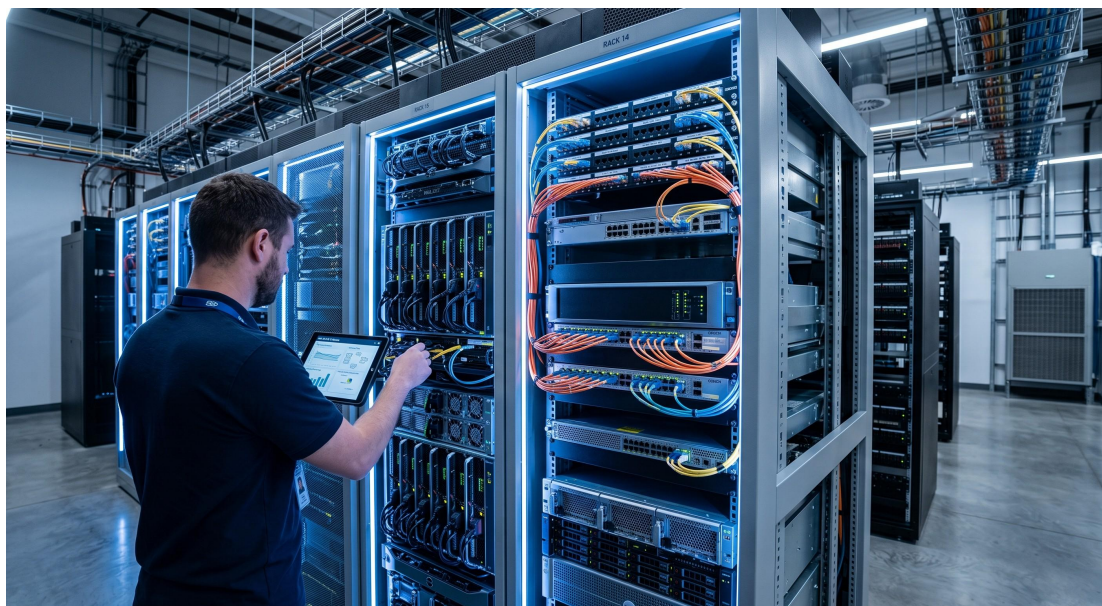


Legacy Network Upgrade Cost-Benefit Analysis - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

Legacy Network Upgrade Cost-Benefit Analysis is a comprehensive carrier-grade framework and hardware platform designed to quantify, model, and accelerate the migration from aging TDM, ATM, and legacy SONET/SDH infrastructures to modern packet-optical and IP/MPLS architectures. This document provides network operators, chief technology officers, and infrastructure strategists with a definitive technical reference for evaluating the total cost of ownership (TCO), operational expenditure (OPEX) reduction, and capital efficiency gains achievable through a structured legacy network upgrade program. The platform integrates advanced hardware components, purpose-built ASICs, and intelligent telemetry to deliver empirical data on upgrade pathways, ensuring investment decisions are backed by rigorous, vendor-neutral analysis.



ARCHITECTURE & CHASSIS DESIGN

The Legacy Network Upgrade Cost-Benefit Analysis platform is architected around a modular, high-availability chassis that consolidates legacy interface termination, protocol interworking, and modern forwarding engines into a single manageable entity. The system employs a non-blocking backplane fabric capable of supporting both legacy TDM tributaries and high-density Ethernet interfaces simultaneously, enabling a seamless and gradual migration strategy. Key architectural elements include:

- Dual-redundant control plane modules with hot-swappable capability for zero-downtime upgrades and in-service software updates.
- A hybrid line card design that accepts legacy interfaces (e.g., DS1/E1, DS3/E3, OC-3/STM-1) alongside 10GE/100GE uplinks, allowing operators to sweat

existing assets while deploying new revenue-generating services.

- An integrated cost-benefit analytics engine that continuously monitors port utilization, power consumption, and traffic patterns to generate real-time ROI dashboards and upgrade recommendations.
- Advanced synchronization and timing modules supporting legacy BITS/SETG and modern IEEE 1588v2/PTP to ensure phase and frequency alignment during transition periods.

The chassis is engineered for central office and data center environments, with front-to-back airflow, DC and AC power options, and compliance with NEBS Level 3 and ETSI standards.

HARDWARE FEATURES

The platform delivers a comprehensive set of hardware features specifically tailored for legacy network upgrade analysis and execution:

- Legacy Interface Support: Up to 192 DS1/E1 ports, 48 DS3/E3 ports, or 16 OC-3/STM-1 ports per chassis, with optional OC-12/STM-4 and OC-48/STM-16 modules.
- Modern Packet Interfaces: 10/100/1000BASE-T, 10GE SFP+, 40GE QSFP+, and 100GE QSFP28 line cards with full line-rate forwarding.

- Forwarding Capacity: 3.2 Tbps non-blocking switching fabric, expandable to 12.8 Tbps via multi-chassis interconnection.
- Cost-Benefit Analysis Engine: Dedicated multi-core processor subsystem running the proprietary TCO-OPTIMA analysis suite, providing real-time cost modeling, power attribution, and migration scenario simulation.
- Redundancy: 1+1 power supplies, 1+1 control plane, N+1 fan trays, and redundant timing modules.
- Management: Dual out-of-band management ports, console, USB, and SNMPv3/SSH/TLS secured management interfaces.

COMPLIANCE & STANDARDS

The Legacy Network Upgrade Cost-Benefit Analysis platform is designed and tested to meet the following industry standards and regulatory requirements:

- NEBS Level 3 (GR-63-CORE, GR-1089-CORE)
- ETSI EN 300 019 (Environmental), ETSI EN 300 386 (EMC)
- ITU-T G.703, G.704, G.707, G.783, G.803, G.805, G.808.1, G.841, G.842
- IEEE 802.3, 802.1Q, 802.1ad, 802.1ah, 802.1ag, 802.3ah
- IETF RFC 2544, RFC 6241 (NETCONF), RFC 6020 (YANG), RFC 5880 (BFD), RFC 4760 (MP-BGP), RFC 5036 (LDP)
- MEF 3.0, MEF 10.3, MEF 6.2

- RoHS, WEEE, REACH
- Safety: UL 60950-1, IEC 60950-1, EN 60950-1, UL 62368-1

TECHNICAL SPECIFICATIONS

The following table summarizes the key technical parameters of the Legacy Network Upgrade Cost-Benefit Analysis platform. All specifications are subject to change without notice and represent nominal values at 25 ° C unless otherwise stated.

Parameter	Specification
Form Factor	2RU, 4RU, or 7RU chassis options
Switching Capacity	1.6 Tbps to 12.8 Tbps non-blocking
Power Supply	1+1 or 2+2 redundant AC/DC, hot-swappable
Control Plane	Dual or quad redundant, hot-swappable
Legacy Interfaces	DS1/E1, DS3/E3, OC-3/STM-1, OC-12/STM-4, OC-48/STM-16
Packet Interfaces	10/100/1000BASE-T, 10GE, 40GE, 100GE
Analysis Engine	Multi-core TCO-OPTIMA processor

	subsystem
Redundancy	1+1 power, 1+1/quad control, N+1 fans, redundant timing
Management	Dual OOB, console, USB, SNMPv3, SSH, TLS, NETCONF/YANG
Operating Temperature	-5°C to +55°C (NEBS), -40°C to +65°C (Extended)
Humidity	5% to 95% non-condensing
Dimensions (2RU)	88.9mm H x 444.5mm W x 600mm D
Dimensions (4RU)	177.8mm H x 444.5mm W x 600mm D
Dimensions (7RU)	311.15mm H x 444.5mm W x 600mm D
Weight (2RU)	22 kg fully loaded
Weight (4RU)	38 kg fully loaded
Weight (7RU)	64 kg fully loaded
Compliance	NEBS Level 3, ETSI, ITU-T, IEEE, IETF, MEF, RoHS, WEEE, UL/IEC 60950-1, UL/IEC 62368-1
MTBF	> 250,000 hours (Telcordia SR-332)

ORDERING OPTIONS

The platform is available in multiple configurations to suit varying network sizes and upgrade objectives. Standard ordering options include:

- LNUC-BASE-2RU: 2RU chassis, 1.6 Tbps fabric, 4 line card slots, dual control plane, dual AC power.
- LNUC-PLUS-4RU: 4RU chassis, 3.2 Tbps fabric, 8 line card slots, dual control plane, dual DC power.
- LNUC-MAX-7RU: 7RU chassis, 12.8 Tbps fabric, 16 line card slots, quad control plane, quad DC power.
- Legacy Interface Line Cards: DS1/E1-192, DS3/E3-48, OC3/STM1-16, OC12/STM4-8, OC48/STM16-4.
- Packet Interface Line Cards: 10GE-48, 40GE-12, 100GE-6.
- TCO-OPTIMA Software License: Per-chassis perpetual license with 1-year, 3-year, or 5-year support options.
- Redundant Power Kits: AC-2KW, DC-2KW, AC-4KW, DC-4KW.
- Mounting Options: 19-inch EIA, 23-inch ETSI, or 600mm/800mm data center rack kits.

