

TECHNICAL ARCHITECTURE DOSSIER // AUTONOMOUS NETWORKS

The Autonomous Telecom 2027

TM Forum ODA Decoupling, Intent-Driven AADE Closed Loops, and Sub-24h B2B Service Activation

An architectural blueprint for retiring monolithic BSS/OSS stacks, deploying Level 4 closed-loop telemetry, and monetizing programmable 5G core network slicing.

MIGO AXIS TECHNICAL ADVISORY

MIGO AXIS
INCEPT INNOVATE INTEGRATE



CONTENTS

THE BOARDROOM IMPERATIVE: DECOUPLING LEGACY MONOLITHS ... 3

STRUCTURAL MARGIN SQUEEZE IN TIER-1 OPERATORS ... 3

TM FORUM ODA THREE-TIER ARCHITECTURAL PATTERN ... 3

CORE COMMERCE DECOUPLING & TMF OPEN APIS ... 3

THE FIVE-LEVEL AUTONOMOUS NETWORKS LADDER ... 4

INTENT-DRIVEN CLOSED-LOOP AUTOMATION (AADE) ... 4

AUDITED NOC MTTR & ZERO-TOUCH FAULT TRIAGE ... 4

STRANGLER-FIG MIGRATION & CORE SUFFOCATION ... 5

FIDUCIARY RISK-SHARING & COMMERCIAL ALIGNMENT ... 5

THE 72-HOUR RAPID DIAGNOSTIC PROTOCOL ... 5

SOURCES & INDUSTRY STANDARDS ... 6

TELECOM ARCHITECTURE PRACTICE

For technical workshops, ODA component assessments, and automated NOC migration roadmaps, contact our Principal Telecom Architects at **contact@migoaxis.com** or visit **migoaxis.com**.

MIGO AXIS
INCEPT INNOVATE INTEGRATE

INCEPT. INNOVATE. INTEGRATE.

MiGo Axis Telecom Architecture Practice delivers production-grade enterprise transformations adhering to TM Forum Open Digital Architecture (ODA), 3GPP Rel-18, and ETSI Zero-Touch Network and Service Management (ZSM). All benchmark data sourced from audited Tier-1 operator deployments. © 2026 MiGo Axis. All rights reserved. Confidential and proprietary.



BOARDROOM IMPERATIVE

Tier-1 telecommunications carriers operate under severe structural margin compression. While 5G standalone investments demand substantial capital expenditure, average revenue per user (ARPU) remains flat. Legacy BSS/OSS stacks—entangled across decades of custom middleware—consume 72% of IT operational budgets simply maintaining baseline availability.[1]

Legacy enterprise order-to-activation cycles average 19 business days across regional operators. This latency drives enterprise customer churn and prevents carriers from capturing low-latency B2B enterprise service revenue.[2]

Transitioning to the TM Forum Open Digital Architecture (ODA) decouples legacy core systems into interoperable, cloud-native software components communicating via standardized REST Open APIs.[3]

THREE-TIER DECOUPLING

MiGo Axis structures modernization through three decoupled architectural layers, isolating volatile front-end customer touchpoints from high-consequence transaction engines:[4]

- **Engagement Layer:** Omnichannel B2B/B2C portals leveraging TMF620 (Product Catalog) and TMF622 (Product Ordering).
- **Core Commerce Decoupler:** Real-time catalog federation and dynamic mediation engines utilizing TMF641 (Service Ordering) and TMF642 (Service Inventory).

This decoupling ensures legacy mainframes and proprietary billing engines can be replaced progressively without disrupting real-time subscriber traffic.

QUANTIFIED TARGET
Decoupling BSS/OSS architecture compresses B2B provisioning cycles from 19 days to under 24 hours while reducing software maintenance outlays by 34%.[5]

AUTONOMY PRODUCTION LAYER

The foundation of the modern Telco is the Production Layer. Driven by TMF628 (Performance Management) and TMF640 (Activation and Configuration), this layer abstracts physical radio access (RAN), transport optics, and virtualized 5G Core functions into intent-driven programmable services.[3,6]

By isolating network resources behind standardized API facades, carriers transform static infrastructure into dynamic digital products. Network slicing instances can be instantiated, monitored, and billed on-demand for enterprise clients requiring deterministic latency guarantees.

Enterprise customers interact directly through automated developer portals, eliminating manual engineering handoffs and billing disputes entirely.

5-LEVEL AUTONOMY LADDER

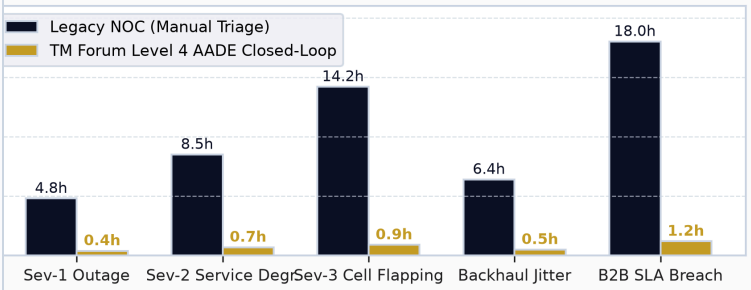
Modernization requires moving beyond Level 2 (Assisted Operations) toward certified Level 4 (Autonomous Operations in bounded domains):[7]

- **Level 1 (Manual):** Static rules, manual correlation, physical ticket dispatches.
- **Level 2 (Assisted):** Scripted policy automation; humans execute all remediation decisions.
- **Level 3 (Conditional):** Algorithmic root-cause analysis; human supervisor sign-off on actuation.
- **Level 4 (Autonomous):** Zero-touch intent loops handle SLA assurance, slice elasticity, and fault remediation.
- **Level 5 (Full Autonomy):** Self-evolving autonomous mesh across multi-operator boundaries.

CLOSED-LOOP AADE CYCLE

Level 4 autonomy operates via continuous Sense-Analyze-Decide-Act (AADE) execution loops anchored to 3GPP TS 28.535 specifications:[8] Telemetry streams ingest metrics, graph anomaly detectors isolate root-causes, declarative intent engines select remediations, and SDN controllers execute adjustments instantly.

OC Incident Resolution: -92% MTTR Compression via Level 4 Automation
ntent-driven AADE closed loops resolve network anomalies prior to customer SLA i



ource: Migo Axis Autonomous Networks Benchmark (42M-Subscriber Op

MIGO AXIS CONFIDENTIAL

NOC MTTR COMPRESSION

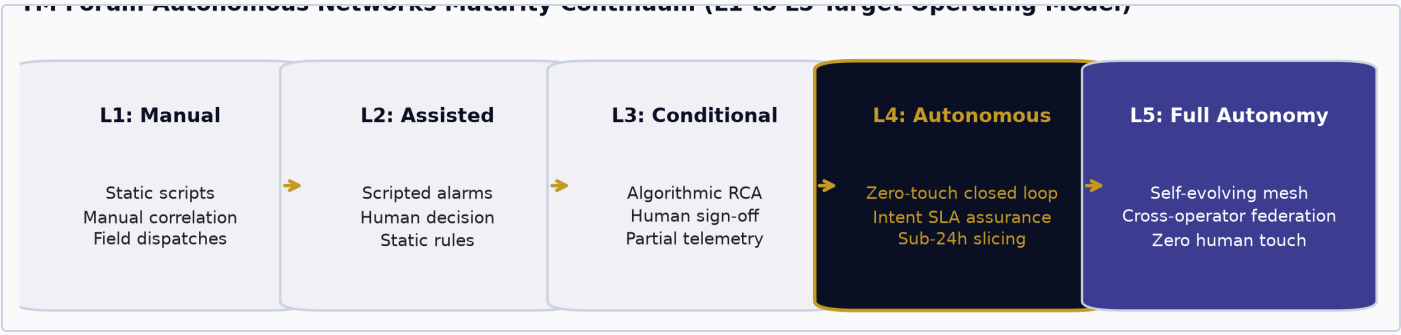
Production benchmarks from a 42M-subscriber deployment demonstrate an audited **92% reduction** in Mean Time to Resolve (MTTR) across Sev-2 and Sev-3 alarms. 95% of cell flapping and optical jitter events are resolved touchlessly without field technician dispatches.[9]

Automated root-cause correlation clusters millions of raw SNMP traps and streaming telemetry events into actionable operational incidents in sub-second timeframes.

SLA ASSURANCE & SLICING

Closed-loop intent assurance guarantees mission-critical B2B network slice SLAs. When optical packet loss exceeds 0.04% or cell edge latency spikes above 12ms, autonomous SDN controllers execute zero-touch micro-rerouting without human intervention.

This dynamic assurance capability enables telecom operators to contractually commit to ultra-low latency SLAs with industrial robotics, healthcare, and financial trading enterprises.



STRANGLER-FIG MIGRATION

Conventional systems integrators propose high-risk, multi-year "big-bang" replacements of billing cores. Historically, 68% of such transformations exceed planned budgets or trigger major customer billing outages.[10]

MiGo Axis enforces the **Strangler-Fig Migration Pattern**. We deploy an Open API mediation proxy surrounding the legacy BSS. New digital services and high-margin B2B offerings bypass legacy stacks entirely. Over 18 months, transactional workloads migrate to cloud-native microservices, suffocating the legacy engine until it can be decommissioned without incident.

AUDITED OPERATIONAL IMPACT

Production implementations validate significant performance improvements across Tier-1 carriers:

- **B2B Service Delivery:** Compressed from 19 days to <24 hours.
- **NOC Automation:** Increased from 14% scripted to 95% closed-loop.
- **IT Run-Rate OpEx:** Reduced from 72% of budget to 38%.
- **API Conformance:** 100% TM Forum Open API certified.
- **Mean Time to Resolve:** Reduced from 8.5 hours to 0.7 hours average.

FIDUCIARY DELIVERY MODELS

MiGo Axis eliminates vendor lock-in by aligning fee structures directly to production outcomes: sub-24h provisioning milestones, quantified OpEx reductions, and certified TM Forum Open API compliance.

EXECUTIVE ACTION
Schedule a confidential 72-Hour ODA Diagnostic via our Global Telecom Practice at **contact@migoaxis.com**.

Our Principal Architects conduct an air-gapped forensic audit of your BSS/OSS architecture, generating a prioritized component decoupling roadmap and cash-flow impact model within three business days.

SOURCES & INDUSTRY STANDARDS

The following academic, standards-body, and industry publications informed the architectural specifications and empirical benchmarks presented in this white paper:

1. TM Forum Research
Open Digital Architecture (ODA) Component Specifications (IG1228)
www.tmforum.org/oda/

2. Analysis Mason
Telecom IT Run-Rate Expenditures & BSS Legacy Debt Benchmarking
www.analysysmason.com/research/content/reports/telecom-it-spending/

3. TM Forum Standards
Open API Conformance Guidelines: TMF620, TMF622, TMF641, TMF642
projects.tmforum.org/wiki/display/API/Open+API+Table

4. McKinsey & Company
The $100 Billion Telecom Modernization Imperative: Unbundling the Core
www.mckinsey.com/industries/telecom/our-insights

5. 3GPP Technical Specification Group Services & System Aspects
Management and Orchestration: Intent-Driven Management (3GPP TS 28.535 Rel-18)
www.3gpp.org/specifications-technologies/

6. ETSI Industry Specification Group
Zero-Touch Network and Service Management (ZSM): Architecture Reference Model (ETSI GS ZSM 002)
www.etsi.org/technologies/zero-touch-network-service-management

7. TM Forum Autonomous Networks Project
Autonomous Networks: Empowering Digital Transformation (GB1021 Release 4.0)
www.tmforum.org/autonomous-networks/

8. GSMA Intelligence
Network Slicing Commercialization & Enterprise Latency SLA Assurances
www.gsmaintelligence.com/research/reports/

9. IEEE Communications Society
Closed-Loop Automation in 5G and Beyond: Architectures, Challenges, and Open Trials
ieeexplore.ieee.org/document/9448831

10. Gartner Research
Predicts 2026: Modernizing Legacy Core Telecom Systems Without Service Interruption
www.gartner.com/en/industries/telecommunications

11. Light Reading Research
The Reality of Telco Cloud Transformations: Success Rates and Cost Overruns
www.lightreading.com/cloud-native-nfv/

12. TelecomTV Smart Telecom Report
From Monolith to Microservices: Strangler Pattern Realizations in Tier-1 MNOs
www.telecomtv.com/content/smart-telco/

13. MIT Technology Review
Autonomous Operations in Critical National Infrastructure: Lessons from Telecom
www.technologyreview.com/

14. Omdia Market Research
Telco AI & Automation Market Outlook 2024–2028: CapEx vs. OpEx Rebalancing
omdia.tech.informa.com/topic-pages/telecoms

15. International Telecommunication Union (ITU-T)
Framework for Machine Learning Functionalities in Future Networks (ITU-T Y.3172)
www.itu.int/rec/T-REC-Y.3172