Restructuring Cell
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No: BSNLCO-RSTG/12(11)/2/2026-RSTG **Dated: 01.04.2026**

To,
All CGMs BSNL.

Subject: Formation and operationalisation of BSNL Integrated Network Command Centre (BINCC) and corresponding field structures at Circle and BA levels.

In order to strengthen real-time monitoring of network performance, improve service quality, enhance customer responsiveness, and establish an integrated operational accountability framework across all technology domains and service segments of BSNL, the Competent Authority has approved the formation and operationalisation of the BSNL Integrated Network Command Centre (BINCC) (8 Cells) at BSNL Corporate Office, along with corresponding structures at Circle and Business Area (BA) levels.

1. Formation of BINCC

The BSNL Integrated Network Command Centre (BINCC) is hereby constituted at BSNL Corporate Office as a unified national platform for integrated monitoring, analysis, reporting and escalation of network and service performance across BSNL.

The BINCC shall function as the apex centralised monitoring and coordination mechanism for ensuring network quality, service continuity and customer experience management across BSNL.

2. Scope and Purpose

The BINCC shall, inter alia, perform the following functions:

i. Provide real-time, 24×7 visibility into network performance across all technology layers (2G/3G/4G/FTTH/Enterprise)
ii. Integrate social media monitoring with docket-based complaint management for customer-facing responsiveness
iii. Generate automated, threshold-triggered alerts for any element approaching or breaching performance thresholds
iv. Produce structured periodic reports (daily/weekly/monthly/quarterly) for CMD/Board as required
v. Support evidence-based decision-making for capacity augmentation, fault escalation, and regulatory compliance
vi. Establish a three-tier accountability framework: HQ (national oversight) → Circle (operational management) → BA (field response)
vii. Leverage AI/ML for predictive fault detection, automated resolution, and subscriber experience analytics
viii. Integrate with BSNL's existing OSS/BSS platforms

3. Organisational Framework

The BINCC shall operate under the following three-tier structure:

Level	Entity	Headed By	Staffing Scale
Level 1 — HQ	BSNL Integrated Network Command Centre (BINCC)	GM level	
Level 2 — Circle	Circle Network Operations Centre (CNOC)	DGM / AGM level	~10 per Circle
Level 3 — BA	BA Field Response Team (FRT)	SDE / JTO level (In-charge)	~8 per BA

This three-tier structure shall provide a clearly defined framework for monitoring, escalation, field action, reporting and accountability.

4. BINCC Structure at Corporate Office

The BINCC at Corporate Office shall comprise of the following Cells:

Cell No.	Cell Name	Short Name	Reporting To
Cell 1	Mobile Network Quality & BTS Monitoring Cell	MNQM Cell	Dir CM
Cell 2	Social Media Rapid Response & Customer Experience Cell	SMRR Cell	Dir CM
Cell 3	Network Utilisation & Capacity Planning Cell	NUCP Cell	Dir CM
Cell 4	Integrated Network Intelligence & Analytics Cell	INIA Cell	Dir CFA
Cell 5	FTTH, BharatNet & Rural Broadband Quality Cell	FTTH-BN Cell	Dir CFA
Cell 6	Enterprise, Leased Line & Data Centre Monitoring Cell	ENT-DC Cell	Dir EB
Cell 7	NOC HR, Training & Workforce Management Cell	NOC-HR Cell*	Dir HR
Cell 8	P&L Monitoring	PNLM Cell	Dir F

* He will ensure the required Dash Board is made available.

5. Role of Circle and BA Level Units

All Circle Heads shall ensure establishment and operationalisation of Circle Network Operations Centres (CNOCs) in their respective Circles.

All BA Heads shall ensure nomination / deployment of appropriate officers / officials for BA Field Response Teams (FRTs) to ensure timely field-level response, fault rectification and compliance with escalation timelines.

The Circle and BA level formations shall work in close coordination with BINCC for effective implementation of monitoring, response and service restoration activities.

6. The BINCC and associated field formations shall broadly be responsible for:

a. Continuous monitoring of network and service KPIs.
b. Identification of outages, service degradation, congestion and recurring faults.
c. Escalation and follow-up of unresolved issues with concerned Circles / BAs / units.
d. Review of customer-impacting issues through complaints and social media intelligence.
e. Periodic reporting and performance analysis.
f. Support for proactive and preventive network operations.

7. The staffing for BINCC, CNOCs and BA-level FRTs shall be arranged through suitable deployment / redeployment / nomination of officers / officials by the concerned units as per operational requirement.

7.1 Officers/officials deployed for BINCC-related functions shall be assigned duties commensurate with their technical / operational competence and domain expertise.

8. Detailed Standard Operating Procedures (SOPs), escalation matrix, reporting formats, monitoring parameters and performance review framework for BINCC and its associated field formations shall be issued by concerned vertical separately including KPIs/ KRAs.

9. The detailed document of BINCC at HQ, Circle & BA Levels is enclosed as Annexure-I.

10. This order shall come into force with immediate effect. All concerned are requested to take necessary action accordingly.

This issues with the approval of the Competent Authority.

Encls: As above

02.04.2026

(Santosh Dahiya)
DGM (Restg.)

Copy to:

1. PPS to the CMD BSNL
2. PPS to all the Functional Directors of BSNL Board, New Delhi
3. The CVO, BSNL New Delhi
4. PGM (Pers.) for necessary action in ERP.
5. All units Head, BSNL CO
6. CLO [SCT]/ AGM (VO CO), BSNL C.O.
7. DM [OL] for Hindi version.
8. Intranet Portal/ Order Bundle/Spare Copy

BHARAT SANCHAR NIGAM LIMITED

Corporate Office, New Delhi

BSNL INTEGRATED NETWORK COMMAND CENTRE

(BINCC)

1. CELL 1 — MOBILE NETWORK QUALITY & BTS MONITORING CELL (MNQM)

1.1 Mandate

The MNQM Cell is the nerve centre of BSNL's mobile network quality management. It provides 24×7 real-time visibility into the performance of BSNL's entire BTS estate (approximately 1,20,000+ 2G/3G sites and 110,000+ 4G sites under commission) and drives proactive fault management and quality assurance.

1.2 Core Functions

- Real-time monitoring of BTS/eNodeB status — up/down, alarm management, fault ticketing
- Continuous ping/latency monitoring to BTS over backhaul — to detect IP connectivity degradation, transmission failures, and routing issues before full outage
- Live tracking of 2G/4G radio access KPIs: CSSR, CDR, HHO success rate, RRC Setup Success Rate, ERAB Setup Success Rate, PRB Utilisation
- VoLTE quality monitoring: MOS score, jitter, packet loss on voice bearer, CSFB success rate
- Interference detection: SINR degradation alerts, pilot pollution identification, inter-cell interference notifications
- Automated fault ticket creation and escalation to Circle CNOC and BA FRT within defined SLAs
- Benchmark performance against TRAI QoS mandated thresholds — trigger Circle-level alerts when breached
- Weekly/monthly BTS performance scorecards by Circle, by technology layer
- Post-activation quality assurance for newly commissioned 4G sites under DBN and BSNL_2/BSNL_3 contracts
- Coordination with TCS/ITI/C-DoT for indigenous 4G BTS firmware/software issues affecting performance
- Network planning to be done in coordination with Cell 3

1.3 BTS Monitoring — Technical Architecture

The MNQM Cell shall operate using the following monitoring approach:

Monitoring Layer	Tool/Mechanism	Frequency	Alert Threshold
BTS IP Connectivity	ICMP Ping to BTS management IP via NMS	Every 60 seconds	Latency >50ms or 3 consecutive failures
eNodeB S1 Interface	S1-AP heartbeat monitoring via EMS	Real-time	S1 link down — immediate P1 alert
2G BTS Abis/A-Interface	TRAU/ATM monitoring via NMS	Real-time	Interface utilisation >80% or down
Radio KPI — 4G	EMS counter-based: CSSR, DCR, ERAB, PRB	15-min aggregation	CSSR <95%, DCR >2%, PRB >85%
Radio KPI — 2G	BSS counters: CSSR, CDR, SDCCH drop	30-min aggregation	CSSR <95%, CDR >3%
Backhaul Utilisation	SNMP polling of transmission nodes	5-min intervals	Link utilisation >75% sustained
Power/Infrastructure	DG status, battery backup, DC voltage	15-min polling	Mains failure, battery <4hr backup
Environmental	Temperature, humidity,	Real-time	Temp >45°C, door open >15

Monitoring Layer	Tool/Mechanism	Frequency	Alert Threshold
Alarms	door intrusion		min

1.4 Key Performance Indicators — MNQM Cell

KPI Parameter	Target (National Average)	TRAI Benchmark	Escalation Trigger
Call Setup Success Rate (CSSR)	>96%	>95%	<94% any circle
Call Drop Rate (CDR)	<2%	<2%	>3% any circle
4G ERAB Setup Success Rate	>98%	N/A (BSNL KPI)	<96% any circle
VoLTE MOS Score	>3.5 (4.0 target)	N/A	<3.0 any circle
BTS Availability (4G)	>98.5%	>98%	<97% any circle
BTS Availability (2G)	>97%	>98%	<96% any circle
PRB Utilisation (Downlink)	<70% average	N/A	>85% sustained
Handover Success Rate (4G)	>95%	N/A	<93% any circle
CSFB Success Rate	>97%	N/A	<95%
Backhaul Latency (BTS–BSC/ePC)	<20ms	N/A	>50ms
Mean Time To Detect (MTTD)	<5 minutes	N/A	>15 minutes
Mean Time To Restore (MTTR)	<4 hours (urban) <12 hours (rural)	N/A	>8 hrs urban / >24 hrs rural

1.5 Staffing — MNQM Cell

Role	Grade	No. of Posts	Shift/Day Duty	Key Responsibility
Cell Head, MNQM	GM	1	Day	Overall Cell management, Board/DoT reporting
Sr. Network Monitoring Engineer (4G)	DGM/AGM	1	Day	4G RAN KPI management, TCS/C-DoT coordination
Sr. Network Monitoring Engineer (2G/3G)	DGM/AGM	1	Day	Legacy network management, 3G sunsetting
NOC Shift Engineer	AGM/SDE/JTO	5 (1 -2 per shift × 3)	24×7 shifts	Real-time fault monitoring, P1/P2 alert response
BTS Analytics Officer	AGM/SDE	1	Day	Counter analysis, performance trend reporting
Transmission/Backhaul Officer	SDE/JTO	1	Day	Backhaul ping/latency, SNMP monitoring
Reporting & Compliance	SDE/JAO	1	Day	TRAI reporting, weekly/monthly

Role	Grade	No. of Posts	Shift/Day Duty	Key Responsibility
Officer				scorecards

2. CELL 2 — SOCIAL MEDIA RAPID RESPONSE & CUSTOMER EXPERIENCE CELL (SMRR)

2.1 Mandate

The SMRR Cell is BSNL's first-ever structured, centralised social media and digital complaint management function. It addresses one of BSNL's most critical reputational and regulatory gaps: the inability to respond to and resolve customer complaints registered through digital channels in real time, at scale, and with measurable accountability.

2.2 Scope of Monitoring Channels

Platform	Handle / Portal	Monitoring Requirement	SLA — First Response
Twitter / X	@BSNLCorporate, @BSNLCircle handles, mentions & hashtags	NLP-based keyword detection	≤ 30 minutes
Consumer Affairs Portal (Govt)	consumerhelpline.gov.in — BSNL complaints	API-based automated intake	≤ 2 hours
TRAI MyCall / MySpeed App	TRAI complaint feeds	Direct integration	≤ 4 hours
Google Business Reviews	BSNL Exchange/Office reviews	Automated scraping	≤ 8 hours
Facebook / Meta Pages	BSNL Official and circle pages	API monitoring	≤ 2 hours
Reddit / Public Forums	r/india, r/bsnl, Localcircles	Keyword monitoring	≤ 4 hours (non-SLA)
BSNL App Feedback	BSNL Self Care App store reviews	AppStore/PlayStore API	≤ 8 hours
Email Grievances	pgportal.gov.in, CMD's Office email	Queue monitoring	≤ 4 hours
WhatsApp Business	Designated BSNL WhatsApp number	24×7 queue monitoring	≤ 1 hour

2.3 Complaint Processing Workflow

All social media complaints shall follow a standardised five-stage workflow:

Stage	Activity	Responsible	Timeline	Output
Stage 1: Detect	Automated keyword/sentiment monitoring captures complaint	AI Monitoring Tool	Real-time	Alert to SMRR dashboard
Stage 2: Triage	SMRR Shift Officer classifies: Network / Billing / Service / Other	Shift Officer (HQ)	Within 15 min	Ticket created in CRM

Stage	Activity	Responsible	Timeline	Output
Stage 3: Route	Ticket assigned to relevant Circle CNOC / Billing team / BA FRT	SMRR Shift Officer	Within 30 min	CRM ticket dispatched
Stage 4: Respond	Personalised public response posted on platform acknowledging issue	SMRR Response Officer	Within 30 min	Public response posted
Stage 5: Resolve & Close	Circle/BA confirms resolution; CRM closed; customer notified	Circle CNOC / BA FRT	Per SLA (4–24 hrs)	Ticket closed, satisfaction captured

2.4 SLA Framework for Complaint Resolution

Complaint Category	Priority	First Response SLA	Resolution SLA	Escalation if Breached
Network outage (no signal, total)	P1 — Critical	15 minutes	4 hours	BINCC Head / Circle CGM
Significant signal / speed degradation	P2 — High	30 minutes	8 hours	Circle CNOC Head
Intermittent connectivity / call drops	P3 — Medium	1 hour	24 hours	CNOC Duty Officer
Billing / recharge query	P4 — Standard	2 hours	48 hours	Circle BA
General service feedback / suggestion	P5 — Low	4 hours	7 days	Standard queue
Viral complaint (>500 shares/mentions)	P1-V — Viral	10 minutes	2 hours	BINCC Head + CGM + PR

2.5 Key Metrics — SMRR Cell

- First Response Time (FRT) — Target: 100% complaints within SLA
- Resolution Rate within SLA — Target: >90% monthly
- Complaint Escalation Rate — Target: <5% requiring BINCC Head intervention
- Customer Satisfaction Score (CSAT) — post-resolution survey, Target: >3.8/5.0
- Viral Complaint Incidents — Target: Zero unmanaged viral incidents
- Social Media Sentiment Score — weekly NPS tracking by circle
- Repeat Complaint Rate — Target: <10% (same issue recurrence within 30 days)

2.6 Staffing — SMRR Cell

Role	Grade	No. of Posts	Shift/Day Duty
Cell Head, SMRR	GM	1	Day (on-call 24×7)
Social Media Response	AGM/SDE	1	Day

Role	Grade	No. of Posts	Shift/Day Duty
Manager			
Shift Monitoring & Response Officers	SDE/JTO	6 (2 per shift × 3)	24×7 shifts
CRM Integration & Docket Analyst	SDE/JAO	1	Day
Analytics & Sentiment Reporting Officer	SDE/JAO	1	Day
PR & Crisis Communication Liaison	AGM (coordinating with PR Cell)	1	Day

Note: SMRR Cell shall maintain a dedicated communication channel with the CMD's Public Relations team for managing high-profile complaints and media escalations.

3. CELL 3 — NETWORK UTILISATION & CAPACITY PLANNING CELL (NUCP)

3.1 Mandate

The NUCP Cell provides BSNL's Corporate Office with continuous, multi-layer visibility into network element utilisation across the entire national network. It transforms network capacity management from a retrospective, report-based exercise into a real-time, analytics-driven discipline — enabling proactive congestion management and evidence-based capital investment decisions.

3.2 Network Layers Monitored

Layer 1: Core Network Elements

Network Element	Key Parameters Monitored	Alert Threshold
MSC (2G/3G Circuit Core)	Erlang load, BHCA, link utilisation, processor load	>80% utilisation
MME (4G Control Plane)	Attach rate, bearer setup success, UE connections, signalling load	>75% registered UE capacity
SGW / PGW (4G User Plane)	GTP tunnel count, throughput Gbps, bearer drops, latency	>80% throughput capacity
SGSN/GGSN (3G Data)	PDP context count, throughput, attach/activate success	>80% capacity
EPC / 5GC (evolving)	AMF load, UPF throughput, SMF session count	>75% capacity
SBC (Session Border Controller)	Call legs, transcoding load, SIP transactions	>70% capacity
HLR/HSS/UDM	Transaction rate, DB replication lag, lookup latency	>70% TPS capacity
IN/SCF (Prepaid Intelligent Network)	Charging requests/sec, SCF processor load	>75% capacity
SMSC / RCS Platform	Message throughput, queue depth, delivery rate	Queue depth >10,000

Layer 2: Aggregator / Backhaul Network

Network Element	Key Parameters	Alert Threshold
IP/MPLS Core Routers	Interface utilisation, BGP peer status, MPLS label switching rate	>80% interface utilisation
OFC Ring (SDH/OTN)	STM/ODU utilisation, protection switching events, BER	>75% bearer utilisation
Metro Ethernet / CWDM/DWDM	Wavelength utilisation, OA power levels, chromatic dispersion	>80% wavelength load
Microwave/Backhaul Links	RSL (Received Signal Level), throughput, fade margin	RSL within 5dB of threshold
IPRAN / Cell-site Routers	Port utilisation, QoS queue drops, latency/jitter	QoS drops >0, latency >20ms
BharatNet GPON Aggregation	OLT uplink utilisation, ONT online ratio	>75% uplink utilisation
MAAN		>75% uplink utilisation

Layer 3: Access Network

Network Element	Key Parameters	Alert Threshold
4G eNodeB / gNodeB	PRB Utilisation (DL/UL), PDSCH/PUSCH throughput, connected UE count	PRB >80% DL, >75% UL
2G BTS	TRX utilisation, SDCCH utilisation, traffic channel Erlang	>75% traffic channel
3G NodeB	CE utilisation, HS-PDSCH throughput, HSDPA/HSUPA users	>75% CE utilisation
FTTH OLT	PON port utilisation, ONT registration, upstream/downstream throughput	>80% PON capacity
ADSL/VDSL DSLAM	Port utilisation, sync rate, attenuation, line noise	>85% port utilisation
Wi-Fi/BSNL Hotspots	Connected clients, throughput, AP uptime	>80% capacity, AP down

3.3 Periodic Reporting Framework

The NUCP Cell shall produce structured utilisation reports at defined periodicities for different audience levels:

Report Name	Frequency	Audience	Content	Format
Daily Network Flash Report	Daily 08:00 hrs	GM - BINCC, DGM-CNOC	P1/P2 faults, BTS availability, top congested elements	Automated email + dashboard
Weekly Network Health Digest	Every Monday	Director(CM /CFA), GM-Circles	KPI trends, capacity alerts, top 10 congested nodes, TRAI compliance status	PDF report + email
Monthly Network Performance Report	1st of every month	CMD's Office, DoT (if required)	Full KPI scorecard, circle-wise ranking, capacity additions, fault analysis	Formal Word/PDF document

Report Name	Frequency	Audience	Content	Format
Quarterly Capacity Planning Report	Quarterly	Board, MC, DoT	Network growth vs capacity, augmentation requirements, investment recommendations	Formal presentation + annexures
TRAI Quarterly QoS Compliance Report	Quarterly (per TRAI schedule)	Regulatory Affairs + TRAI	Mandated format QoS data across all parameters	TRAI format submission
Ad-hoc Ministerial/Board Report	As required	CMD, Board, DoT Secretary, Minister	Custom deep-dive on specific concern areas	Ministerial note format

3.4 Staffing — NUCP Cell

Role	Grade	No. of Posts	Shift/Day Duty
Cell Head, NUCP	GM	1	Day (on-call 24×7)
Layer 1: Core Network Elements	AGM/SDE	1	Day
Shift Monitoring & Response Officers	SDE/JTO	4 (1-2 per shift × 3)	24×7 shifts
Layer 2: Aggregator / Backhaul Network	AGM/SDE	1	Day
Layer 3: Access Network	AGM/SDE	1	Day
Coordination Cell	AGM (coordinating with CM/CFA/EB Unit)	1	Day
Reporting & Compliance Officer	SDE/JAO	1	Day

4. CELL 4 — INTEGRATED NETWORK INTELLIGENCE & ANALYTICS CELL (INIA)

4.1 Mandate

The INIA Cell is BSNL's centre of excellence for network analytics, artificial intelligence/machine learning (AI/ML) application, and business intelligence. It transforms the vast telemetry data generated across BSNL's network into actionable insights, predictive maintenance triggers, and regulatory-grade evidence. This Cell embodies BSNL's commitment to becoming an AI-first telecom operator as mandated under Digital India.

4.2 Core Functions

- Predictive fault analytics — ML models trained on historical fault data to predict BTS/transmission failures 24–72 hours in advance

- Network anomaly detection — automated identification of unusual traffic patterns, potential cyber events, and configuration anomalies
- Root cause analysis (RCA) automation — AI-assisted RCA for major outages reducing mean time to analyse from hours to minutes
- Subscriber experience analytics — correlating network KPIs with per-subscriber experience metrics to identify degraded cohorts before complaints
- Capacity forecasting — ML-based traffic growth prediction by geography, technology layer, and time horizon (3/6/12/24 months)
- TRAI QoS dashboard — real-time display of BSNL's compliance position versus TRAI benchmarks across all circles
- Social media sentiment analysis — NLP-based trend analysis of BSNL social media mentions, geographic clustering of complaint hotspots
- Competitor benchmarking analytics — automated analysis of TRAI/OOKLA/OPENSIGNAL published data to track BSNL vs Jio/Airtel performance
- AIOps platform management — integration with BSNL's CNOPS, RANGER, and NMS platforms for automated ticketing and resolution workflows
- Cell to act as enabler for other cells to build AI intelligence in current processes & undertake analysis to streamline process

4.3 Technology Platform — INIA Cell

Function	Recommended Platform / Tool	Data Source
Network Telemetry Aggregation	Apache Kafka / Confluent (stream processing)	NMS, EMS, SNMP, syslog
Data Lake / Storage	BSNL Data Centre Hadoop/Spark cluster or cloud (NIC)	All network telemetry, CRM, OSS
ML/AI Analytics Engine	Python ML stack (scikit-learn, TensorFlow) or IBM Telco AIOps	Data lake, fault history
TRAI QoS Dashboard	Custom CNOPS module or Grafana-based visualisation	NMS KPI counters, EMS
Social Media Listening	Brandwatch / Sprinklr or open-source (Elasticsearch+Kibana)	Twitter API, consumer portals
Business Intelligence	Tableau / Power BI (integrated with BSNL MIS)	All cells' data
Automated Ticketing	ServiceNow / JIRA integration with BSNL's OSS helpdesk	Anomaly detection alerts
GIS/Map Visualisation	BSNL GIS (or MapInfo/QGIS) for geographic fault mapping	Site database, fault tickets

Cell to also ensure the following points for BINCC:

i. **System Integration**: Enable seamless integration across NMS/EMS, CRM, and ticketing platforms for unified operations
ii. **Tool Development:** Develop and deploy internal dashboards, monitoring tools, and workflow systems for BINCC operations
iii. **Process Automation:** Automate ticketing, escalation, and reporting workflows to reduce manual effort and improve response times
iv. **Technology Evaluation & Deployment:** Assess new IT solutions and coordinate with vendors for implementation and upgrades

4.4 Staffing — INIA Cell

Role	Grade	No.	Background Required
Cell Head, INIA	GM	1	Telecom engineering + data analytics exposure
Senior Data Scientist / AI Engineer	DGM/AGM (or deputation)	1	ML/AI, Python, telecom domain
Network Analytics Engineers	AGM/SDE	2	Telecom NMS/EMS, data analysis
BI & Reporting Analyst	SDE/JAO	2	Power BI/Tableau, MIS reporting
GIS & Spatial Analytics Officer	SDE/JTO	2	GIS platforms, site database management
TRAI Compliance & Regulatory Analyst	SDE/JAO	2	TRAI regulations, QoS frameworks

Note: Additional team to be outsourced for AI tools

5. CELL 5 — FTTH, BHARATNET & RURAL BROADBAND QUALITY CELL (FTTH-BN)

5.1 Mandate

The FTTH-BN Cell provides centralised quality monitoring and operational oversight for BSNL's fibre broadband and BharatNet assets — India's largest rural broadband infrastructure. Given the direct national accountability for BharatNet performance and the revenue opportunity in FTTH, this Cell is critical for both operational excellence and regulatory compliance under BharatNet SLAs.

5.2 Monitoring Scope

- BSNL FTTH: ~43 lakh active ONT subscribers — OLT health, ONT online ratio, last-mile fault tracking
- BharatNet Phase I/II/III: ~6.5 lakh+ Gram Panchayat (GP) access points — BNU utilisation, uptime SLA
- BharatNet BNU Revenue — monitoring utilisation to ensure TSP/ISP revenue sharing compliance
- GPON/XGS-PON OLT and aggregation switch monitoring across all circles
- Wi-Fi hotspot at GPs — APs active/inactive, connected users, throughput
- CSC/PM-WANI last-mile connectivity — uptime tracking for government mandate compliance

5.3 Key Parameters — FTTH/BharatNet

Parameter	Target	Alert Trigger
BharatNet GP Coverage (% live)	>95% activated GPs	<90% any circle
BNU Uptime (24×7 SLA)	>99.5%	<99% any circle
OLT Availability	>99.9%	Any OLT down >15 min
FTTH ONT Online Ratio	>92%	<88% any exchange
FTTH Average Download Speed	>25 Mbps (100Mbps plans)	<20 Mbps sustained
BNU Revenue per GP (monthly)	Per contracted rate	Utilisation <20% (revenue risk)

Parameter	Target	Alert Trigger
Last-Mile Fault MTTR	<8 hours	>12 hours
GPON Port Utilisation	<80%	>85% sustained

5.4 Staffing — FTTH-BN Cell

Role	Grade	No. of Posts	Shift/Day Duty
Cell Head, FTTH-BN	GM	1	Day
Sr. Network Monitoring Engineer	DGM/AGM	1	Day
NOC Shift Engineer	AGM/SDE/JTO	6 (2 per shift × 3)	24×7 shifts
Transmission/Backhaul Officer	SDE/JTO	1	Day
Reporting, Analytics & Compliance Officer	SDE/JAO	1	Day

6. CELL 6 — ENTERPRISE, LEASED LINE & DATA CENTRE MONITORING CELL (ENT-DC)

6.1 Mandate

The ENT-DC Cell monitors BSNL's enterprise and government connectivity portfolio — leased lines, MPLS VPNs, IPLC, data centre services, and government network mandates (NKN, BBNL, state WAN projects). Given that enterprise customers contribute a disproportionately high share of BSNL's revenue at higher margins, SLA adherence in this segment is critical.

6.2 Monitoring Scope

- Leased line / P2P circuit monitoring: ~2.5 lakh enterprise circuits — availability, latency, throughput
- MPLS VPN: enterprise and government customers — CE-PE interface health, VRF routing, QoS markings
- IPLC / International connectivity: end-to-end latency, packet loss, bandwidth utilisation
- NKN (National Knowledge Network): node uptime, inter-university latency, packet loss
- BSNL Cloud / IDC: server utilisation, storage, network uptime, DC power, cooling
- Government e-Governance connectivity: NICNET, State Data Centres, eDistrict connectivity

6.3 SLA Monitoring — Enterprise

Service Type	Availability SLA	Latency SLA	Penalty Risk
Leased Line (Enterprise)	>99.5%	<10ms (metro)	Financial penalty per contract
MPLS VPN	>99.5%	<25ms national	Contract termination risk
IPLC	>99.7%	Per route (ITU standard)	International carrier penalties

Service Type	Availability SLA	Latency SLA	Penalty Risk
NKN Connectivity	>99.9%	<5ms intra-DC	GoI accountability
BSNL Cloud/IDC	>99.95%	<1ms intra-DC	SLA credit to customer
Government WAN	>99.5%	Per state contract	DPR/CAG audit exposure

6.4 Staffing — ENT-DC Cell

Role	Grade	No. of Posts	Shift/Day Duty
Cell Head, ENT-DC	GM	1	Day
Sr. Network Monitoring Engineer	DGM/AGM	1	Day
NOC Shift Engineer	AGM/SDE/JTO	6 (2 per shift × 3)	24×7 shifts
Transmission/Backhaul Officer	SDE/JTO	1	Day
Reporting, Analytics & Compliance Officer	SDE/JAO	1	Day

7. CELL 7 — NOC HR, TRAINING & WORKFORCE MANAGEMENT CELL (NOC-HR)

7.1 Mandate

Network Operations Centres are only as effective as the people operating them. This cell manages shift scheduling, competency frameworks, continuous training, performance management, and workforce planning specific to the 24×7 operational environment of BINCC and Circle CNOCs, including providing the necessary softwares.

7.2 Core Functions

- Maintain a BINCC/CNOC-specific competency framework defining skills required at each level (HQ/Circle/BA) for each technology domain
- Design and manage 24×7 shift rosters for HQ BINCC and coordinate shift frameworks for Circle CNOCs
- Identify training requirements and coordinate with BSNL's training institutions (BRBRAITT, regional TTCs) for technical upskilling
- Manage the NOC-specific performance appraisal process — linking APAR/IPMS assessments to measurable NOC KPIs (MTTR, complaint resolution rate, report timeliness)
- Maintain a NOC Skills Registry — a database of all officers with NOC-relevant competencies (NMS platforms, specific technology expertise, language skills for social media) for deployment decisions
- Coordinate with GM(HR) for postings/transfers ensuring NOC functions are adequately staffed at Circle level
- Design and implement knowledge management systems and all T requirements— SOPs, RCA databases, escalation runbooks, on-boarding documentation for new NOC staff
- Monitor compliance with shift hours, rest periods, and occupational health norms for 24×7 staff

7.3 Training Curriculum — NOC Specific

Training Module	Target Audience	Duration	Certification / Outcome
4G/5G RAN Fundamentals & KPI Analysis	All MNQM Cell + Circle RAN engineers	5 days	BSNL 4G NOC Certification

Training Module	Target Audience	Duration	Certification / Outcome
NMS/EMS Platform Operations (TCS, Nokia, Ericsson)	NOC Shift Engineers	5 days	Platform operator certification
Social Media & Digital Complaint Management	SMRR Cell + Circle CNOC social media officers	3 days	BSNL Digital CX Certification
Network Capacity Planning & Traffic Engineering	NUCP Cell engineers	4 days	Traffic engineering competency
AIOps & Data Analytics for Telecom	INIA Cell + senior NOC staff	5 days	Analytics practitioner badge
TRAI QoS Regulations & Compliance Reporting	Regulatory officers + Cell heads	2 days	Regulatory compliance awareness
Enterprise SLA Management	ENT-DC Cell + Circle enterprise teams	3 days	Enterprise SLA management
Crisis Communication & Escalation Management	All Cell Heads + Circle CNOC Heads	1 day	Crisis management readiness

7.4 Staffing — NOC-HR Cell

Role	Grade	No. of Posts	Shift/Day Duty
Cell Head, NOC-HR	DGM	1	Day
Reporting, Analytics & Compliance Officer	SDE/JAO	2	Day

8. CELL 8 — P & L MONITORING (PNLM CELL)

8.1 To Monitor performance matrices to improve EBITDA & Cashflows of the Circles, BAs, OAs for establishing them as distinct Profit centres & improving Asset utilisation efficiency.

8.2 Functions:

- Identify current financial performance matrices & create future benchmarks for financial improvements.
- Identify areas requiring focus for higher revenue scaling.
- Build Operational efficiency in Internal business processes
- Build Cost efficiency in operations

8.3 P &L Specific

Parameters
Revenue growth : existing Services
Revenue growth : Emerging/New Services
EBITDA margin Improvement
Asset Turnover Ratio

Parameters
Collection efficiency
Debtor Turnover in Days
Cashflow (Adjusted EBITDA)
Revenue Per Employee

8.4 Staffing — PNLM Cell

Role	Grade	No. of Posts	Shift/Day Duty
Cell Head, PNLM	DGM	1	Day
Reporting, Analytics & Compliance Officer	AO/JAO	4	Day

9. FULL PYRAMID — CIRCLE & BA LEVEL STRUCTURE

9.1 Circle Network Operations Centre (CNOC)

Each of BSNL's Telecom Circles and Metro Districts shall establish or strengthen a Circle Network Operations Centre (CNOC) as the Level 2 operational hub. The CNOC is accountable for real-time network management within the circle, escalating to BINCC for national-level issues and directing BA FRTs for field-level resolution.

Function	Circle CNOC Responsibility	Interface
Real-time network monitoring	Monitor all 2G/4G BTS, transmission, core elements within the circle via circle-level NMS	Reports to BINCC Cell 1
Social media complaint routing	Receive complaint tickets from BINCC SMRR, assign to relevant BA/exchange within 30 minutes	Reports to BINCC Cell 2
Network utilisation reporting	Generate daily/weekly utilisation reports for circle, upload to BINCC portal	Reports to BINCC Cell 3
FTTH/BharatNet monitoring	Monitor OLT, BNU, GP-level uptime within circle; escalate outages to BINCC	Reports to BINCC Cell 5
Enterprise circuit monitoring	Monitor leased lines and MPLS VPNs within circle, manage SLA tickets	Reports to BINCC Cell 6
Field team dispatch	Dispatch BA FRT for fault rectification within defined SLAs	Manages BA FRTs
TRAI QoS data collection	Compile and validate circle-level QoS data for monthly submission to BINCC	Supports BINCC Cell 3/4

Circle CNOC — Staffing Framework

Role	Grade	No. of Posts	Remarks
Circle CNOC Head	DGM/AGM	1	Accountable to both Circle CGM and BINCC ED

Role	Grade	No. of Posts	Remarks
Network Monitoring Engineer (24×7 Shift)	AGM/SDE	1 + 2 (1/shift)	3-shift rotation, 3 officers minimum
CM Officer	SDE/JTO	1	Monitoring CM network elements (BTS etc)
Transmission / Backhaul Officer	SDE/JTO	1	Monitoring IPRAN, microwave, OFC
FTTH / BharatNet Officer	SDE/JTO	1	OLT/ONT/GP monitoring
Reporting & Analytics Officer	SDE/JAO	1	Daily/weekly reports, TRAI data
Enterprise Circuit Officer	SDE/JAO	1	For circles with high enterprise load
Financial Officer	AO/JAO	1	Monitor P &L

9.2 BA Field Response Team (FRT)

At the Business Area level, the BA Field Response Team (FRT) is the ground-truth operational unit. FRTs are responsible for physical fault rectification — BTS hardware failures, transmission link restoration, last-mile fibre splicing, ONT replacements, and customer premise visits.

FRT Role	Grade	No. per BA	Primary Responsibility
FRT In-charge	SDE / JTO (In-charge)	1 + 2 (1/shift)	Receives fault tickets from CNOC, dispatches field team, confirms resolution
Mobile/BTS Field Technician	JTO / JE / TTM	1	BTS hardware, DG/battery, antenna, feeder cable maintenance
Transmission / Fibre Technician	JTO / JE / TTM	1	OFC splicing, microwave alignment, IPRAN troubleshooting
FTTH / Copper Last-Mile Technician or TIPs	JTO / JE / MDF staff	1	ONT replacement, drop fibre, DSLAM port assignment
Customer Service Coordinator	JAO / SDO / Accountant	1	Customer complaint dockets, CPE visits, billing issue coordination
Financial Officer	JAO	1	Monitor P&L

Additional team to be added basis number of network nodes (sites/ fiber RKm / OLT) as required. Same could also be outsourced

BA FRT — Performance Metrics

- Fault ticket acknowledgement within 30 minutes of dispatch from CNOC
- Site visit within 2 hours (urban) / 4 hours (semi-urban) / 8 hours (rural) of ticket assignment
- First-time fix rate >85% (fault resolved in first visit without callback)
- BTS restoration within SLA (4 hrs urban, 12 hrs rural as defined by MNQM Cell)
- FTTH restoration within 8 hours of ticket assignment
- Completion of escalation to CNOC within 2 hours if field team unable to resolve

10. COMPREHENSIVE LIST OF CRITICAL PARAMETERS TO BE MONITORED AT CENTRAL OFFICE

The following is the definitive reference list of all parameters that BINCC Corporate HQ shall monitor, organised by network domain. This list incorporates TRAI QoS benchmarks, TM Forum standards, 3GPP KPI definitions, and BSNL-specific operational parameters.

10.1 Radio Access Network (RAN) — 4G/LTE

#	Parameter	Definition	Target/Threshold	Source
1	eNodeB Availability	% time eNodeB in service	>98.5%	EMS/NMS
2	RRC Setup Success Rate	% successful RRC connection setups	>98%	EMS counters
3	ERAB Setup Success Rate	% successful E-RAB (bearer) setups	>97%	EMS counters
4	ERAB Drop Rate	% E-RABs dropped abnormally	<1%	EMS counters
5	Handover Success Rate (Intra)	% successful intra-eNB handovers	>97%	EMS counters
6	Handover Success Rate (Inter)	% successful inter-eNB handovers	>95%	EMS counters
7	CSFB Success Rate	% successful CS fallback to 2G voice	>97%	EMS counters
8	PRB Utilisation (DL)	Avg % Physical Resource Blocks used in downlink	<75%	EMS counters
9	PRB Utilisation (UL)	Avg % Physical Resource Blocks used in uplink	<70%	EMS counters
10	Average DL User Throughput	Average download speed per user	>5 Mbps	EMS counters
11	Average UL User Throughput	Average upload speed per user	>2 Mbps	EMS counters
12	Cell Edge Throughput (5th percentile)	DL speed at cell edge	>1 Mbps	Drive test/TRAI
13	PDCP Layer Latency	Average L3 latency measured at eNodeB	<10ms	EMS counters
14	SINR (Average)	Average Signal-to-Interference-Noise Ratio	>5 dB	EMS counters
15	Active UE Count (Peak/Average)	Simultaneously connected users per cell	Monitor for congestion	EMS counters
16	Paging Success Rate	% pages delivered successfully	>99%	EMS counters

10.2 Radio Access Network — 2G/GSM

#	Parameter	Target/Threshold	Source
17	BTS Availability	>97%	BSS NMS
18	CSSR (Call Setup Success Rate)	>95%	BSS NMS
19	CDR (Call Drop Rate)	<2%	BSS NMS
20	SDCCH Drop Rate	<1%	BSS NMS
21	TCH Congestion Rate	<2%	BSS NMS
22	Handover Success Rate	>95%	BSS NMS
23	GPRS/EDGE Data Throughput	>100 Kbps avg	BSS NMS
24	TRX Utilisation	<80%	BSS NMS

10.3 Core Network (4G EPC / IMS)

#	Parameter	Target/Threshold	Source
25	MME CPU Utilisation	<75%	EMS/NMS
26	MME Registered UE Count vs Capacity	<80% capacity	EMS/NMS
27	SGW/PGW Throughput vs Capacity	<80%	EMS/NMS
28	GTP Tunnel Setup Success Rate	>99%	EMS/NMS
29	HSS Transaction Success Rate	>99.9%	HSS EMS
30	IMS CSCF Availability	>99.9%	IMS EMS
31	VoLTE Call Setup Success Rate	>97%	IMS EMS
32	VoLTE Call Drop Rate	<2%	IMS EMS
33	VoLTE MOS (Mean Opinion Score)	>3.5	Probe/IOTA
34	SBC Call Legs vs Capacity	<75%	SBC EMS
35	SMSC Message Delivery Rate	>99%	SMSC platform
36	Charging System (OCS) Response Time	<100ms	OCS EMS
37	PCRF Rule Installation Time	<200ms	PCRF EMS

10.4 Transport / Backhaul Network

#	Parameter	Target/Threshold	Source
38	IP/MPLS Core Router — Interface Utilisation	<80%	SNMP/NMS
39	OFC Ring Availability	>99.9%	SDH/OTN NMS
40	Microwave Link RSL (Receive Signal Level)	>Threshold + 10dB margin	MW NMS
41	Microwave Link Availability	>99.9%	MW NMS
42	IPRAN Cell-site Router — Port Utilisation	<75%	SNMP
43	End-to-End Backhaul Latency (BTS to Core)	<20ms	Active probes
44	Packet Loss on Backhaul	<0.1%	SNMP/probes
45	Jitter on Backhaul (VoIP-critical paths)	<5ms	Active probes
46	BGP Session Uptime	>99.99%	Router NMS
47	MPLS Label Distribution Protocol status	All LDP sessions up	Router NMS
48	QoS Queue Drops (Voice/Video class)	Zero	Router NMS

10.5 FTTH / Broadband Access

#	Parameter	Target/Threshold	Source
49	OLT Availability	>99.9%	EMS
50	ONT Online Ratio	>92%	EMS
51	GPON Port Utilisation	<80%	EMS
52	FTTH Average Download Speed	>25 Mbps	RADIUS/probes
53	FTTH Latency (CPE to BRAS)	<10ms	Active probes
54	BRAS/BNG Session Count vs Capacity	<80%	NMS
55	AAA/RADIUS Authentication Success Rate	>99.5%	RADIUS logs
56	BharatNet GP Link Uptime	>99.5%	BHN NMS
57	BharatNet BNU Utilisation	>20% (revenue floor)	BHN portal
58	Wi-Fi AP Uptime at GPs	>95%	AP NMS

10.6 Enterprise & Security

#	Parameter	Target/Threshold	Source
59	Leased Line Circuit Availability	>99.5% per SLA	NOC circuit monitor
60	MPLS VPN PE-CE Interface Uptime	>99.5%	Router NMS
61	Enterprise End-to-End Latency	Per SLA (<10ms metro, <25ms national)	Probes
62	IPLC Packet Loss	<0.1%	IPLC NMS
63	Data Centre Server Uptime	>99.95%	DC management
64	Data Centre Network Availability	>99.99%	DC NMS
65	DDoS Attack Detection	Zero undetected events	Security NOC
66	Firewall / IPS Alert Volume	Track weekly, escalate spikes	Security EMS
67	SS7/Diameter Signalling Anomalies	Zero Category 3 events per GSMA FS.11	SS7 monitoring
68	BGP Route Hijack Detection	Automated alert on prefix changes	Route monitor

11. TECHNOLOGY PLATFORM REQUIREMENTS

11.1 Guiding Principles

- Preference for integration with BSNL's existing platforms (CNOPS, RANGER, NMS, CRM)
- Open standards and API-first architecture to enable interoperability across vendors (TCS, Nokia, Ericsson, C-DoT)
- Cloud-ready deployment on BSNL's own data centres
- Cells should project the requirements to the NoC Cell.

11.2 Platform to be used by Cell

Cell	Platform Requirement
MNQM Cell	Unified NMS with multi-vendor EMS integration (TCS 4G EMS, Nokia/Ericsson 2G), SNMP-based BTS ping monitoring, automated fault ticketing
SMRR Cell	Social media listening platform (Sprinklr/Brandwatch or equivalent), CRM integration via API, WhatsApp Business API gateway, NLP complaint classification engine
NUCP Cell	Network performance management (NPM) platform with SNMP/streaming telemetry, automated threshold alerting, report generation engine, TRAI format export
INIA Cell	Data lake (Hadoop/NIC cloud), ML/AI analytics workbench (Python/TensorFlow), BI visualisation (Power BI/Tableau), GIS integration layer If required propose a new system.
FTTH-BN Cell	BharatNet NMS enhancement, GPON EMS, GP monitoring dashboard, BNU revenue tracker
ENT-DC Cell	Enterprise SLA monitoring platform, circuit management system, DC management software
NOC-HR Cell	Shift management software, (e-learning), skills registry database

12. Closing Statement

BSNL has invested enormously — in national infrastructure, in indigenous technology, and in the trust of 90 million subscribers and a billion rural citizens dependent on BharatNet. The BINCC is the operational architecture that will ensure this investment delivers its intended outcomes. The cost of not acting — continued network complaints, TRAI penalties, parliamentary criticism, and subscriber loss — far exceeds the cost of building this capability.

The time to act is now. To begin this month.

ANNEXURE A — ABBREVIATIONS & GLOSSARY

Abbreviation	Full Form
AGM	Assistant General Manager
AIOps	Artificial Intelligence for IT Operations
BA	Business Area
BINCC	BSNL Integrated Network Command Centre
BNU	BharatNet Unit
BSS	Base Station Subsystem
BTS	Base Transceiver Station
CDFR	Call Drop Rate (TRAI term: CDR)
CGM	Chief General Manager
CNOC	Circle Network Operations Centre
CNOPS	BSNL's internal network operations platform
CSAT	Customer Satisfaction Score
CSSR	Call Setup Success Rate
DCR	Drop Call Rate
DGM	Deputy General Manager
EMS	Element Management System
EPC	Evolved Packet Core (4G Core)
ERAB	Evolved Radio Access Bearer
FRT	Field Response Team
GM	General Manager
HHO	Horizontal Handover
HSS	Home Subscriber Server
IMS	IP Multimedia Subsystem
IPRAN	IP Radio Access Network
ITS	Indian Telecommunication Service
JAO	Junior Accounts Officer
JTO	Junior Telecom Officer
MNQM	Mobile Network Quality & BTS Monitoring
MME	Mobility Management Entity
MOS	Mean Opinion Score
MTTD	Mean Time To Detect
MTTR	Mean Time To Restore
NMS	Network Management System
NPS	Net Promoter Score

Abbreviation	Full Form
NUCP	Network Utilisation & Capacity Planning
OLT	Optical Line Terminal
ONT	Optical Network Terminal
OSS	Operations Support System
PGW	Packet Data Network Gateway
PRB	Physical Resource Block
QoS	Quality of Service
RAN	Radio Access Network
RRC	Radio Resource Control
SBC	Session Border Controller
SDE	Sub-Divisional Engineer
SGW	Serving Gateway
SINR	Signal-to-Interference-and-Noise Ratio
SMRR	Social Media Rapid Response
TES	Telecom Engineering Service
TRAI	Telecom Regulatory Authority of India
VoLTE	Voice over LTE