Mobile Backhaul Offer

Henky Agusleo  
Global Service Provider Segment  
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Ihsan Junaidi Ibrahim  
Service Provider Architecture
Major Service Provider trends demand an Agile Infrastructure to survive.

Top Challenges Facing Service Providers:

- Flattening revenue
- Exponential traffic
- Complexity and Scale
Service Provider: Service Centric Network Value and Offers

- Agile Infrastructure
  - Cut costs, deliver services faster, increase adaptability & trust
  - Topology Re-architecture
  - Operations Re-Architecture
  - Network Services Re-Architecture
  - Workforce Re-Architecture

- Next Gen Subscriber Services - TBD
- Telco Data Center - Q3FY20
- Service Centric Network - August 2019

- Mobile Backhaul
- Trusted Intelligent Peering
- Software Defined Transport Network

- Reference architectures, journey, and offers
- X-arch sales plays
- CXO messaging
- Industry expertise
Service Provider: Service Centric Network–Mobile Backhaul
Service Provider: Mobile Backhaul Value Proposition

Cisco Mobile Backhaul provides clear value to Service Providers.

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<tr>
<th>Lowers Cost</th>
<th>Future-proofs the network</th>
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<tr>
<td>• Next-generation equipment lowers power consumption and cooling requirements.</td>
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<td>• Compact size leads to less real estate costs.</td>
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<td>• Network automation increases overall operational efficiency and reduces human errors.</td>
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<td>• Foundation for superior technologies in software-defined networks (SDN), segment routing and IPv6 - paving the way for the Service Centric Network.</td>
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<td>• Security hardening and trustworthiness embedded in every Cisco product</td>
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<td>• Automated network deployment and operation</td>
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<th>Supports Growth</th>
<th>Smart investment</th>
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<td>• Higher bandwidth equipment capable of supporting new-era services like augmented reality (AR), virtual reality (VR), and 5G business-to-business (B2B).</td>
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<td>• Key automation features that shorten deployment phase and time to revenue.</td>
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<td>• Choice of Cisco positively impacts service provider (SP) business outcomes: cost and growth</td>
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<td>• Commercial models (Vortex, EAs) that provide the right balance between CapEx and OpEx for SP in deals</td>
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Service Provider: Mobile Backhaul Overview

Cisco Mobile Backhaul Offer

1. Automation / Security
   - NSO + Crosswork + WAE + EPN Manager
   - Firewall + Duo + Stealthwatch + ISE

2. Network Infrastructure
   - IOS XE/XR
   - Fixed and modular cell site routers, pre-aggregation and aggregation routers

3. Services / CX
   - Plan, design, implement at scale with automation
   - Brownfield XE->XR migration

Target customers

This offer is appropriate for a number of customer situations:

- **Aging inefficient installed base**
  - Cisco (XE to XR upgrade)
  - Competitor (take out)

- **4G growth or 5G pre-build**
  - Continued 4G growth needs and added capacity for 5G deployments

- **Greenfield environments**
  - New start-up mobile providers

Business case

- Proof of concepts (POCs) and demos
- Commercial construct
- Validated design
5G Converged Transport Network Overview

E2E Service Provisioning (NSO) and Path Computation with SLA (SR-PCE/WAE)

Feature-rich service stack in L3VPN & EVPN
Automatable & Programmable Segment Routing Transport

D-RAN
LTE
5G NR

C-RAN
5G NR

Cloud RAN
RRU #1
RRU #2
RRU n

Carrier Ethernet
xPON

Access
Pre-Agg
Backhaul
MEC
vCU

Access
Pre-Agg
Midhaul
MEC
vCU/vDU

Access
Pre-Agg
Fronthaul
MEC
vDU

DCO over dark fiber/DWDM

Backhaul
Aggregation
Backhaul
Edge

MEC
vCU

Peering MEC
vCU

SR Core

Central DC
Packet Core
OSS/BSS

Internet

Peering

DCI

NCS 540
NCS 540
NCS 560
NCS 560
NCS 5500
NCS 5500
ASR 9900
ASR 9900
NCS 5500

Cisco IMPACT
Transport Network Fabric Evolution

Centralized Management, Leaner & Highly Scalable

Traditional Unified MPLS
- Operational complexity
- Integrated HW & SW
- Underlay scaling issues

Transport
- BGP
- T-LDP
- BGP-TE
- RSVP-TE
- MPLS LDP
- GP
- P/MPLS

Current SR-MPLS deployment with controller
- SR MPLS: optimised & leaner routing
- Centralised management & orchestration
- Distributed control plane
- Underlay scale issues

Future SRv6 deployment with controller
- All of SR-MPLS features plus
- Further simplification & enhanced scaling
- Programmable control plane
- Service chaining
- Massive underlay scale

Services
- BGP
- SDN

Transport
- Overlay
- IPv6/SR
Why Segment Routing

Leverage EVPN & L3VPN rich features
SR-TE steering for SLA-bound services
SRv6 service chaining for Far-Edge Enterprise serverless computing
NaaS with Flex Algo & EVPN slicing

Data plane monitoring & cumulative metric-bound SPF for SLA assurance
Massive SRv6 underlay scaling
TI-LFA & micro-loop avoidance for increased network availability
Tree-SID for leaner Multicast delivery

SRv6 in Transport, DC & Compute
E2E service turn-up with NSO & Traffic Engineering with SR-PCE/WAE
SRv6 network programmability & XR automation capability

Cisco leadership in SR
SR/MPLS deployment with over 200+ customers worldwide
Proven brownfield MPLS integration
Seamless SRv6 transition
Key Segment Routing + Automation Use Cases

- **Agile Service Provisioning**: Automatic network & services provisioning with NSO
  Outcome: Decrease time to revenue & increase service agility

- **Bandwidth & Path Optimization**: Sweat network links & optimize service network path
  Outcome: Run costly links hotter & increased user experience

- **Egress Peer Engineering**: BGP-aware SLA service for latency-sensitive Cloud SaaS app
  Outcome: Optimal service experience based on cost, latency & loss

- **Bespoke Services Provisioning**: SR/ACI + Automation network slicing
  Outcome: Network-as-a-Service revenue model
Built upon Cisco’s best-in-class
- Routing, Automation platforms
- Security: Protect Network, Applications, Customer Data
Service Provider: Mobile Backhaul Case Example

Winning solution
- Single vendor MBH
- WAN transport with NCS5500, Central DCs with ACI, Regional/Edge DC with Nexus9K, NFVI with Cisco VIM

How we won
- Executive-level engagement, Bridging
- Early engagement, consultant work with top talent in Cisco influencing future architecture design
- Proven ability and expertise of global deployment (especially, RJIO)
- End-to-end arch: IP transport, DC Fabric, NFVI, Virtualized Packet Core and Automation
- Substantial Capex optimization via CFP2 DCO differentiation
Vortex Flexible Consumption Model

Customer benefits

- Reduce upfront capital up to 36%
- Utilize capital efficiently
- Protect your investment
- Embedded automation

Pay for use

Year | Network ports
--- | ---
Gen #1 line card
Gen #2 line card

Portability

- Pay for capacity only when needed
- Licenses float to where there is demand—plan your network, not your box
- Take licenses with you—separate capacity planning from hardware lifecycle planning
- Add features when needed without fear of being stranded on older hardware

Resource pooling

- Embedded automation
  - EPN Manager
  - WAE Automation
  - NSO

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Commercial modeling

Please engage the Cisco sales teams to achieve the business outcome that you want.

- Customer-facing business cases

**Benefits:**
- Demonstrate lower upfront cost
- Year-by-year cost projections
- Model and compare multiple scenarios

**Vortex TCO model for fixed NCS Nodes**
Supports: NCS5501, NCS5502, NCS55A1-24, NCS55A2-36 & NCS55A2z

**Vortex TCO model for modular NCS Nodes**
Supports: NCS5504, NCS5508 & NCS5515

**Vortex TCO model for NCS540 & NCS560**
For more information

- For more information on mobile transport, backhaul, segment routing, please go to [www.cisco.com/go/5g-transport](http://www.cisco.com/go/5g-transport)

