

SRv6 DWDM P2P Integration

RON/POI stack collapse — disaggregated λ channels or ROADM fat pipe over SRv6 Flex-Algo

COMPUTER NETWORKING / INFORMATION TECHNOLOGY

Service Overview

SRv6 TEK Innovations architects and deploys Segment Routing over DWDM Point-to-Point integrations that eliminate complex transponder overhead by mapping SRv6 uSID segments directly over coherent pluggable optics (400G ZR+ / OpenZR+), realizing the full promise of Routed Optical Networking (RON) and Packet-Optical Integration (POI) architectures endorsed by the IETF CCAMP working group.

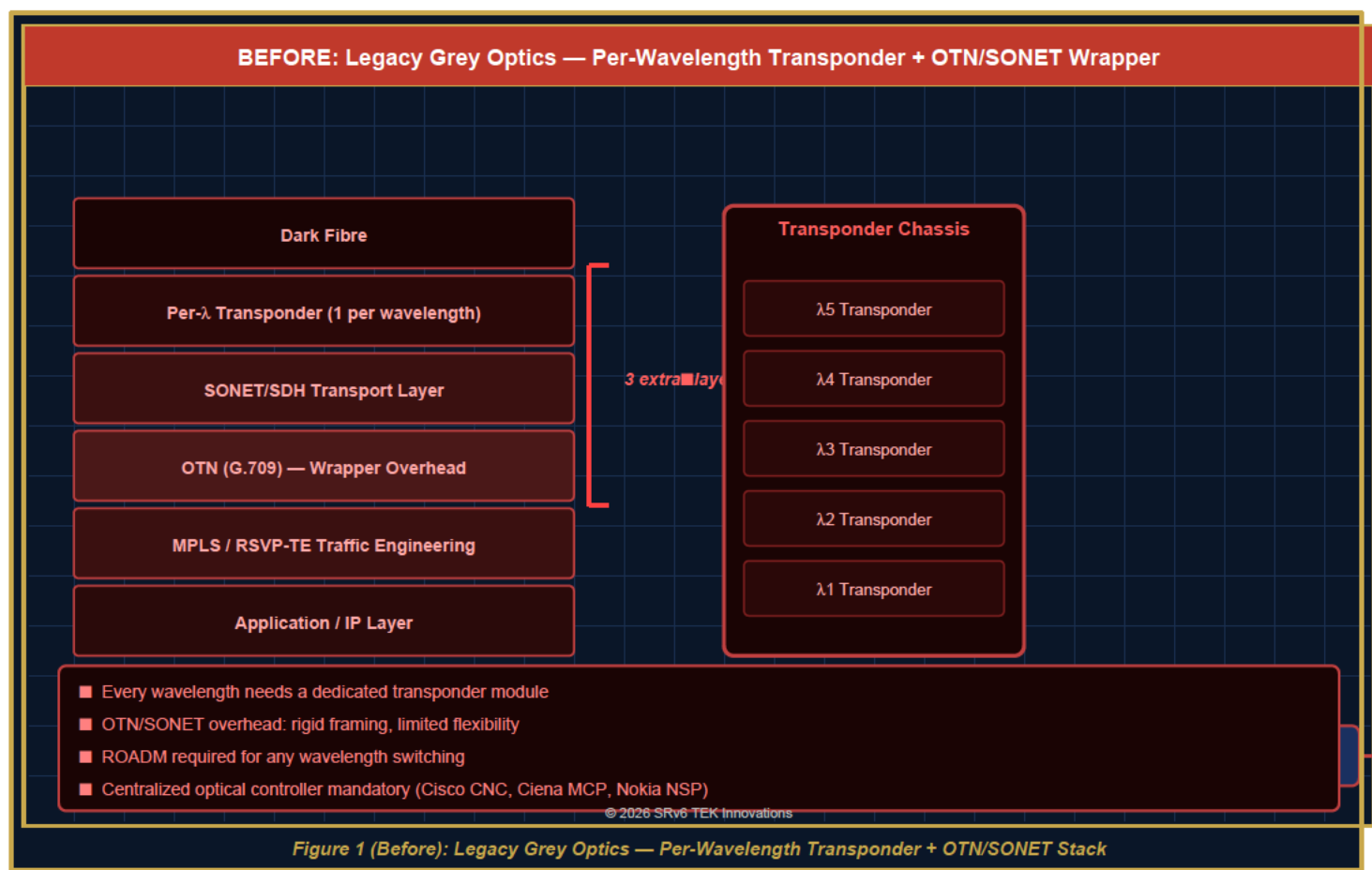
"Collapse your IP+Optical stack from 5 layers to 3. SRv6 uSID segments ride directly over coherent wavelengths — no transponder, no OTN wrapper, no excuses. Choose controllerless disaggregated λ channels for network slicing, or aggregated ROADM fat pipe with hierarchical CS-SR controller for maximum bandwidth utilization."

Two Deployment Architecture Options

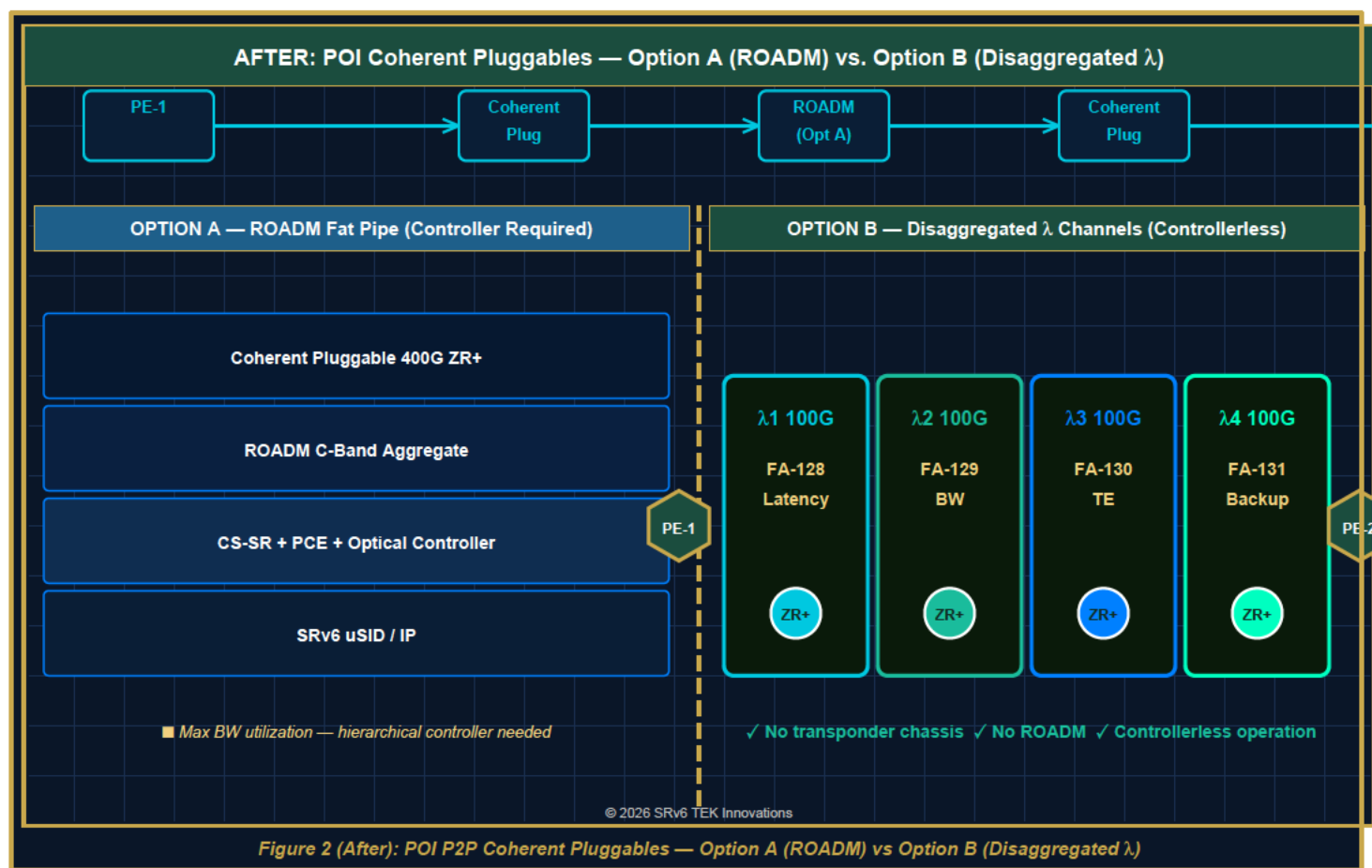
The before/after diagrams on pages 2 and 3 show the full evolutionary arc — from legacy grey optics/OTN to two distinct target-state architectures:

- **BEFORE:** Legacy grey optics with OTN/SONET/SDH wrapper — complex transponder overhead, rigid RSVP-TE TE plane, expensive per-wavelength transponder cost.
- **OPTION A:** DWDM with ROADM — all wavelength channels aggregated into a single fat pipe. Maximum bandwidth management and utilization. Requires hierarchical controller: CS-SR (Circuit-Style SR), Cisco CNC or Huawei Hierarchical Controller, PCE IP controller, and WSON Optical controller working together for provisioning.
- **OPTION B:** POI P2P Disaggregated λ Channels — individual discrete wavelength channels without ROADM aggregation. Each channel or grouping carries a dedicated SRv6 Flex-Algo plane (FA-128 Latency, FA-129 BW, FA-130 TE, FA-131 Backup), enabling native network slicing per channel. Optimized, controllerless design — no complex controller architecture required when channels are discrete. Simple, scalable, and operationally lean.

Architecture — Before State



Architecture — After State



Technical Architecture

RON/POI Integration	SRv6 uSID segment list in IPv6 SRH forwarded over 400G ZR+ coherent DWDM wavelengths without IP-over-OTN wrapper overhead.
Disaggregated λ Channels	Per-channel SRv6 Flex-Algo planes enable network slicing without ROADM. Each channel carries an independent TE policy. Controllerless when channels remain discrete.
ROADM Fat Pipe (Option A)	Aggregated bandwidth via ROADM for maximum BW utilization. Requires CS-SR (Circuit-Style SR) with Cisco CNC or Huawei Hierarchical Controller + PCE + WSON Optical Controller.
TI-LFA Fast Reroute	Sub-50ms local repair on optical link quality degradation (Q-factor threshold crossing). RFC 8355 pre-computed backup paths.
POI Control Plane	PCEP-based PCE with TE optical topology abstraction. BGP-LS advertisements of optical link parameters into IP TE database.

Validation Engine — Two-Phase Proof-of-Concept

Phase I — Virtual Containerlab	Multi-vendor topology (cEOS, Nokia SR Linux, FRRouting, vJunos) on bare-metal Ubuntu. Automated Q-factor/BER optical degradation injection, TI-LFA < 50ms convergence validation per RFC 8355, H.Encap/H.Insert benchmarks, BGP-LS/PCEP end-to-end verification. CI/CD GitHub Actions regression pipeline handed off as self-service sandbox. Deliverable: topology-as-code repo, benchmark report, runbook.
Phase II — Physical Customer Site	Principal architect on-site at customer lab against physical coherent pluggable routers and live fiber plant. Coherent pluggable (400G ZR+/OpenZR+) commissioning: optical power budget, OSNR/pre-FEC BER baseline, wavelength alignment. SRv6 uSID policy via IaC — zero CLI deviation. Fiber-pull TI-LFA test with telemetry-verified sub-50ms recovery. Deliverable: Hardware Commissioning Report + Grafana telemetry stack.

Phase II — Customer Site Cost Breakdown

Principal Architect On-Site	\$3,500/day × 5 days on-site (commissioning through NOC handoff) = \$17,500. Additional days at same rate per SOW amendment.
Travel & Logistics	Economy airfare + ground + hotel at actuals with pre-approved cap. Estimated \$1,500–\$2,500 depending on site.
Phase I + II Bundle	Combined virtual + physical fixed fee: \$45,000–\$55,000 covering both phases, all deliverables, and 30-day post-deployment hypercare support.

Pricing and Engagement Terms

Pricing Model	Base Engineering Fee	Scale Factor Modifier
Base + Per-Node Dynamic	\$30,000 Baseline Phase I architecture design and Containerlab digital twin setup	\$250 / Optical Node Phase II on-site: \$3,500/day + travel actuals. Bundle (Phase I+II): \$45,000–\$55,000 fixed.
Scale Examples	10 nodes: \$30,000 + \$2,500 = \$32,500 25 nodes: \$30,000 + \$6,250 = \$36,250 50 nodes: \$30,000 + \$12,500 = \$42,500	

Download the Technical Whitebox PDF. | Connect on LinkedIn to initiate a scoping call.