS Optimization for Static Upstream Bonding Groups
- Multi-tuner Cable Modem Support
- IS-IS Point-to-Point Adjacencies
- IS-IS Dynamic Hostname Support
- RADIUS Authentication
- CM Status SOOR Handling
- Annex A Mixed 256 QAM / 64 QAM per F Connector
- Automated Hitless Patching
- Load Balancing via SNMP MIB
- UCAM Hitless Sparing Expansion to 6+1
- MP-BGP + IPv6 Address Family
- Secure NTP
- Intelligent Channel Optimizer (ICO) Support
- Copy FTP Source IP on Same Command Line
- IPv6 Route Scaling Enhancement
- Intelligent RCS Assignment/Balancing Control

**Copyright Statement:** ©ARRIS Enterprises, Inc. 2014 All rights reserved. No part of this publication may be reproduced in any form or by any means or used to make any derivative work (such as translation, transformation, or adaptation) without written permission from ARRIS Enterprises, Inc. (“ARRIS”). ARRIS reserves the right to revise this publication and to make changes in content from time to time without obligation on the part of ARRIS to provide notification of such revision or change. ARRIS and the ARRIS logo are all trademarks of ARRIS Enterprises, Inc. Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and the names of their products. ARRIS disclaims proprietary interest in the marks and names of others.
Managing the E6000 CER is typically done via the SNMP or CLI interfaces. The E6000 has multiple options available for IPDR, a useful tool for measuring bandwidth usage. Physical maintenance of the E6000 is very simple. Air filters, one in the front and another in the rear of the chassis, should be inspected and/or replaced per recommendations in the E6000 CER User Guides.

### GENERAL SPECIFICATIONS

#### RF Downstream
- **Frequency Range (MHz)**: 57 to 999 (DOCSIS 3.0); 90 to 1002 (EuroDOCSIS 3.0)
- **Modulation (QAM)**: 64, 256 (256 Only in Release 1.1)
- **Data Rate (Mbps) (Max.)**: 30.34 to 55.62 per channel (42.89 to 55.62 in Release 1.0)
- **RF Output Level (dBmV)**: 41 to 60
- **Typical Modulation Error Ratio (MER) (dB)**: 47
- **Symbol Rate (Msym/sec)**: 5.361 (DOCSIS); 6.952 (EuroDOCSIS)
- **Bandwidth (MHz)**: 6 (DOCSIS), 8 (EuroDOCSIS)
- **Output (load) impedance (ohms)**: 75

#### RF Upstream
- **Frequency Range (MHz)**: 5 to 85 (5 to 65 with Software Release 1.0)
- **Modulation**: QPSK, 8 QAM, 16 QAM, 32 QAM, 64 QAM (No 8 QAM Support in Release 1.1)
- **Channel Type**: TDMA, ATDMA, TDMA/ATDMA, SCDMA (No SCDMA Support in Release 1.1)
- **Data Rate (Mbps) (Max.)**: 30.72 per channel
- **RF Input Level (dBmV)**: -16 to +29
- **Frequency Resolution (KHz)**: < 1
- **Symbol Rate (Ksym/sec)**: 160, 320, 640, 1280, 2560, 5120
- **Bandwidth per Channel (MHz)**: 0.2, 0.4, 0.8, 1.6, 3.2, 6.4

#### Physical
- **Power Consumption (full-fill system)**: 3,800 W nominal at -48 VDC, 77°F (25°C)
- **Power -48 VDC (-40 to -72 VDC)
- **Power Consumption (full-fill system)**: 3,800 W nominal at -48 VDC, 77°F (25°C)
- **Operating Temperature**:
  - **Short Term °F (°C)**: +23 to +131 (-5 to +55)
  - **Long Term °F (°C)**: +41 to +104 (+5 to +40)
- **Storage Temperature °F (°C)**: -40 to +158 (-40 to +70)
- **Operating Humidity (Min.-Max.)**: 5 to 85% (Non condensing)
- **Dimensions (H x W x D) in. (cm)**: 13.8 x 1.2 x 17.8 (35.0 x 3.0 x 45.3)
- **Weight lbs. (kg) (full-fill system)**: approx. 235 (107)

#### Management Interfaces
- 10/100/1000 Mbps Ethernet (RJ-45) plus Console (serial port, RJ45)
- 10 Gigabit Ethernet (SFP+) auto-baud, eight per card
- NSI Ethernet ports via front of chassis, management ports via rear (RSM PIC)

#### Installation Environment
- 10/100/1000 Mbps Ethernet (RJ-45) plus Console (serial port, RJ45)
- 10 Gigabit Ethernet (SFP+) auto-baud, eight per card
- NSI Ethernet ports via front of chassis, management ports via rear (RSM PIC)

#### Management Access
- In-band Management with Access Control Lists via any NSI port
- Out-of-Band Management via dedicated Ethernet port on RSM PIC
- Console (serial) port on RSM PIC

#### Future Capabilities (not supported in Release 1.1)
- Dedicated Ethernet interface on RPIC for Conditional Access System (CAS)
- Active and Stand-by DTI interfaces on RPIC
The E6000 CER provides cable operators with unprecedented efficiencies in DC power consumption per downstream channel. This leads to reduced powering and cooling requirements for the operators’ facilities, which can provide significant savings in operational and capital expenditures.

SOFTWARE RELEASE 1.1 FEATURES (PARTIAL LISTING)

- **DCAM**
  - Policy-Based Routing
- **8 RF (F-Connectors) per slot**
  - 24 Channel Bonding (Downstream)
- **256 Channels (Annex B) per card**
  - Four Channel Bonding (Upstream)
- **192 Channels (Annex A) per card**
  - BGPv4, MP-BGP with IPv6 Address Fam.
- **Max 32 Channels per RF connector**
  - PacketCable™ Multimedia Support
- **Up to 7+1 RF Sparing**
  - Dynamic Cable Modem Load Balancing
- **IPv6 Features**
  - SII Lawful Intercept (RFC 3924)
- **Cable modem management**
  - 802.1Q VLAN tagging
- **Dual-Stack CPE**
  - Extended ACLs & Named ACLs
- **IS-IS Routing with Multi-topology support**
  - Secure Shell v2 (SSHv2)
- **Cable Source Verify with DHCP Lease Query**
  - Automated Hitless Patching
- **Prefix Delegation Route Injection**
  - DHCP Relay Agent (Option 82)
- **OSPFv3**
  - DNS Client
- **Prefix Stability**
  - TFTP Enforce and Dynamic Shared Secret
- **TFTP Enforce / Dynamic Shared Secret**
  - BPI+ Enforce
- **DS and US Subscriber Management Filters**
  - IPDR/SP
- **DOCSIS 3.0 Multicast IP Video Support (via IGMPv3 Control)**
  - CM Status SOOR Support
- **Extended CM TX Power Support**
  - DSG Reset to Null
- **Integrated Service Class Agility**
  - Multi-Tuner CM Support

ORDERING INFORMATION

- **801023** Duplex Chassis Kit - Two RSMs, No CAMs, Rel. 1.x
- **801022** Simplex Chassis Kit - One RSM, No CAMs, Rel. 1.x
- **799012** Router System Module Kit - 1 RSM and RSM PIC
- **796836** Router System Module (796836)
- **796847** RPIC - Physical Interface Card for RSM (796847)
- **801146** SFP+ Optical Interface, 10GBASE-LR/LW, 1310nm
- **801147** SFP+ Optical Interface, 10GBASE-SR, 850nm
- **781346** SFP+ Optical Interface, 10GBASE-ER, 1550nm
- **781347** SFP+ Optical Interface, 10GBASE-ZR, 1550nm
- **801025** 128 DS DCAM Kit (Active) - 1 DCAM, Active DCAM PIC, and 128 DOCSIS DS Licenses
- **801021** 128 DS DCAM Kit (Spare) - 1 DCAM, Spare DCAM PIC, and 128 DOCSIS DS Licenses
- **799011** 64 DS DCAM Kit (Active) - 1 DCAM, Active DCAM PIC, and 64 DOCSIS DS Licenses
- **801019** 64 DS DCAM Kit (Spare) - 1 DCAM, Spare DCAM PIC, and 64 DOCSIS DS Licenses
- **802117** 128 DS DCAM Kit (Active) - 1 DCAM, Active DCAM PIC, and 128 EuroDOCSIS DS Licenses
- **802118** 128 DS DCAM Kit (Spare) - 1 DCAM, Spare DCAM PIC, and 128 EuroDOCSIS DS Licenses
- **801169** E6000 Software Maintenance – Phone Plus Gold

Copyright Statement: ©ARRIS Enterprises, Inc. 2014 All rights reserved. No part of this publication may be reproduced in any form or by any means or used to make any derivative work (such as translation, transformation, or adaptation) without written permission from ARRIS Enterprises, Inc. (“ARRIS”). ARRIS reserves the right to revise this publication and to make changes in content from time to time without obligation on the part of ARRIS to provide notification of such revision or change. ARRIS and the ARRIS logo are all trademarks of ARRIS Enterprises, Inc. Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and the names of their products. ARRIS disclaims proprietary interest in the marks and names of others.

Note: Specifications are subject to change without notice.

©ARRIS Enterprises, Inc. 2013 All rights reserved. No part of this publication may be reproduced.
### ORDERING INFORMATION (CONT’D)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>781304</td>
<td>Annex B 32 DOCSIS DS License Bundle</td>
</tr>
<tr>
<td>781296</td>
<td>Annex A 32 EuroDOCSIS DS License Bundle</td>
</tr>
<tr>
<td>799008</td>
<td>48 US UCAM Kit (Active) - 1 UCAM, Active UCAM PIC, and 48 DOCSIS US</td>
</tr>
<tr>
<td>801026</td>
<td>48 US UCAM Kit (Active) - 1 UCAM, Active UCAM PIC, and 48 DOCSIS US</td>
</tr>
<tr>
<td>781245</td>
<td>72 US UCAM Kit (Active) - 1 UCAM, Active UCAM PIC, and 72 DOCSIS US</td>
</tr>
<tr>
<td>781246</td>
<td>72 US UCAM Kit (Spare) - 1 UCAM, Spare UCAM PIC, and 72 DOCSIS US</td>
</tr>
<tr>
<td>802221</td>
<td>96 US UCAM Kit (Active) - 1 UCAM, Active UCAM PIC, and 96 DOCSIS US</td>
</tr>
<tr>
<td>802222</td>
<td>96 US UCAM Kit (Spare) - 1 UCAM, Spare UCAM PIC, and 96 DOCSIS US</td>
</tr>
<tr>
<td>781268</td>
<td>24 US License Bundle - applicable only with 48 &amp; 72 US UCAM Kits</td>
</tr>
<tr>
<td>801062</td>
<td>48 US License Bundle - applicable only with 48 US UCAM Kits</td>
</tr>
</tbody>
</table>

Full price list available from ARRIS.