KEYNOTE PRESENTATION | SANOG 44

The Economics of Connectivity in South Asia

Falling ARPU, Rising Expectations, Rising Network Costs

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Kathmandu, Nepal | July 2026

EXECUTIVE SUMMARY

01 | The Region of Scale: Growth vs. Value

02 | The Core Crisis: The widening traffic-revenue gap

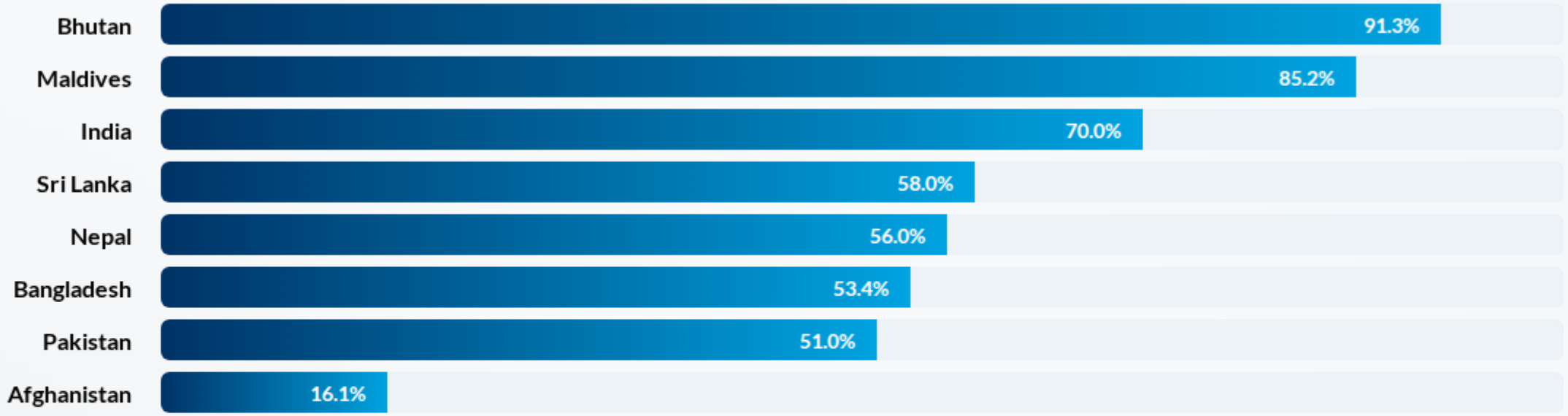
03 | The Cost Challenge: FX, Energy, and Infrastructure

04 | Strategic Roadmap: Automation, Peering, Diversification

05 | Shared Responsibility: Policy and Ecosystem

SOUTH ASIA: A REGION OF SCALE

Internet Penetration Rates (ITU Verified Regional Datasets)

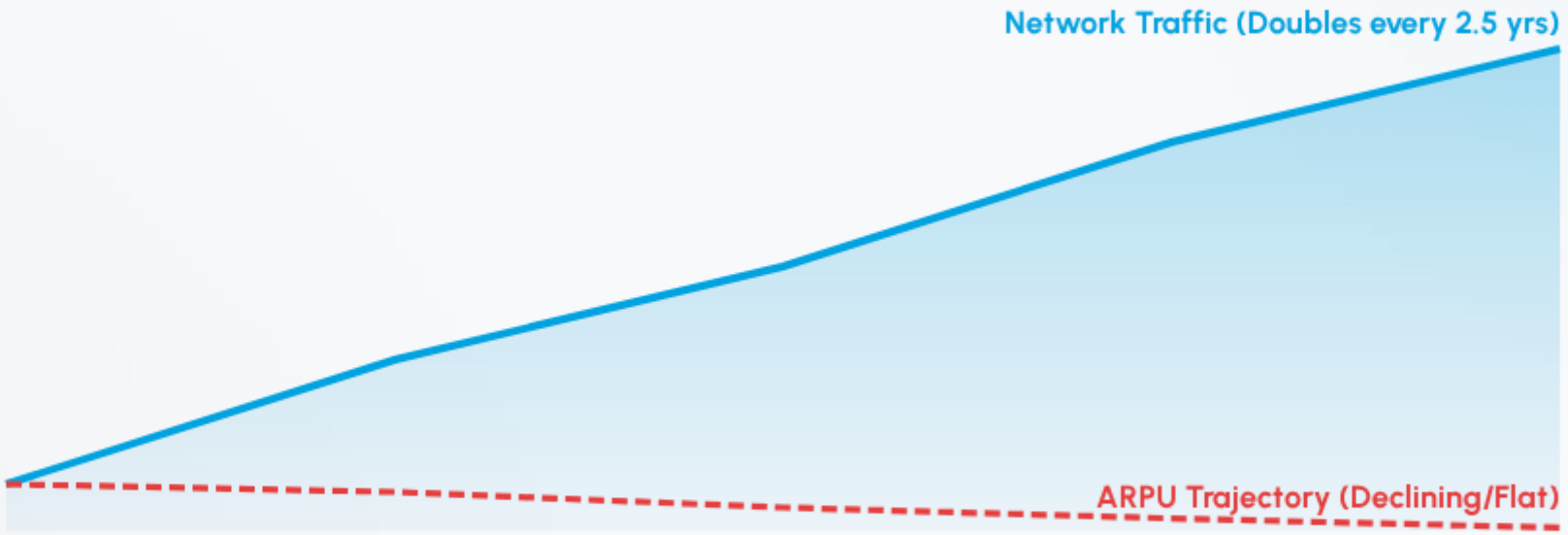


A defining digital growth story: 1.9 billion people, hundreds of millions still to come online. Affordability unlocked growth; sustainability must now maintain it.

Source: ITU IDI Dashboard (2024 Profile Ref: BTN). https://datahub.itu.int/dashboards/idi/?e=BTN&y=2026

THE STRUCTURAL DIVERGENCE

Network Traffic Growth vs. ARPU Trajectory



Operators must deliver 3x more capacity for the same or less revenue per user.

THE DIVERGENCE GAP (SUBCONTINENT MARKET TRENDS)

The extreme operational divergence between what the user consumes versus what the operator earns

Year	Avg. Monthly Data Usage per User (GB)	Blended Mobile ARPU (Local Currency Equivalent)	Blended Mobile ARPU (Adjusted to USD)	Realized Revenue Per Gigabyte (USD / GB)
2021	13.5 GB	₹140 / ৳155	$1.90	$0.14
2022	16.8 GB	₹150 / ৳162	$1.85	$0.11
2023	21.0 GB	₹165 / ৳175	$2.00	$0.095
2024	26.2 GB	₹174 / ৳185	$2.10	$0.08
2025/2026	30.5 GB	₹195 / ৳210	$2.30	$0.075
5-Year Trend	+125% Increase	+39% Flat Growth	+21% (Due to FX Devaluation)	–46% Drop in Value

Sources & Context: Based on regional performance indices, including TRAI Service Indicator Data and GSMA Mobile Economy metrics.

Data Sources:

1. Data Usage & Revenue Realization: *Telecom Regulatory Authority of India (TRAI) Performance Indicators Report, QE Dec 2025 / Annual Report 2025-22026.*
2. Macro ARPU Trends & Regional FX Impact: *GSMA Intelligence Mobile Economy (Asia Pacific Index) macro data normalized*

WHY ARPU IS UNDER PRESSURE

Intense Competition

Oversaturated markets lead to constant price wars and promotional pricing as the standard norm.

OTT Consumption

Video/Cloud consumes bandwidth that operators carry without a share of service revenue.

Zero Friction

Switching costs are near zero, forcing operators to prioritize retention over yields.

RISING EXPECTATIONS

4K

The New Standard

Infrastructure as Essential Service

The internet is no longer discretionary. It is how people work, learn, and transact. Users have upgraded their lives; they expect the network to keep up.

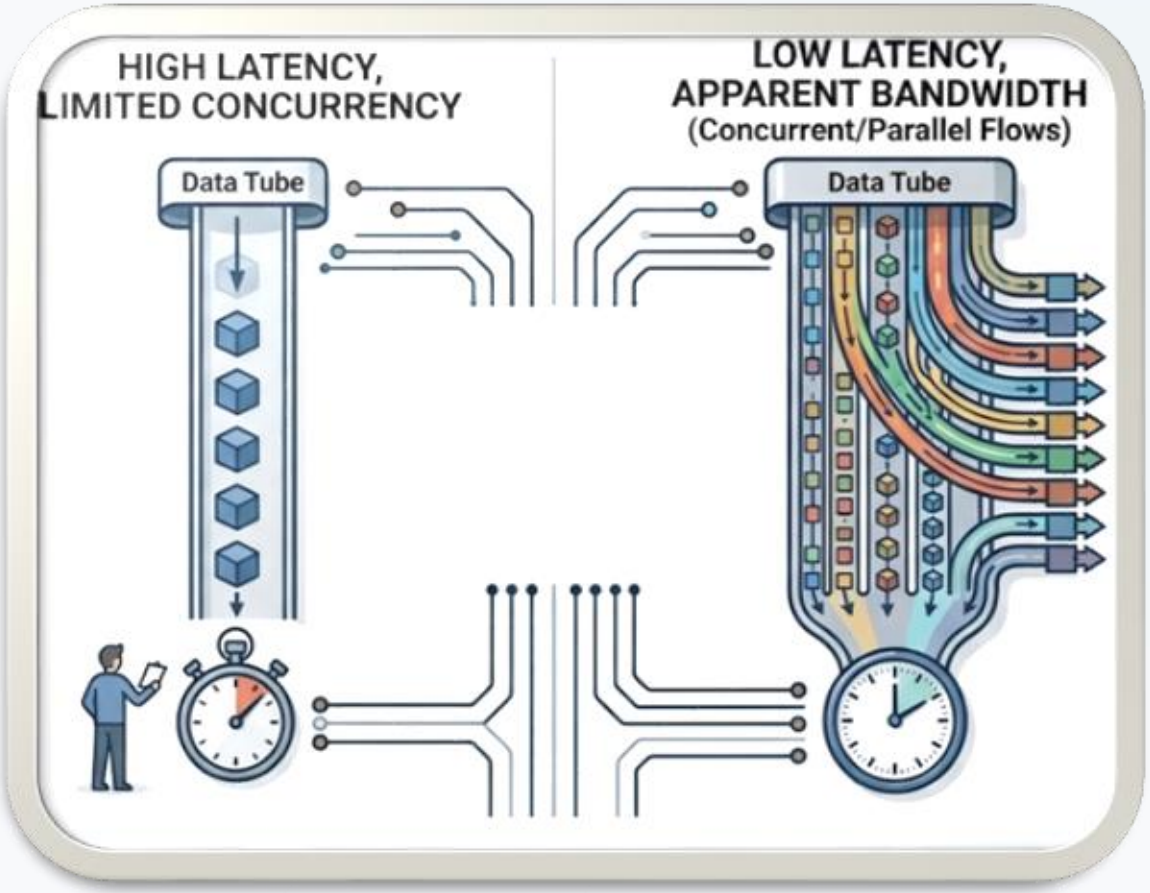
- Video Conferencing (Low Latency)
- Always-on Cloud Sync
- Smart Home Ecosystems

LATENCY IS BANDWIDTH

Quality of Service Demands

Raw throughput is no longer the only metric. Gaming, finance, and remote desktop are latency-sensitive.

A 200ms ping is now a QoS complaint waiting to happen. Trust and continuity are the real products being sold.



COST CHALLENGE: FX EXPOSURE

Foreign Currency Exposure

Routers, switches, optics, radio gear—priced globally in USD, paid locally. Every currency weakening makes the next upgrade more expensive.

Capex plans don't survive exchange-rate shocks unchanged, leading to deferred investment and infrastructure aging.

ENERGY: THE SILENT OPEX

30%

of Site Operational Cost

Powering the Network

In markets with unstable grids, continuous uptime demands continuous electricity. Backup power (batteries/generators) is a major cost driver.

- Grid Instability Issues
- Diesel/Fuel Price Volatility
- Cooling System Demands

THE SECURITY MANDATE

DDoS Mitigation

No longer optional. Every day without protection is borrowed time.

BGP Security

RPKI and ROV deployment to prevent route hijacks and leaks.

Observability

Threat visibility and NOC tooling for incident response.

STRATEGIC ROADMAP OVERVIEW

01 | PEER
Aggressively at IXPs

02 | CACHE
Bring Content Close

03 | AUTOMATE
NetDevOps Shift

04 | ENERGY
Energy Optimization

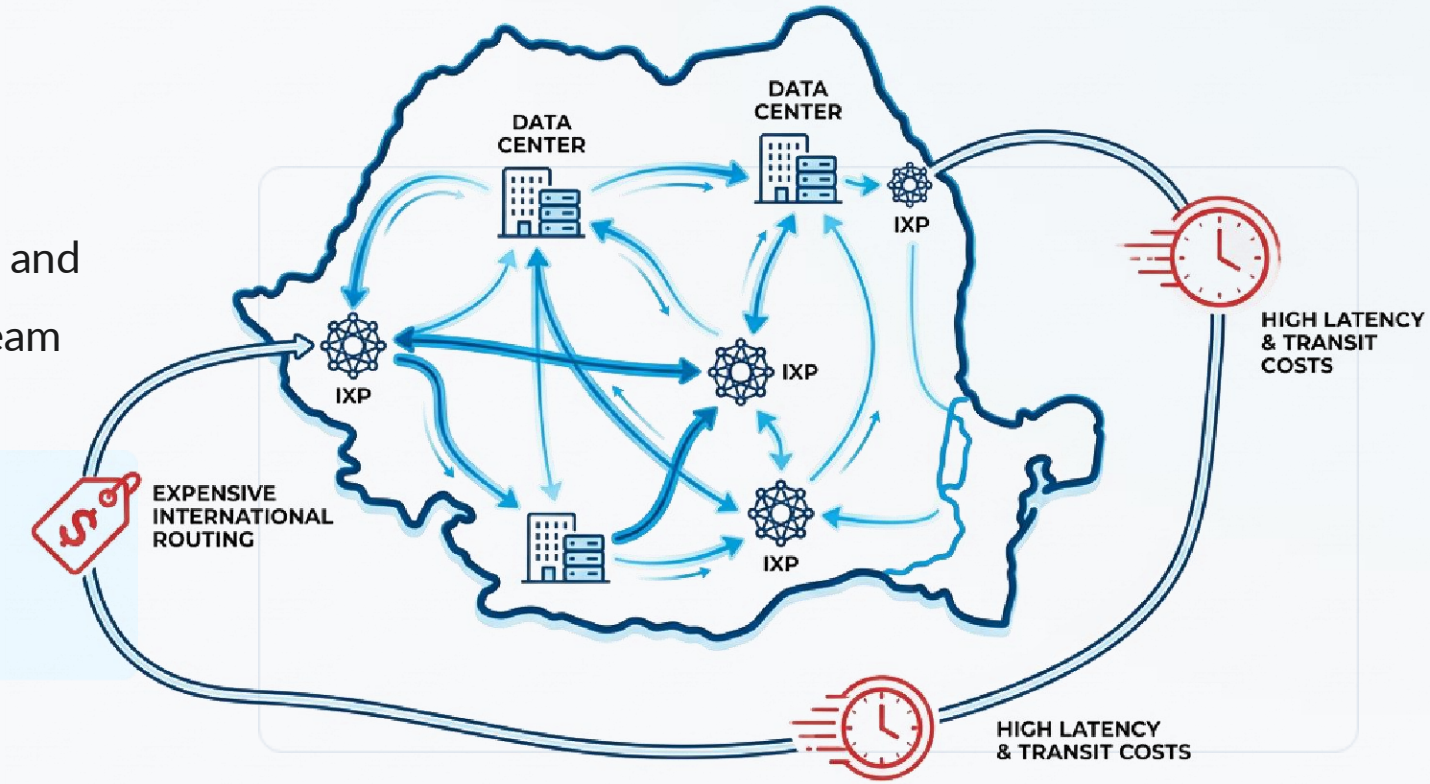
05 | DIVERSIFY
New Revenue Streams

PILLAR 1: AGGRESSIVE PEERING

Keep Local Traffic Local

Every unnecessary international hop costs money and adds latency. Well-functioning IXPs reduce upstream dependency and build resilience.

National IXPs (NIXI, NPIX, BDIIX, LKIX) are strategic infrastructure—not optional extras.



PILLAR 2: CDN & CACHING

GGC Nodes

Meta Caching

Akamai / Cloudflare

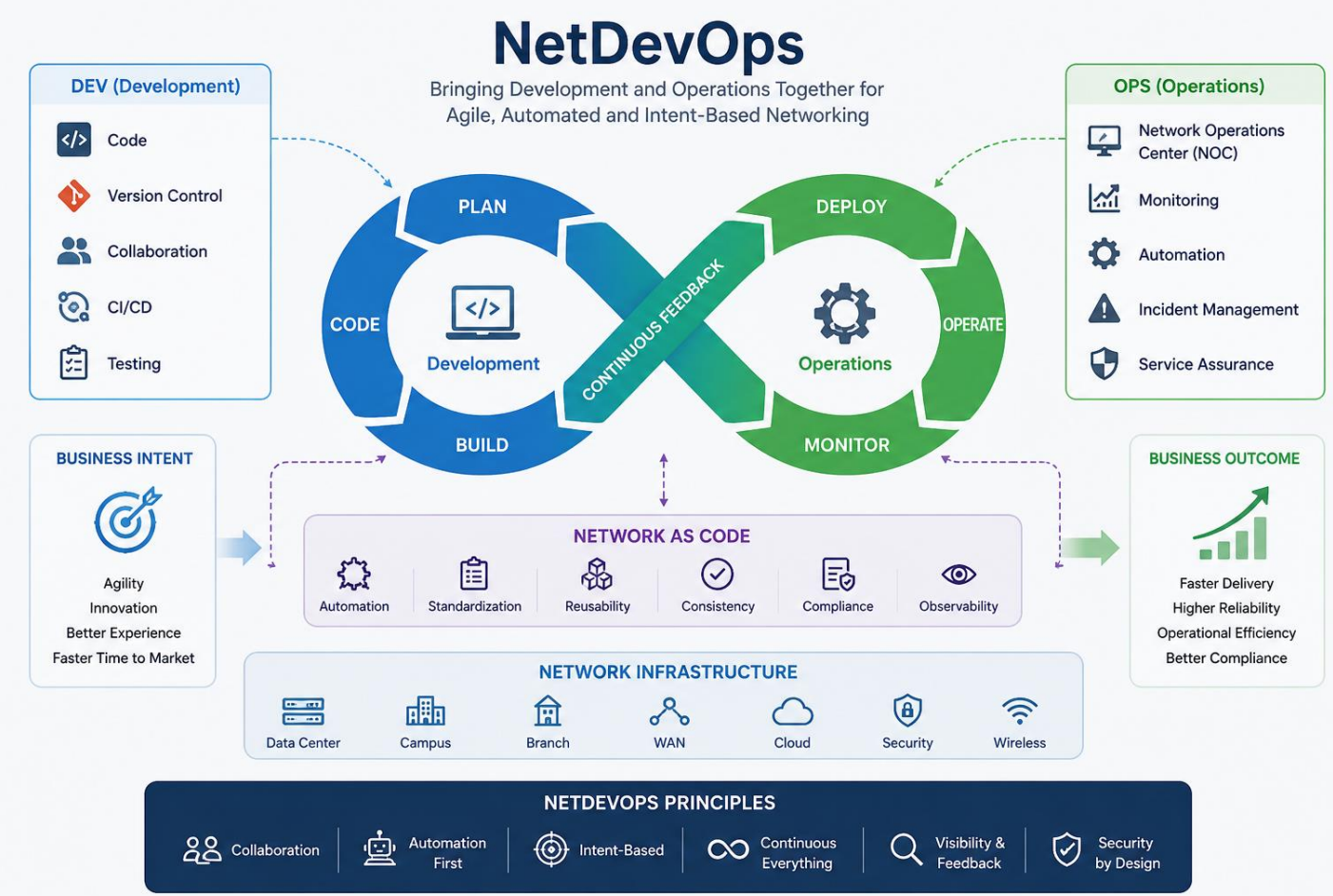
When a CDN node is inside a national network, popular content doesn't cross ocean links on every request. Upstream costs fall; user experience improves.

PILLAR 3: NETDEVOPS

Automation as Strategy

Efficiency as a survival strategy. Manual operations don't scale. Investing in automation (Ansible, CI/CD, Telemetry) reduces opex without sacrificing resilience.

An understaffed NOC is a fragility waiting to be discovered.



PILLAR 4: ENERGY OPTIMIZATION

Addressing the Opex Lever

In South Asia, power backup can be 20-30% of site opex. This is addressable through:

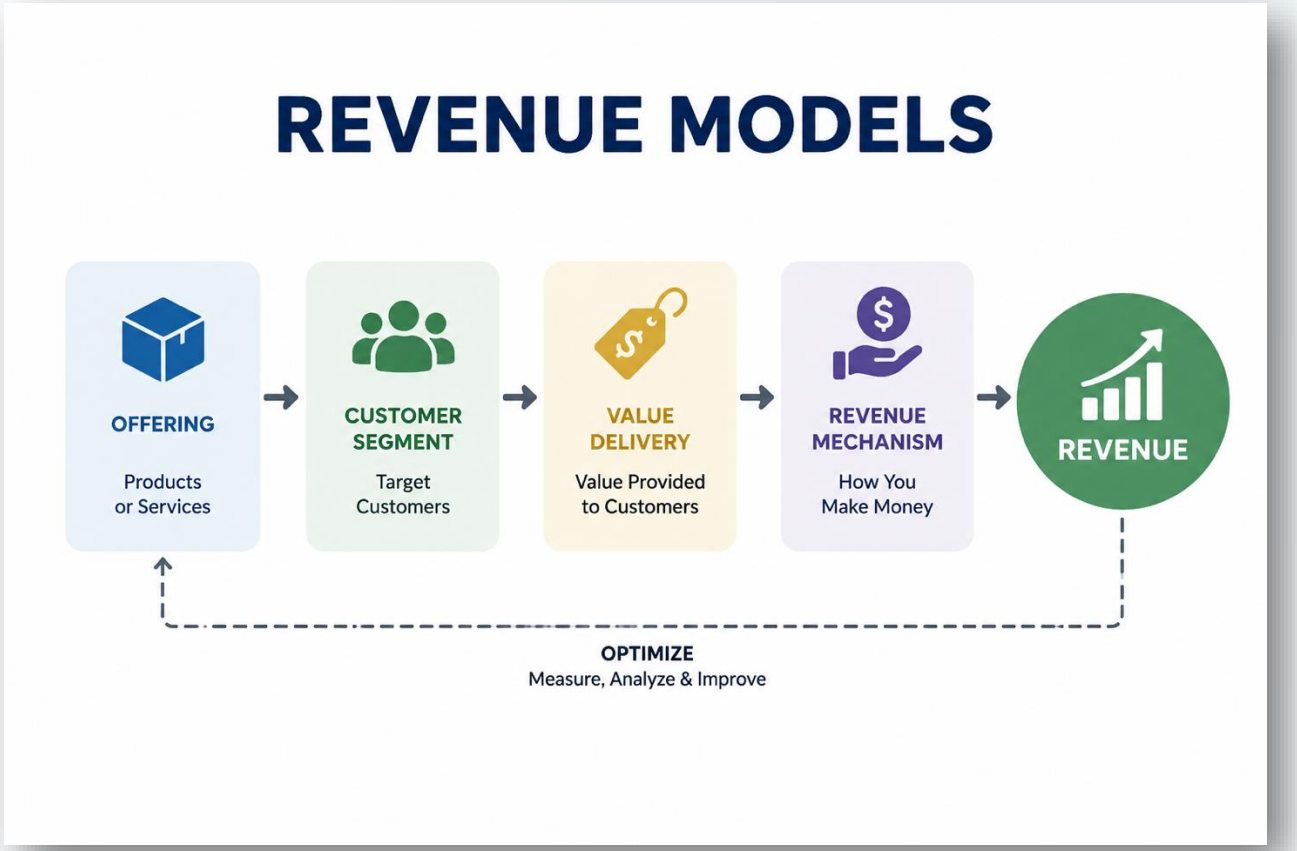
- Solar + Battery hybrids at remote sites
- Grid-aware generator scheduling
- Modern DC-rectifier efficiency audits

PILLAR 5: REVENUE MODELS

Enterprise Diversification

Managed services subsidize the residential price wars you cannot exit. Quality pays for sustainability.

- Managed WiFi & LAN
- Direct Cloud Connectivity
- 99.99% Uptime SLAs



SHARED RESPONSIBILITY

Regulators

Promote competitive markets while ensuring investment is economically rational.

Operators

Aggressive efficiency, peering, and automation. Resilience is built before the crisis.

Communities

SANOG/Local NOGs role in building shared knowledge and operational norms.

REGULATOR'S ROLE

Moving Beyond "Lowest Price"

If the only visible market signal is the lowest monthly price, every actor optimizes for price. Quality that doesn't show up in an ad doesn't get rewarded.

Proposed KPI Scorecard: Uptime, Latency under load, Disaster Recovery posture, and incident transparency.

TECHNICAL COMMUNITIES

The SANOG Role

SANOG, along with its local NOGs, build the shared knowledge and trust that make regional collaboration possible. Sustainable connectivity is built in forums like this one. Peer learning multiplies efficiency across hundreds of networks simultaneously.

SANOG

bdNOG
Bangladesh Network Operators Group

btNOG

inndg
Indian Network Operators Group

LkNOG

NPNOG

PkNOG
Pakistan Network Operators Group

A RICHER SCORECARD

Category	Measurement Metric
Uptime	Mean Time to Repair (MTTR) & SLA Performance
Quality	Jitter and Latency stability under congestion
Resilience	BGP Security (RPKI) & Multi-homing diversity
Investment	Network headroom vs. 3-year growth forecast

THE 5-YEAR TEST

2030

Planning Horizon

Ask of any operator: Are they still able to invest in the next five years of demand—or are they surviving only the next quarter?

A market that cannot answer this confidently is optimizing for the wrong horizon.

CASE STUDY: DOMESTIC TRAFFIC LOCALIZATION

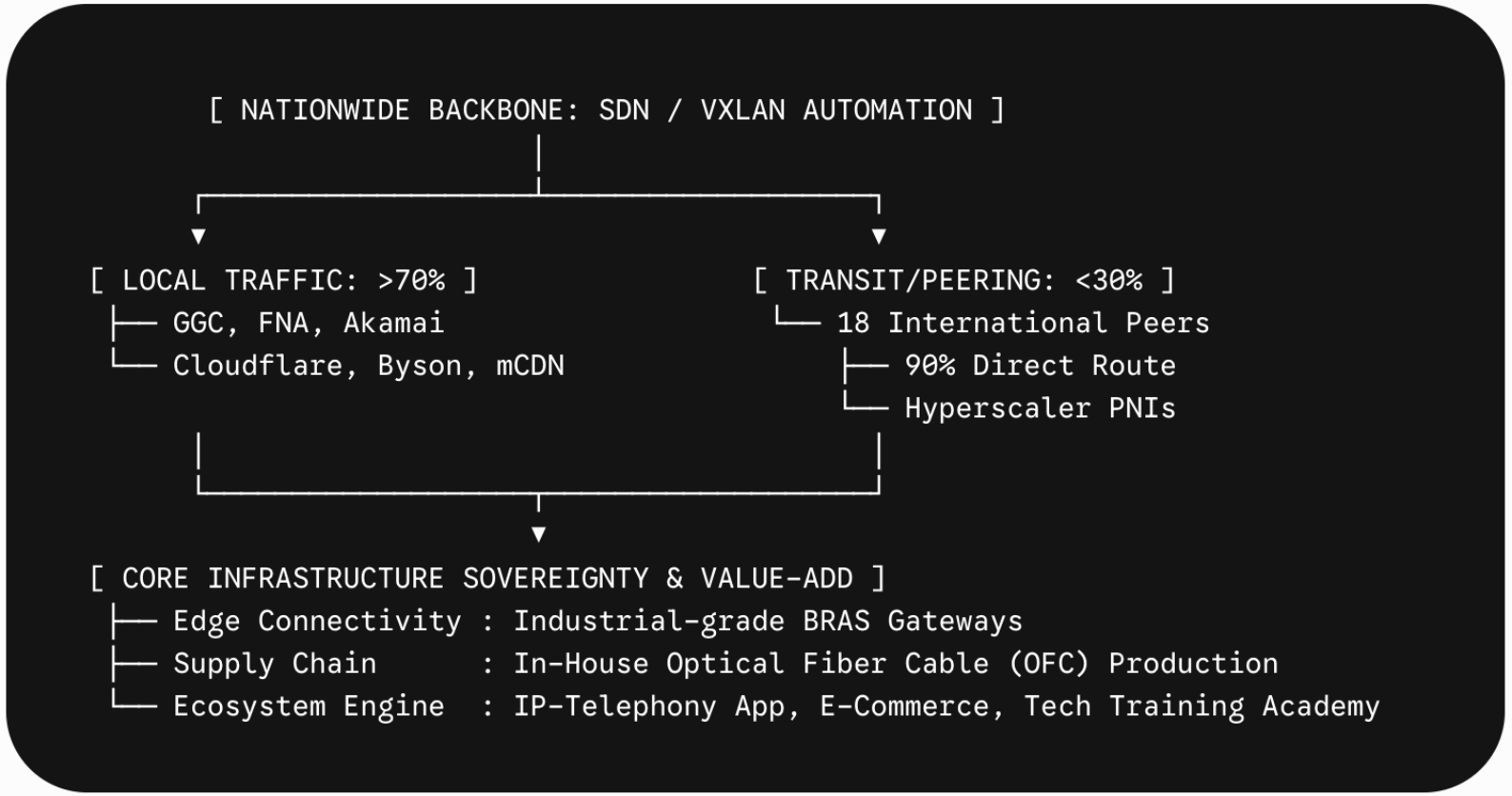
Architectural Transformation & Sovereign Infrastructure (2017–Present)

>70%

Local Traffic Offload Engine
GGC, FNA, Akamai, Cloudflare, Byson, mCDN cached locally.

<30%

Optimized International Transit & Peering
18 International Peers. 90% direct paths via hyperscaler PNIs.



CASE STUDY: DOMESTIC TRAFFIC LOCALIZATION

Architectural Transformation & Sovereign Infrastructure (2017–Present)

THE TRAFFIC ENGINE

Core Network Architecture & Edge Optimization

>70% Traffic Localized

Aggressive cache integration hosting global architectures (GGC, FNA, Akamai, Cloudflare, Byson, mCDN) completely on-net.

Deterministic Interconnection

18 international peering agreements routing the remaining 30% traffic over 90% direct paths and hyperscaler Private Network Interconnects (PNIs).

Automated Transport (- CAPEX)

Zero-touch nationwide orchestration running a Software-Defined Network (SDN) layer utilizing VXLAN encapsulation.

Robust Edge Gateways

High-capacity, industrial-grade BRAS platforms deployed at critical infrastructure boundaries for seamless onboarding.

THE SOVEREIGN BUSINESS ECOSYSTEM

Vertical Integration & Sovereign Services

Supply Chain Independence

Mitigating foreign exchange exposure and USD dependency through in-house Optical Fiber Cable (OFC) manufacturing facilities.

Value-Add Digital Eco-System

Capturing end-user lifecycle utility with a custom IP-Telephony application and regional e-commerce engines.

Localized Engineering Pipelines

Running a dedicated, accessible Technical Training Academy to upskill community talent and expand localized network literacy.

IN LAST THREE YEARS
ARPU :: BDT 1,050/= TO BDT 535/=

"Reject the false choice. South Asia needs affordable access for digital inclusion, AND it needs sustainable operators to build the infrastructure that inclusion depends on."

REVENUE INCREASED BY 450%

Future-Ready Connectivity

It is not about low-cost internet. It is about a digital architecture that balances affordability, efficiency, and sustainable investment.

Questions?

Are we building for this quarter's subscriber count,

or next decade's resilience?

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