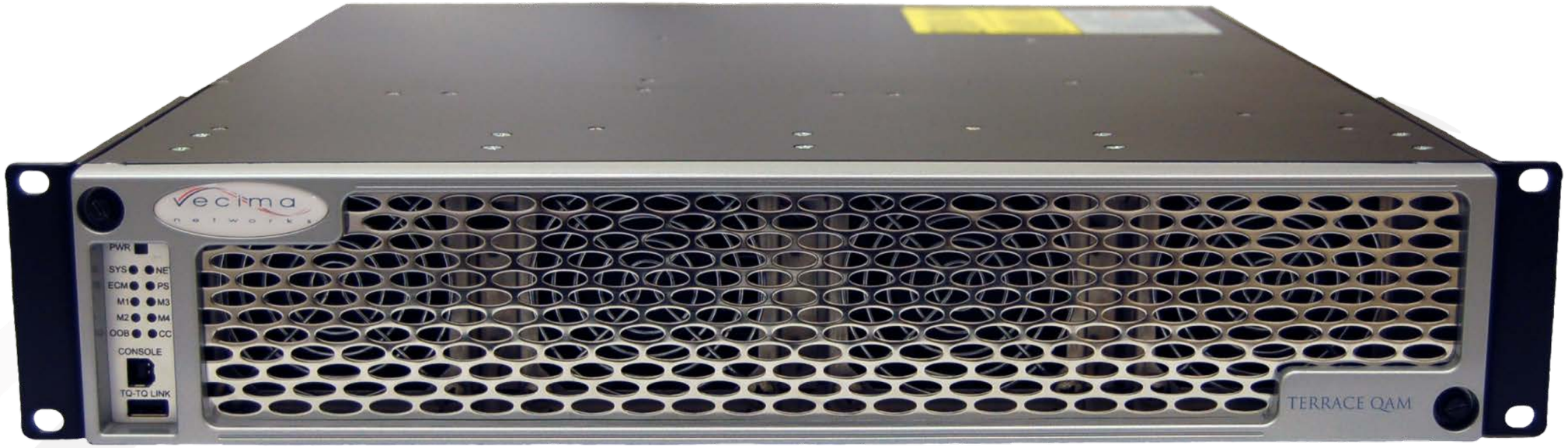


Terrace QAM

QAM to QAM – Hospitality Gateway

vecima networks®

LAST MILE SOLUTION®

January 2018

Presentation Outline

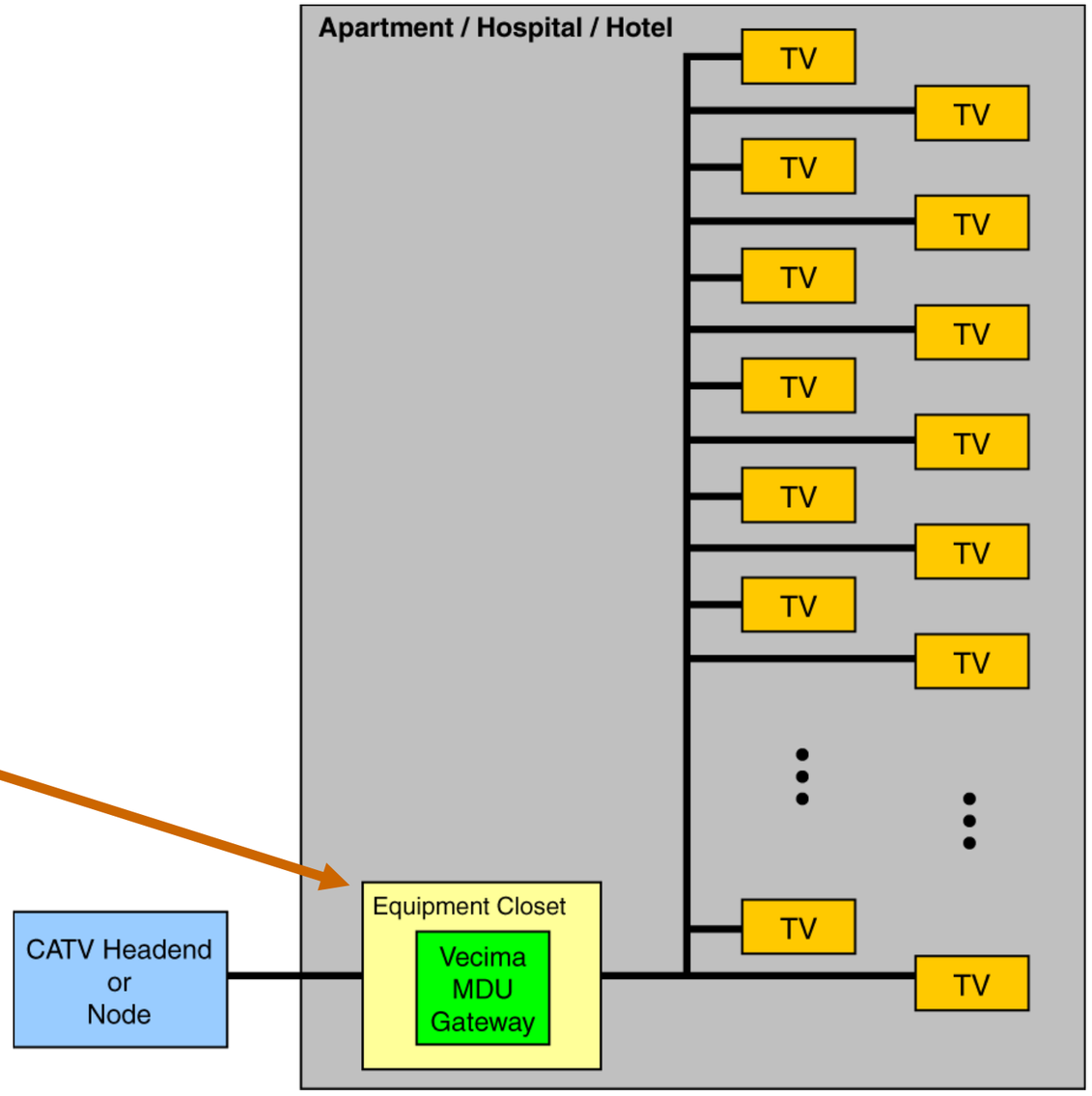
- The Challenge – Delivering all Digital and Hi-Definition Content to Hotels
- Vecima's Solution & Benefits
- Ecosystem Architecture and Use Case
- Basic Hardware Architecture
- Terrace QAM Transcryptor
- Provisioning and Control
- Key Features
- Basic Product Specifications
- Summary

The Challenge – Hi-Definition Content for Hotels

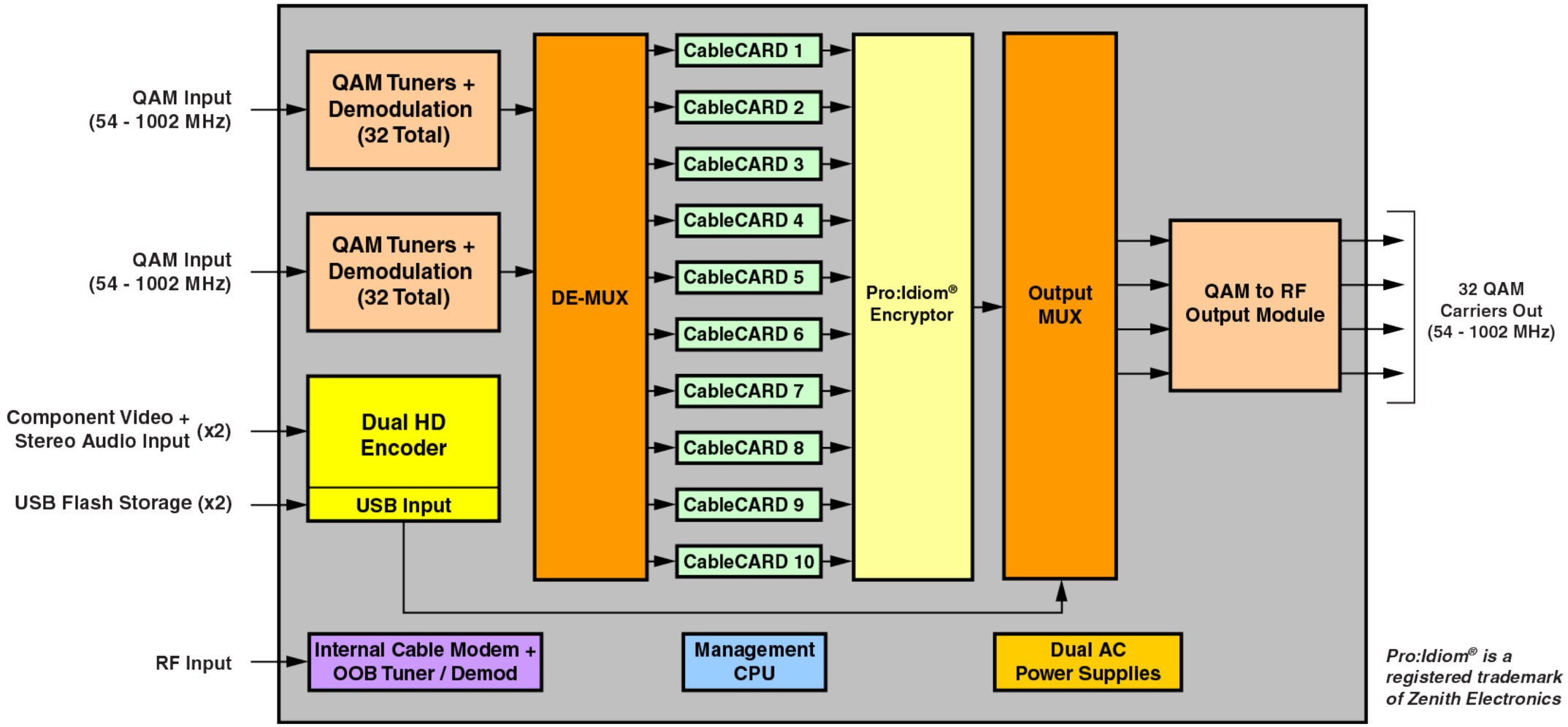
- To be competitive hotels are installing or upgrading to “HD ready” flat panel TVs in the guest rooms
  - » HD content from CATV and Satellite providers is available now and growing
- CATV Set Top Boxes could be installed in hotel guest rooms but it is highly undesirable due to:
  - » Theft, damage, limited access for maintenance, and cost
- Most digital content cannot be sent “in the clear”
  - » Must include Digital Rights Management (DRM) to prevent copying
- This challenge also exists for other types of MDUs
  - » Hospitals, Retirement Homes, etc.

Ecosystem Architecture and Use Case

- Product installation location is typically:
  - » Centrally located in a electronics equipment room
  - » Limited in size
  - » Not environmentally controlled
  - » Hot, Humid and Dusty

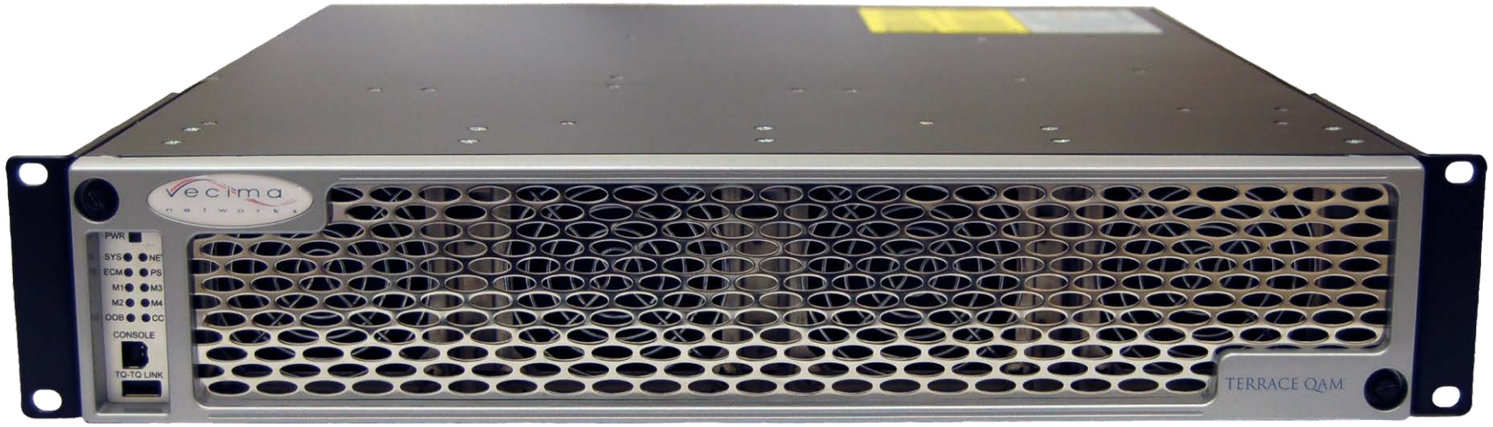


Basic Hardware Architecture – QAM In → QAM Out



Pro:Idiom® is a registered trademark of Zenith Electronics

Terrace QAM – Chassis

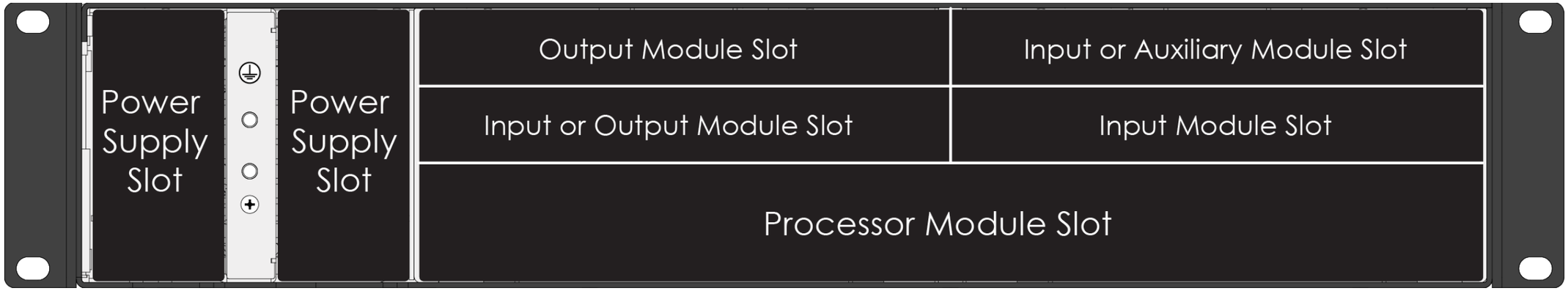


Terrace QAM - Front

Terrace QAM - Rear

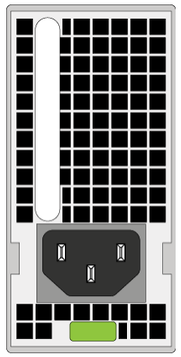
- 2RU by 21 inches deep
- Rack or vertically wall mount
- Multi LED status display
- Front to back cooling
- Local USB console connection for local control and configuration

Terrace QAM – Chassis



- Chassis is modular and supports:
  - Up to two power supplies (TQ1011B+) for redundancy - if two power supplies are used, they will load share with one taking over the load should the other fail
  - One processor module (TQ1007LT+ or TQ1007+)
  - Certain combinations of Input and Output Modules

Terrace QAM – Modules

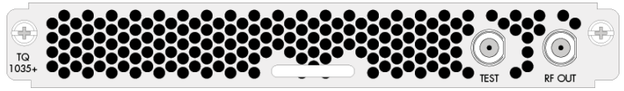


- Power Supply Module (TQ1011B+)
  - » Up to two power supplies for redundancy - if two power supplies are used, they will load share with one taking over the load should the other fail

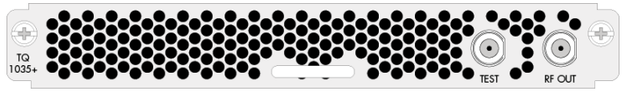
- QAM Input Tuner Module (TQ1042+)
  - » Demodulate up to 32 QAMs

- QAM Input Tuner Module (TQ1045+)
  - » Demodulate up to 40 QAMs

Terrace QAM – Modules

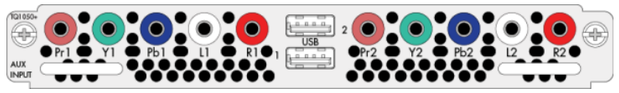


- RF Output Module (TQ1030+)
  - » Output up to 32 QAMs
    - ◆ Configurable as 4 blocks of up to 8 channels each

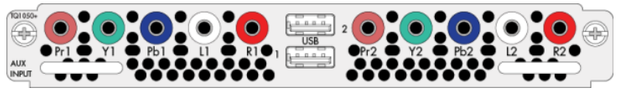


- **TransQAM** RF Output Module (TQ1035+)
  - » Output up to 32 QAMs
    - ◆ Configurable as 4 blocks of up to 8 channels each
  - » **MPEG-4 to MPEG-2 transcoding**
  - » SCTE-27 subtitling

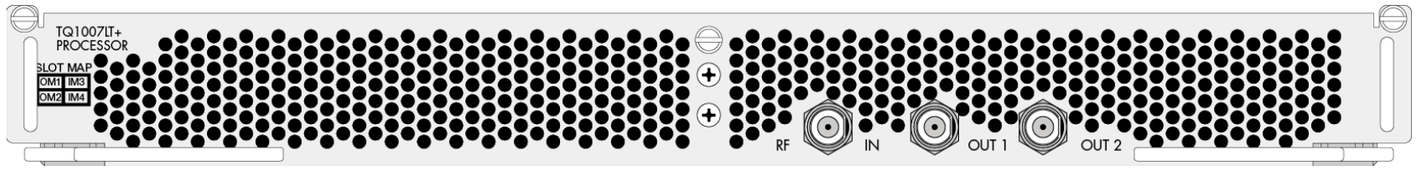
Terrace QAM – Modules



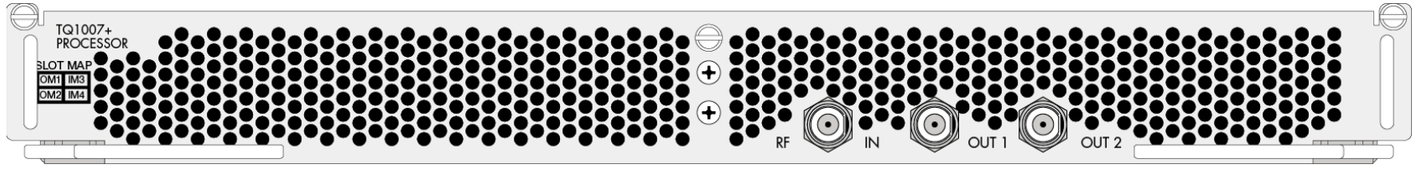
- Auxiliary Input Module (TQ1050+)
  - 2 sets of 5 x RCA Jack (Y,Pb,Pr,L,R) - SD and HD content capable
  - 2 x USB (Type A) - SD and HD content capable
  - Up to one auxiliary input card per chassis



- Auxiliary Input Module (TQ1055+)
  - HD or SD Scrolling Electronic Program Guide (now with Rovi Cloud Support)
  - Describes output channel lineup with incoming program names
  - 1 set of 5 x RCA Jack (Y,Pb,Pr,L,R) - SD and HD content capable
  - 1 x USB (Type A) - SD and HD content capable
  - Up to one auxiliary input card per chassis



- Processor Module (TQ1007LT+)
  - » Four CableCARD slots
  - » Decrypt up to 24 programs
  - » Encrypt outgoing programs with Pro:Idiom® technology or utilize clear QAM output



- Processor Module (TQ1007+)
  - » Ten CableCARD slots
  - » Decrypt up to 60 programs
  - » Encrypt outgoing programs with Pro:Idiom® technology or utilize clear QAM output

- One Processor Module per chassis (*either* TQ1007LT+ *or* TQ1007+)

Provisioning and Control

- Management Interfaces
  - Front panel USB console interface port for local technician diagnostics
  - Embedded DOCSIS® 2.0 cable modem for remote management
    - Optional Ethernet Management port (replaces embedded cable modem)
  - SNMP monitoring with traps for critical events and alarms
  - Password-protected web GUI showing status, alarms and logs

Provisioning and Control

- Centralized Provisioning
  - » All provisioning and device settings in a DOCSIS-like configuration file
  - » Configuration file automatically downloaded via TFTP at boot time
  - » PSIP re-generation for custom channel lineups based on in-band SCTE 65, out-of-band SCTE 65 or manual via configuration file

- Secure software download with firmware image verification similar to DOCSIS Secure Download

Key Features

- Provide reliable, secure HD programming in a hospitality environment
- Highly integrated - Combines QAM demodulation, decryption, demultiplexing, encryption, multiplexing, QAM modulation and upconversion in a single product for creating an entire line-up of channels
- Demodulate up to 64 QAM channels
- Supports 4 or 10 multi-channel CableCARDs to decrypt 24 or 60 programs for both SD and HD programming

Key Features

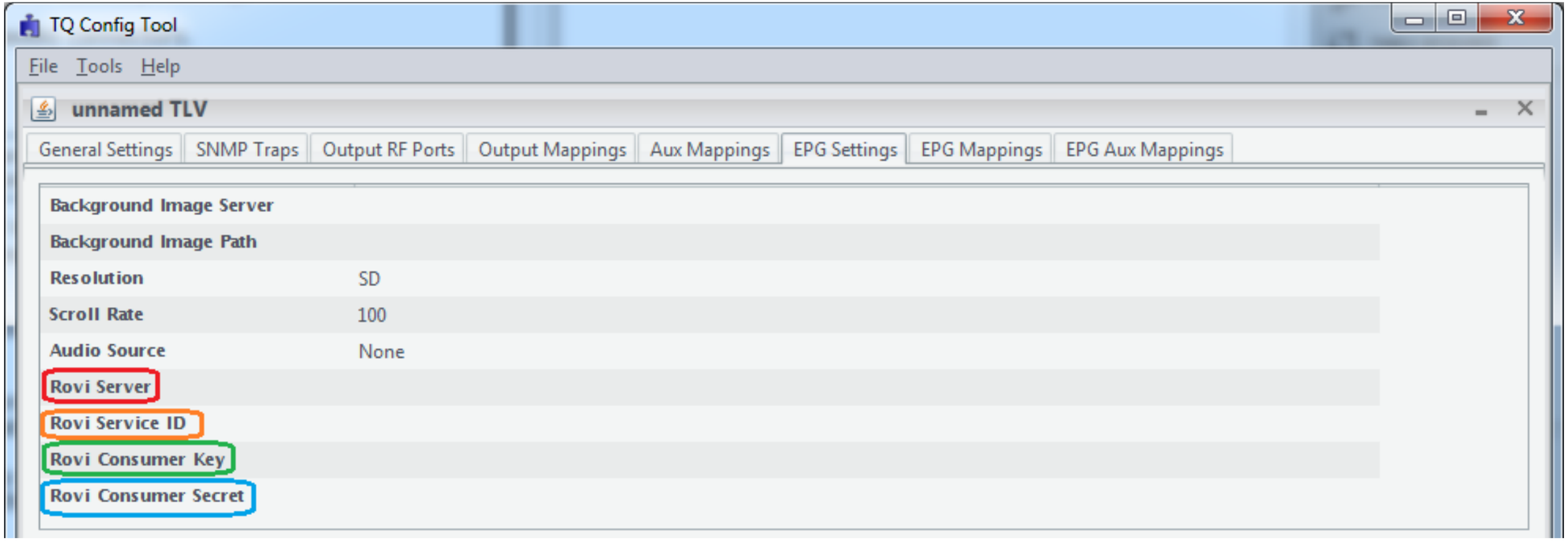
- Flexibility - Offer both SD and HD programming in the same chassis
- Supports MediaCipher® or PowerKEY® CableCARD™ decryption
- Encrypt outgoing programs with Pro:Idiom® technology or utilize clear QAM output
- Supports up to 4 HD inputs (2xComponent + 2xUSB) for delivery of local advertising and information with the TQ1050+ module

Key Features

- Embedded DOCSIS Cable Modem or Ethernet for remote configuration and management
- Supports MPEG-2 and MPEG-4 video
- Optional MPEG-4 to MPEG-2 transcoding with TransQAM (TQ1035+) module
- Optional SCTE-27 subtitling with TransQAM (TQ1035+) module

Key Features

- The TerraceQAM now supports ROVI Cloud.
- Rovi is a separate company that supplies cloud based EPG services allowing the customer to maintain EPG services without the need for a private server.
- Rovi will supply the customer with the ID of the Rovi Server, the Rovi Service ID, the Rovi Consumer Key, and the Rovi Consumer Secret, all of which can be inputted into the new Vecima TQ Configuration Tool, see below.



Basic Input Specifications

- QAM Input Tuner
  - » QAM Carriers Demodulated — 32 → TQ1042+ RF Input Module; 40 → TQ1045+ RF Input Module
  - » Modulation — ITU J.83 Annex B; 64, 256 QAM
  - » Frequency Range — 54 – 1002 MHz (Band Edges)

- *Optional* Auxiliary Input Module (TQ1050+ / TQ1055+)
  - » Connector (TQ1050+) — 2 sets of 5 x RCA Jack (Y,Pb,Pr,L,R) - SD & HD content capable; 2 x USB (Type A) - SD & HD content capable
  - » Connector (TQ1055+) — 1 set of 5 x RCA Jack (Y,Pb,Pr,L,R) - SD & HD content capable; 1 x USB (Type A) - SD & HD content capable
  - » Video Format — Analog component video (Y,Pb,Pr)
  - » Video Resolution — 480i/480p/720p
  - » Audio Format — Left & Right Audio

Basic Output Specifications

- QAM RF Output (TQ1030+)
  - » Modulation — ITU J.83 Annex B; 64, 256 QAM
  - » RF Output Ports — 1 x F-type, female, 75 Ω
  - » QAM Channels — 32 (Configurable as 4 blocks of up to 8 channels each)
  - » Frequency Range — 54 – 1002 MHz (Band Edges)

- QAM RF Output with **TransQAM** Module (TQ1035+)
  - » Modulation — ITU J.83 Annex B; 64, 256 QAM
  - » RF Output Ports — 1 x F-type, female, 75 Ω
  - » QAM Channels — 32 (Configurable as 4 blocks of up to 8 channels each)
  - » Frequency Range — 54 – 1002 MHz (Band Edges)
  - » Transcoding — H.264 to MPEG-2 Video
1080i and 720p resolution support
AC-3 audio pass through
32 programs per module

Summary

- Solves the hospitality challenge:
  - Most cost effective – lowest capital, installation and maintenance costs per channel
  - Most robust and reliable – highly integrated and commercial grade
  - Highest density – up to 64 QAMs processed in a single 2RU chassis
  - Remotely manageable – local embedded cable modem
  - Most flexible – modular future proof platform
  - Supports MediaCipher® or PowerKEY® CableCARD decryption
  - Compatible with SD and HD streams

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