Closing the Gap on GAP

LiveLearning Webinar™ For Professionals

Thursday, July 16, 2020
11:00 am – 12:00 pm ET
TODAY’S SPEAKERS

Alan Breznick
Cable/Video Practice Leader
Light Reading

Dean Stoneback
Senior Director of Engineering and Standards, SCTE•ISBE

Ed Dylag
Market Development Manager, Intel Network Platforms Group

Colin Howlett
Chief Technology Officer, Vecima

John Chapman
CTO, Cable Access & Fellow, Cisco Systems
AGENDA

• **Light Reading**—Purpose of GAP
• **SCTE**—Roots of GAP
• **Intel**—Fundamentals of GAP
• **Vecima**—Key tenets of GAP
• **Cisco**—Need for universal chassis
• **SCTE**—Training, standards & certifications
• **Audience Q&A**
So What is GAP?

MODULAR, STANDARDS-BASED NODE DESIGN

SCTE working group to specify
Mechanicals, Power & Thermals

Module Functionality defined by Vendors
to meet market needs
What’s Purpose of GAP?

• To accelerate innovation by defining common interfaces within node housings that support plug-in modules conforming to certain physical, thermal, mechanical and electrical specs
• To enable MSOs to work with best-of-breed vendors to add new functions and services to access nodes through simple in-field module or software upgrades
• To allow cable operators to accelerate tech updates, deliver multiple services using a single node platform, facilitate the migration to an edge-computing model, reduce inventory and boost service velocity
GAP-Node Diagram
Inside the GAP Node
Dean Stoneback
Senior Director of Engineering and Standards,
SCTE•ISBE
SCTE•ISBE Standards have driven consistency and commoditization of cable products/practices powering huge growth in customers, revenue, and reliability. SCTE•ISBE Standards Program has created and regularly updates more than 300 standards/operational practices for every aspect of cable technology.

Our Explorer initiative is spearheading cable’s progress in telemedicine, aging in place, IoT, and other areas on the 10G platform.
SCTE•ISBE Standards At-A-Glance

**BUSINESS BENEFITS**

- Industry ROI from enablement of linear/advanced advertising and broadband data/voice.
- Volume production of hardware/software drives costs down while expanding industry’s market footprint.
- Worldwide acceptance of standards fuels international growth.

**OPERATIONAL BENEFITS**

- Freedom from reliance on competitive industries’ standards.
- Single source for standards, best practices, and training drives workforce excellence.
- Interoperability across equipment optimizes service performance.
- Comoditization keeps costs low and accelerates deployment.
10 G Initiatives in the SCTE•ISBE Standards Program

- Reliable network powering (EMS)
- Proactive network maintenance (NOS)
- Measurement practices (NOS)
- Business continuity / disaster recovery (NOS)
- Human impact on network operations (NOS)
- Artificial intelligence / machine learning (DSS)
- 3 GHz actives and passives (IPS)
- Generic Access Platform (IPS)
- Edge computing inside the Generic Access Platform (IPS)

Join at **scte.org/standards-join**

EMS = Energy Management Subcommittee
NOS = Network Operations Subcommittee
DSS = Data Standards Subcommittee
IPS = Interface Practices Subcommittee
Interface Practices Subcommittee (IPS)
Generic Access Platform (GAP)

- Project supported by Charter, Cox, Shaw, and others
  - Physical, thermal, mechanical, and electrical interfaces for the internals of a node housing
  - Allows OEMs to devote their value-adding efforts to the service-generating modules that reside inside the enclosure
  - Any module that is compliant with the GAP specification will be able to coexist with other GAP-compliant modules
- Group Chairs: Kevin Kwasny and Roger Stafford, Charter Communications
- Meeting Schedule: Bi-Weekly, Wednesday at 3:00 p.m. ET, plus many weekly breakout sessions
- Join at [scte.org/standards-join](http://scte.org/standards-join)
Interface Practices Subcommittee (IPS)
3 GHz Task Force

Group Charter

- The purpose of the 3.0 GHz Task Force is to evaluate all IPS Standards to determine how to best update them to match the DOCSIS 4.0 specifications.
- The task force creates standardized text to be used in IPS standards and standardized approaches such as specification tiering or the creation of equipment “classes” so that both legacy and future equipment can be accommodated.
- The identified standards are then updated.
- Group Chair: Timothy Cooke, Director of Technology, Amphenol Broadband Solutions
- Meeting Schedule: Bi-weekly, Monday at 4:00 p.m. ET
- Join at scte.org/standards-join
Interface Practices Subcommittee (IPS)
WG2 DG1 - 3 GHz Hardline Taps and Passives

Group Charter

• Create standard(s) for 3.0 GHz taps including:
  • Mechanical specifications, including sizes, mounting points, and faceplate interfaces and mounting
  • Requirements for electrical performance
  • An RF bypass mode that maintains AC and RF through the housing when the faceplate is removed
• The group will also consider creating standard(s) for hardline passives.
• Group Chair: Nick Segura, Advanced Engineering Principal Engineer, Charter Communications
• Meeting Schedule: Weekly, Tuesday at 11:00 a.m. ET
• Join at scte.org/standards-join
Interface Practices Subcommittee (IPS)
3 GHz Coordination

Key RF Connectors Are Being Updated

- GAP, tap and 3 GHz teams are working together to update common standards
- F connector updates
  - SCTE 01 and SCTE 02 female ports
  - SCTE 123 and SCTE 124 male connectors
  - Many others
- 5/8-24 RF & AC equipment port updates
  - SCTE 91 and SCTE 92 female port and male connector
- Join at scte.org/standards-join
Interface Practices Subcommittee (IPS) Generic Access Platform (GAP) Participants

Join at scte.org/standards-join
What is GAP?

MODULAR, STANDARDS-BASED NODE DESIGN
SCTE working group to specify Mechanicals, Power & Thermals
Module Functionality defined by Vendors to meet market needs
WHY GAP, Why now?

1) Multi-Access
   - Hang enclosure once
   - Mix access types
   - Deploy far edge services

2) DAA Inflection
   - Focus on core competencies
   - Compete in larger access space

3) Edge Compute
   - Sell far edge virtual network functions

MSO BENEFITS
- Focus on core competencies
- Compete in larger access space
- Sell far edge virtual network functions
Multi-access Drives Need To Streamline Inventory & Deployment

- DOCSIS
- O-RAN
- R-OLT
- R-PHY
- 5G CBRS
- Wi-Fi
- CDN
- COHERENT T
- vRouter
- SD-WAN
- Lora WAN
- O-RAN
- R-MACPHY

<table>
<thead>
<tr>
<th>WITH GAP</th>
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<tr>
<td>Mix access types</td>
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<td>Avoid ‘strand sprawl’</td>
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DAA & Fiber Deep Increase Node Count, Make Rip & Replace Unsustainable

WITH GAP
Hang enclosure once
Upgrade in place
Future proof outside plant
Edge Compute Represents Emerging New Services Opportunity

MISSION-CRITICAL IOT:
Low Latency
Ultra Reliability

MASSIVE IOT:
Reduce Backhaul Requirements

ENHANCED BROADBAND
Better Experience
Faster Transactions

WITH GAP
Node design modernization
High speed dataplane
Updated thermal design
DOCSIS RMD (Remote MAC Device)

- RF Modules
- PCIe Backplane Module
- RPD Module
- Power Supplies & Distribution
- Modular Housing
- Intel® Xeon-D Compute Module
DOCSIS RMD + PON (Passive Optical)

- DOCSIS MAC SW
- OLT Forwarding Plane
- Telemetry
- Other SW
Wireless RAN (Radio Access Network)

Radio Unit (RU)
Distributed Unit (DU)
Central Unit (CU)
Use Cases for Edge Computing

- Retail
- Healthcare
- Transportation
- Manufacturing

- Enterprise LTE/5G
- Edge Security
- Local Traffic Shaping
- Internet of Things
Join the Journey TODAY!

GENERIC ACCESS PLATFORM (GAP)
Part of Interfaces Practices Subcomittee (IPS)
See https://standards.scte.org/apps/org/workgroup/ipswg1/
-or- contact standards@scte.org
Audience Poll I

How important do you think the GAP initiative is for the cable industry?

• Critical
• Important
• Somewhat important
• Not important
GAP
Generic Access Platform
Colin Howlett, Chief Technology Officer
GAP Key Tenets

### Modularity
- Everything field-replaceable (including RF/AC Entry)
- Predefined physical “slots”
- Simple interfaces
- Multi-vendor ecosystem

### Flexibility
- All cable access technologies
- Multi-slot modules for space and power when needed
- Allow for vendor innovation

### Manageability
- NETCONF/YANG northbound to operator OSS
- Standard GAP Object Model
- Inventory – what is in each node in the field?
- Monitoring - common node and module parameters
Slot locations defined including mounting

Passive backplanes

Electrical and mechanical interfaces shown in-scope

Alternate lid backplane for compute module
Inventory management and monitoring including energy

Inter-module CAN Bus

NETCONF/YANG northbound from module with hub uplink

GAP Management

Operator OSS

NETCONF/YANG

Module D Hub Uplink

Internal Management CAN BUS

Module A

Module B

Module C
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Part of Interfaces Practices Subcommittee (IPS)

See https://standards.scte.org/apps/org/workgroup/ipswg1/
- or- contact standards@scte.org
Thank You,
Audience Poll II

Assuming the specs and equipment are ready, how soon do you see your company starting to install GAP nodes in its plant?

- Next year
- 2022
- 2023
- 2024 or later
- Don’t see it happening right now
Chapters & Membership

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AUDIENCE Q&A

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NEXT MONTHS WEBINAR

Getting Ready for DOCSIS 4.0
Sept. 17, 2020 at 11:00 am (ET)

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