Open Aggregation

Routers

Jeff Catlin V.P. Technology Edgecore Networks
Agenda

• Edgecore Cell Site Gateway Router Contribution

• Edgecore Aggregation Router Contribution

• Q&A
Active members in Open Compute since 2013!

- #1 Network ODM
- Founded 1988, IPO Taiwan 1995
- Engineering: 700 network engineers
- Manufacturing: Accton in Taiwan & China. Partners. TAA Compliant

Total: 3,750 employees worldwide

- Wholly owned subsidiary of Accton
- Go-to-market organization to network operators
- Manages customer, partner and open community relationships
Why “Open” Cell Site Gateways?

- Updates to existing equipment is needed as mobile backhaul usage surges with 5G deployments on the horizon. Sitting at the edge of the network the Cell Site Gateway is a high volume deployment product and a natural location for Carriers to start enjoying the benefits of open networking.

- Removal of single vendor lock in and traditionally slow technology roadmaps from incumbents

- Truly open Hardware that can run different commercial and open source operating systems offering freedom of choice to the operator

- New operating systems choices that provide extensibility and the execution of arbitrary agents

- Removal of vendor lock in on pluggable optics and cables leading to lower capex
Cell Site Gateway High Level Requirements

- Outside plant compliant with operating temperature -40C to +65C
- 1RU 19” Rack mountable
- Maximum equipment depth 300mm
- Redundant power supplies and fans
- Support clock synchronization techniques incl IEEE 1588 and SyncE
- Support for local timing inputs/outputs GPS, ToD, 1PPM, etc.
- Ability to support long haul optical modules
Topology

Source: AT&T OCP Presentation OCP_OutDoorSIAD.V4.pdf

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Edgecore AS7316-26XB Cell Site Gateway

- Conforms to the AT&T Cell Site Gateway Router Specification
- 16 x 10G SFP+, 8 x 25G QSFP28, 2 x 100G QSFP28
- Deep Buffer Switch Architecture
- Outdoor Plant Deployment
  - NEBS 3, -40 to 65C operating temp
  - 1U, 300mm depth
  - 350W max power
- Full 1588 and Synchronous Ethernet
- AC and 48VDC Power Options
- Broadcom StrataDNX QumranAX silicon
# Edgecore AS7316-26XB Cell Site Gateway

<table>
<thead>
<tr>
<th>Description</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Power Supplies</td>
<td>1-4</td>
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<tr>
<td>2- 100 Gigabit Ethernet QSFP28 ports</td>
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<td>6- 1PPS output port</td>
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<tr>
<td>7- 10MHz input port</td>
<td>16</td>
</tr>
<tr>
<td>8- 10MHz output port</td>
<td></td>
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</tbody>
</table>

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Edgecore AS7316-26XB Cell Site Gateway
Edgecore AS7316-26XB Cell Site Gateway

• Included in the Edgecore AS7316-26XB contribution
  • Hardware specification
  • Software programming guide
  • Schematics
  • Gerber files
  • Allegro .brd files
  • Mechanical STEP files
  • CPLD code in source and binary format
  • Test plan
Edgecore AS7316-26XB Cell Site Gateway

• Contribution Schedule
  • Specification contribution – Complete ready for review
  • Design file contribution – Complete ready for review
  • Incubation Committee overview and presentation – Complete
  • Contribution Acceptance - Tentative completion by early November

• Product Schedule
  • Sample units distributed to software partners – Complete
  • PoC tests and filed trials – Throughout Q4 2018
  • Volume and GA Q1 2019
Topology

Source: AT&T OCP Presentation OCP_OutDoorSIAD.V4.pdf

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Why “Open” Aggregation Routers?

Increasing cellular deployments and upcoming new 5G deployments may/will necessitate updates to the aggregation network

- Removal of single vendor lock in and traditionally slow technology roadmaps from incumbents
- Truly open Hardware that can run different commercial and open source operating systems offering freedom of choice to the operator
- New operating systems choices that provide extensibility and the execution of arbitrary agents
- Removal of vendor lock in on pluggable optics and cables leading to lower capex
Aggregation Router High Level Requirements

• 19” Rack mountable
• Redundant power supplies and fans
• Support clock synchronization techniques incl IEEE 1588 and SyncE
• High density 100G connections
• Support for 400G connections
• Deep Buffering
• Large Capacity TCAM
• Ability to support long haul optical modules
Edgecore AS7926-40XK, -80XK Aggregation Routers

- 40 x 100G and 80 x 100G models
- Broadcom StrataDNX Jericho 2 (BCM88690)
- Deep Buffer Switch
- Expandable TCAM (BCM16K)
- IEEE 1588 and Synchronous Ethernet
- AC and 48VDC Power Options
- “Building Block Design” for future offerings
Edgecore AS7926-40XK, -80XK Aggregation Routers

• Contribution Schedule
  • Specification contribution – Complete - Ready for review and feedback
  • Design package contribution – After specification review – Target Q4 2018

• Product Schedule
  • Sample units distributed to software partners – October 2018
  • PoC tests and field trials – throughout Q1 2019
  • Volume and GA late Q1 2019
What’s Next Aggregation Router Designs?

• There is plenty of innovation still left to do!

• 400G Mezzanine card for mixture of 100G and 400G

• 400G Main PCB for complete 400G solutions

• Distributed chassis designs

• ...?
Follow up!

• Purchase these and other products on the OCP Marketplace!
  https://www.opencompute.org/products

• Download detailed specifications from the Telco group wiki!
  https://www.opencompute.org/wiki/Telcos#Specs_and_Designs

• Provide feedback and ideas to mailing list!
  https://www.opencompute.org/projects/telco
THANK YOU