Title:	Performance Management and Reporting for CSPs (TM Forum aligned) – GamerPlus BRM Integrated Open APIs
Key Component:	Performance Management and Reporting

Process Description:

Service Operating Procedure: Performance Management and Reporting for CSPs (TM Forum aligned) – GamerPlus BRM Integrated Open APIs
Version: 1.0.1

Objectives:
Note: This variant extends existing TM Forum-aligned Performance Management and Reporting SOPs by incorporating GamerPlus Bundle specifics (QoS for game data paths, Wallet Layer credits/vouchers, Home Continuity) and end-to-end BRM integration. Objectives are to: - Provide end-to-end performance management across service operations in alignment with TM Forum eTOM BRM and SID data model. - Proactively assure service quality, availability, capacity, and customer experience for GamerPlus bundles with subsidy and content licensing revenue components. - Enable real-time visibility, anomaly detection, threshold management, and closed-loop remediation via TM Forum Open APIs and automation. - Ensure SLA compliance, regulatory/privacy controls, and revenue integrity through auditable performance reporting and governance. - Support end-to-end service lifecycle management from order through revenue recognition with proactive quality assurance.

Scope:
Scope covers the full lifecycle of GamerPlus Bundle services (Entry/Mid/Premium tiers) including QoS toggles, Home Continuity, wallet credits, vouchers, subsidy terms (24-month), and content licensing revenue. Interfaces include CRM, provisioning, HLR/HSS, content licensing, wallet/voucher systems, partner stores, and payment gateways. Applies to 5G FWA and similar non-FTTH contexts where per-user QoS provisioning and subsidy/credentialing are enabled. Aligns with TM Forum Open APIs (Billing/Open, Customer, Provisioning, Product Catalog, Subscription) and BRM domain objects, ensuring end-to-end traceability, privacy governance, and auditable data flows across OSS/BSS stacks.

Key Performance Indicators (KPIs):

1. Name: Service Availability
   Description: Proportion of time the GamerPlus service is accessible and usable for end users.
   Measurement Unit: percent
   Thresholds:

   - Warning: 99.95
   - Critical: 99.9

2. Name: End-to-End Latency
   Description: Average time for data to traverse the GamerPlus service from user to edge and back.
   Measurement Unit: milliseconds
   Thresholds:

   - Warning: 50
   - Critical: 100

3. Name: Packet Loss
   Description: Percentage of packets lost during GamerPlus service transmission.
   Measurement Unit: percent
   Thresholds:

   - Warning: 0.1
   - Critical: 0.5

4. Name: Throughput (Access/Backhaul)
   Description: Average sustained data rate delivered to end users.
   Measurement Unit: Mbps
   Thresholds:

   - Warning: 40
   - Critical: 20

5. Name: Activation Success Rate
   Description: Proportion of activation requests completed successfully within defined SLA.
   Measurement Unit: percent
   Thresholds:

   - Warning: 98
   - Critical: 95

6. Name: Invoicing Accuracy
   Description: Proportion of invoices generated without errors.
   Measurement Unit: percent
   Thresholds:

   - Warning: 98
   - Critical: 95

7. Name: On-Time Invoicing
   Description: Invoices issued within the scheduled billing window.
   Measurement Unit: percent
   Thresholds:

   - Warning: 98
   - Critical: 95

8. Name: Payment Collection Rate
   Description: Proportion of payments collected as expected.
   Measurement Unit: percent
   Thresholds:

   - Warning: 98
   - Critical: 95

9. Name: ARPU (per user per month)
   Description: Average Revenue Per User, monthly basis for profitability and trend analysis.
   Measurement Unit: USD
   Thresholds:

   - Warning: 22
   - Critical: 20

10. Name: Churn Rate
    Description: Proportion of customers leaving the GamerPlus service within a period.
    Measurement Unit: percent
    Thresholds:

    - Warning: 2

- Critical: 3

11. Name: Revenue Leakage Incidents
    Description: Incidents leading to unrecognized or incorrectly billed revenue.
    Measurement Unit: count
    Thresholds:

    - Warning: 5
    - Critical: 10

12. Name: Wallet Balance Health
    Description: Proportion of wallets with sufficient balance for ongoing game data path QoS and subsidies.
    Measurement Unit: percent
    Thresholds:

    - Warning: 95
    - Critical: 90

13. Name: CPE Subsidy Utilization
    Description: Rate of subsidy utilization against approved subsidy pool.
    Measurement Unit: percent
    Thresholds:

    - Warning: 80
    - Critical: 70

14. Name: Voucher Issuance Success Rate
    Description: Proportion of voucher issuances completed successfully.
    Measurement Unit: percent
    Thresholds:

    - Warning: 98
    - Critical: 95

15. Name: Voucher Redemption Rate
    Description: Proportion of issued vouchers redeemed within valid period.
    Measurement Unit: percent
    Thresholds:

    - Warning: 95
    - Critical: 90

Data Collection:
Methods: - Real-time telemetry streaming from gamer QoS paths, edge gateways, and home gateway devices. - TM Forum Open APIs: Billing/OpenAPI (BRM-related subsidies, wallet, vouchers), Customer OpenAPI, Provisioning OpenAPI, ProductCatalog/OpenAPI, Subscription/OpenAPI. - BRM ledger events (wallet credits, subsidies, subsidies unlocks), voucher issuance/redeemption events, and content licensing revenue events. - HLR/HSS events for subscriber state and QoS gating eligibility. - Payment gateway callbacks and invoicing events. - Content licensing system events and partner store reconciliation. - Logs and analytics from OSS/BSS components and CRM. - Data privacy governance and audit logs. - Data quality checks and lineage tracking in accordance with SID.
frequency: "- Real-time telemetry (≤1 minute granularity) for critical KPIs. - Near real-time event-driven collection (seconds to minutes) for anomalies. - Hourly to daily aggregation for non-critical metrics. - Per-bill-cycle aggregation for revenue metrics. - On-demand extraction for regulatory reporting."
aggregation:"Hierarchical roll-up by per-user GamerPlus service instance -> service tier -> region -> market. Time-based aggregations include 1m, 5m, 15m, hourly, daily, monthly. Maintain audit trails and data lineage across BRM, wallet, voucher, and QoS telemetry to support revenue recognition and regulatory reporting."},
Frequency: This field is described in dataCollection.frequency above.
Aggregation: This field is described in dataCollection.aggregation above.

Analysis:
Step-by-step analysis approach (operationalized): Step 1 – Data quality and readiness checks: validate data completeness, schema conformance, and time synchronization across BRM, wallet, voucher, QoS telemetry, and billing data streams. Step 2 – Anomaly detection: apply threshold-based alerts for critical KPIs; deploy SPC charts and ML-assisted anomaly detectors for recurring patterns (seasonality in gaming peak hours, promo periods). Step 3 – Threshold breach handling: auto-escalate to Service Assurance, Fault Management, and BRM teams; trigger auto-ticketing and remediation proposals. Step 4 – Correlation and root-cause analysis: cross-correlate performance anomalies with BRM lifecycle events (activation, subsidy release, voucher issuance), wallet events (top-ups, deductions), and external partner actions (content promotions). Step 5 – Trend analysis and capacity planning: identify ongoing performance drift, correlate with game data path QoS toggles and subsidy lifecycles; adjust capacity and policy thresholds accordingly. Step 6 – Compliance and governance checks: ensure data lineage, privacy constraints, retention windows, and regulatory reporting readiness. Step 7 – governance dashboards and scorecards for cross-domain reviews (FM, SA, CEM, BRM). Step 8 – Documentation of lessons learned and CAPA proposals for continuous improvement.

Reporting:
Formats: Dashboard UI, PDF, Excel/CSV, JSON API
Frequency: - Real-time dashboards for NOC/SA and BRM operations. - Daily performance pack for Service Management. - Weekly SLA Review Pack. - Monthly Performance & Revenue Report for Executives and Regulators. - Ad-hoc incident and regulatory reports as required by governance.
Stakeholders: Internal: Service Management, NOC, Service Assurance, Fault Management, BRM/Revenue Assurance, Data Privacy Office, Compliance, Customer Experience Management (CEM), Product/Offering, IT/Automation, Wallet and Voucher Ops, Content Licensing, Partner Management, Finance. External: Regulators, Partners per contract, Auditors

Roles and Responsibilities:

- Performance Manager: owns PMO, KPIs lifecycle, scoping, governance, and reporting cadence. - Data Steward/Data Governance: ensures data quality, lineage, privacy controls, API access governance, and data retention policies. - Service Assurance Engineer: monitors metrics, investigates anomalies, coordinates with FM; executes closed-loop remediation actions. - Fault Management Analyst: triages faults, drives MTTR improvements, implements auto-remediation via orchestration. - CEM Manager: translates customer experience signals (CSAT/NPS/complaints) into service improvements and feeds back into PM. - BRM/Revenue Assurance Lead: ensures ARPU accuracy, churn analytics, subsidy accounting, wallet ledger integrity, and revenue realization. - Wallet/Voucher Manager: oversees wallet ledger health, subsidy funds, voucher issuance, redemption lifecycle, and partner reconciliation. - Subsidy and Subsidy Lifecycle Coordinator: ensures subsidy disbursement aligns with 24-month terms and activation gating. - Network/Provisioning Engineer: provides availability, capacity inputs, QoS path provisioning data, and gating for activation. - Compliance/Privacy Officer: enforces data handling, retention, access control, and regulatory reporting. - CRM/Provisioning Owners: ensure data consistency with Open APIs and provisioning events. - IT/Automation Engineer: maintains automation stack, orchestration, runbooks, and API integrations.

Integration with Other Domains:

- Fault Management (FM): Provide cross-domain alerts for performance anomalies; auto-ticketing and RCA data to feed CAPA. - Service Assurance (SA): Correlate performance metrics with fault data; joint incident reviews and guided remediation. - Customer Experience Management (CEM): ingest CSAT/NPS and complaints; map to service improvements along customer journeys. - BRM/Revenue Assurance: reconcile KPI impacts with ARPU, churn, invoicing accuracy, subsidy ledger, and wallet activity; ensure revenue integrity. - CRM/ HLR/HSS: synchronize subscriber state and eligibility for QoS gating and activation gating. - Content Licensing System: align TV licensing revenue with licensing events and bundle promotions. - Payment Gateway/Billing: real-time data exchange for invoicing, payments, subsidies, and wallet vouchers. - Partner APIs and Open APIs: leverage TM Forum Open APIs for BRM, Billing, Provisioning, Product Catalog, and Subscription; align with SID BRM objects for end-to-end traceability. - Data Privacy/Governance Systems: ensure privacy controls and auditable data flows across all integrations.

Automation:

- Real-time telemetry ingestion and rule-based alerting to NOC dashboards. - Closed-loop remediation: auto-create incidents, trigger FM/SA workflows, gate provisioning/activation when policy breaches occur, and push corrective actions to BRM/Wallet/Voucher systems for automatic updates. - Automated reconciliation: periodic auto-reconciliation of BRM events with performance data (ARPU, churn, subsidy ledger); generate CAPA recommendations. - Self-healing scripts: capacity tuning, QoS path reconfiguration, and activation gating automation integrated with orchestration. - API-driven data sharing: streaming and batch data exposed via Open APIs to internal/external stakeholders for transparency and regulatory reporting.

Continuous Improvement:

- Quarterly Post-Implementation Reviews (PIR) and annual CAPA cycles. - Refine KPIs, thresholds, and data models to reflect GamerPlus offerings (per-user QoS, subsidy schemes, voucher ecosystems, Home Continuity). - Update TM Forum Open API mappings and BRM data objects as domain refinements occur. - Expand automation to reduce MTTR, shorten activation times, improve invoicing accuracy, and strengthen wallet/subsidy governance. - Conduct cross-domain performance alignment reviews (FM, SA, CEM, BRM) to ensure end-to-end traceability from issue to business outcome (ARPU, churn, profitability). - Update privacy/regulatory controls in response to new laws and data retention policies. - Publish updated runbooks and knowledge base articles for operator training and onboarding.