NOTICE OF REQUEST FOR PROPOSAL ("RFP")

Vendors are invited from company incorporated in Malaysia and registered with Tenaga Nasional Berhad (TNB) for supply, installation and commissioning of work as follows:

RFP Description	Request for Proposal ("RFP") for Supply, Installation, Commissioning, Operation and Maintenance of Operational Support System ("OSS") for Allo Technology Sdn. Bhd.
Category of Works/Supplies	Information Technology
RFP Floatation Date	Thursday, 9th July 2026
RFP Closing Date	Monday, 10th August 2026 (12.00 Noon)
Submission of RFP Documents	The RFP documents shall be submitted in softcopy via email to: amir@allo.my; Cc: procurementallo@allo.my ***Submission deadline: 10th August 2026, 12:00 Noon***

1. **Qualification/Mandatory Requirement**

    - A company is legitimate and incorporated in Malaysia and has been duly registered with Companies Commission of Malaysia (SSM) and/or Registered as a vendor with Tenaga Nasional Berhad (TNB).

2. **Contact info for Technical Enquiries**
    - Contact Person: Mohammad Suhaimi Taha
    - Email: msuhaimi@allo.my

3. **Contact info for RFP General Enquiries**
    - Contact Person: Amir Hazmi Nawawi
    - Email: amir@allo.my / procurementallo@allo.my

NOTICE OF REQUEST FOR PROPOSAL ("RFP")

4. Submission of RFP Document

Flow process for RFP documents submission as per below:

SINGLE MASTER ENVELOPE / SINGLE PARCEL PACKAGE

What to do:

1. Include the RFP documents into either a single master file or multiple files, and ensure all files are properly named.
2. Submission shall be in **SEALED WITH PASSWORD** Single Master Files or Multiple Files and email to procurement Allo.
3. Affix label as shown below

EMAIL TO:

amir@allo.my

Cc: procurementallo@allo.my

Allo Technology Sdn Bhd,
Level 3, Left Wing,
NOVA Building, Universiti Tenaga Nasional (UNITEN),
43000 Kajang, Selangor.

(Attn: Procurement & Supply Chain Department)
(Subject: ALLO-OSS-2026-001)

No later than 12.00 Noon on Monday, 10th August 2026

REQUEST FOR PROPOSAL

RFP No. ALLO-OSS-2026-001

SUPPLY, INSTALLATION, COMMISSIONING, OPERATION AND MAINTENANCE OF

OPERATIONAL SUPPORT SYSTEM (OSS)

Inventory Management System (IMS) | GIS / Outside Plant (OSP)
Trouble Ticketing (TT) | Service Fulfilment & Provisioning | Analytics & Reporting

Issued by	**Allo Technology Sdn. Bhd.**
RFP Number	**ALLO-OSS-2026-001**
Issue Date	**9th July 2026**
Closing Date	**Monday, 10th August 2026, 12:00 Noon (Malaysian Standard Time)**
Submission Mode	**Online submission via email to amir@allo.my** **Cc: procurementallo@allo.my**
Language	**English**
Validity Period	**Six (6) months from closing date**

SUBMIT TO:
Procurement Department
Allo Technology Sdn. Bhd.
Email: amir@allo.my
cc: procurementallo@allo.my,
Subject: RFP RESPONSE — ALLO-OSS-2026-001 — [Your Company Name]
(Attn: _____)

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SECTION I: PROJECT BACKGROUND AND OBJECTIVES

1.1 About Allo Technology Sdn. Bhd.

Allo Technology Sdn. Bhd. is a licensed broadband Internet Access Service Provider (IASP) and Network Facilities Provider (NFP) in Malaysia, operating a GPON/FTTx fibre-to-the-home (FTTH) and fibre-to-the-building (FTTB) access network. The Company serves residential, SME and enterprise customers across multiple states, with a growing subscriber base and an expanding network footprint under Malaysia's National Fiberisation and Connectivity Plan (NFCP).

1.2 Existing Technology Environment

The Client's current technology environment relevant to this procurement includes:

System	Vendor / Product	Role
Element Management System (Access)	Nokia 5520 AMS	GPON OLT/ONT management and provisioning
Element Management System (Access)	Huawei NCE Lite	GPON/FTTx OLT and ONT management
Transmission NMS	Infinera TNMS	Optical transport (OTN/WDM) network management
Network Monitoring	LibreNMS	Active equipment bandwidth and performance monitoring
BSS (CRM, Billing, Careline)	Alepo	Customer management, billing and service portal
BNG / CGNAT	Juniper BNG	Subscriber session management, bandwidth policy, CGNAT

System	Vendor / Product	Role
AAA / RADIUS	FreeRADIUS	PPPoE subscriber authentication (current); IPoE migration target
Subscriber auth method	PPPoE (majority) + DHCP legacy	Target state: IPoE with DHCP Option 82 / circuit-id across all subscribers
IPv6 status	Not yet deployed	Planned dual-stack (IPv4 + IPv6) deployment; OSS must be IPv6-ready
OSS (IMS, GIS, Analytics)	Existing platform	To be replaced / upgraded as part of this OSS Transformation Program
Trouble Ticketing	Existing basic TT system	To be replaced — lacks SLA tracking and MCMC reporting

1.3 Scope of Procurement

The Client seeks a comprehensive, integrated OSS platform to support its network operations. The scope of this RFP covers the following functional modules:

Module	Name	Purpose
Module 1	Inventory Management System (IMS) / Network Inventory Core	Central repository for all physical and logical network resources
Module 2	GIS / Outside Plant (OSP) Management	Geographic visualisation and OSP/FTTX planning and design
Module 3	Trouble Ticketing (TT) System with MCMC MS-QOS Reporting	ITIL-aligned TT with automated regulatory reporting
Module 4	Service Fulfilment and Provisioning	End-to-end service order management and ONT auto-provisioning
Module 5	Analytics and Reporting	BI dashboards, MCMC MS-QOS KPI tracking, executive reporting
Module 6	IPv6 Readiness and Dual-Stack Support	Dual-stack IPv4/IPv6 provisioning and MCMC IPv6 adoption KPI reporting across all modules
Module 7	EMS Integration Layer	Bidirectional integration with Nokia, Huawei and Infinera EMS

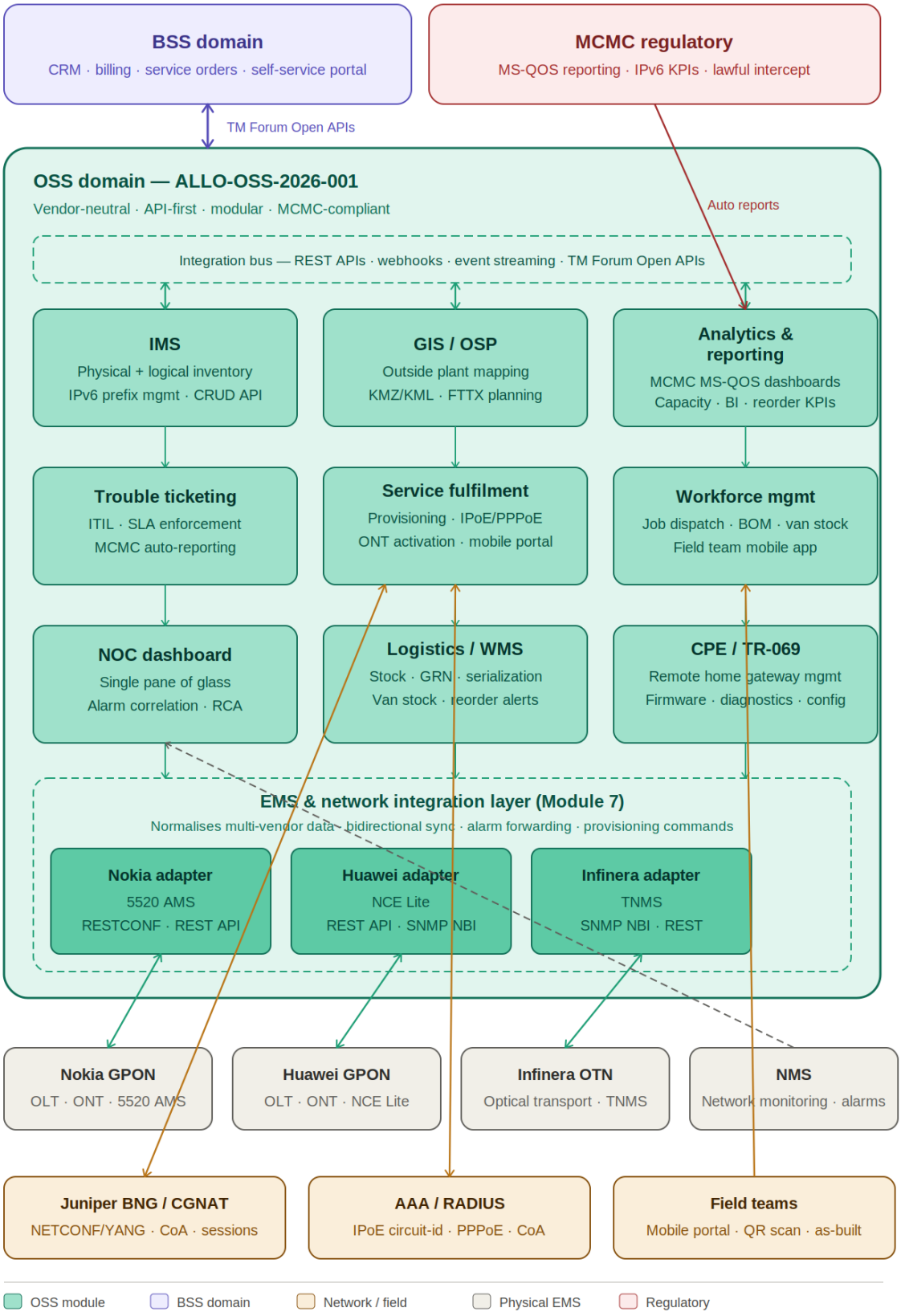
Note: BSS integration requirements are specified under Section 2.2 (Integration Requirements) and Section 3.4.8, and are not a standalone module. Field/mobile access portal requirements are specified under Module 4 (Section 3.4.4), Service Fulfilment and Provisioning.

1.4 OSS Solution Architecture Overview

The following diagram illustrates the high-level architecture of the OSS platform being procured under this RFP. It defines the OSS domain boundary, the seven functional modules within scope (see

Section 1.3), all external integration points, and the communication protocols between components. Respondents shall use this architecture as the framework for their proposed solution and shall clearly indicate any deviations in Form TS-K (Departure from Specifications).

Figure 1 — Allo Technology OSS High-Level Architecture | RFP No. ALLO-OSS-2026-001
External domains (above OSS boundary)
BSS domain (left) connects to the OSS via TM Forum Open APIs for service order intake, customer data synchronisation and provisioning status feedback. MCMC regulatory (right) receives automated MS-QOS performance reports and IPv6 adoption KPIs directly from the OSS Analytics module.
OSS domain modules (nine modules within RFP scope)
Row 1 (inventory and visibility): IMS, GIS/OSP, Analytics and Reporting. Row 2 (operations): Trouble Ticketing, Service Fulfilment, Workforce Management. Row 3 (support): NOC Dashboard, Logistics/WMS, CPE/TR-069. All nine modules communicate via a shared integration bus (REST APIs, webhooks, Kafka event stream, TM Forum Open APIs).
EMS and network integration layer (below OSS modules)
Nokia adapter (RESTCONF/REST API), Huawei adapter (REST API/SNMP), Infinera adapter (SNMP NBI/REST). The Client's NMS feeds alarm events via webhook directly to the NOC Dashboard and Trouble Ticketing modules. Physical EMS systems (Nokia GPON, Huawei GPON, Infinera OTN) sit below the integration layer.
Network and field integration (below OSS boundary)
Juniper BNG/CGNAT (NETCONF/YANG, CoA) and FreeRADIUS/AAA (IPoE circuit-id, PPPoE, CoA) connect bidirectionally to the Service Fulfilment module for subscriber provisioning. Field teams access the OSS via the mobile portal connected to Workforce Management and Service Fulfilment modules.


BSS domain
CRM · billing · service orders · self-service portal
MCMC regulatory
MS-QOS reporting · IPv6 KPIs · lawful intercept
TM Forum Open APIs
Auto reports
OSS domain — ALLO-OSS-2026-001
Vendor-neutral · API-first · modular · MCMC-compliant
Integration bus — REST APIs · webhooks · event streaming · TM Forum Open APIs
IMS
Physical + logical inventory
IPv6 prefix mgmt · CRUD API
GIS / OSP
Outside plant mapping
KMZ/KML · FTTX planning
Analytics & reporting
MCMC MS-QOS dashboards
Capacity · BI · reorder KPIs
Trouble ticketing
ITIL · SLA enforcement
MCMC auto-reporting
Service fulfilment
Provisioning · IPoE/PPPoE
ONT activation · mobile portal
Workforce mgmt
Job dispatch · BOM · van stock
Field team mobile app
NOC dashboard
Single pane of glass
Alarm correlation · RCA
Logistics / WMS
Stock · GRN · serialization
Van stock · reorder alerts
CPE / TR-069
Remote home gateway mgmt
Firmware · diagnostics · config
EMS & network integration layer (Module 7)
Normalises multi-vendor data · bidirectional sync · alarm forwarding · provisioning commands
Nokia adapter
5520 AMS
RESTCONF · REST API
Huawei adapter
NCE Lite
REST API · SNMP NBI
Infinera adapter
TNMS
SNMP NBI · REST
Nokia GPON
OLT · ONT · 5520 AMS
Huawei GPON
OLT · ONT · NCE Lite
Infinera OTN
Optical transport · TNMS
NMS
Network monitoring · alarms
Juniper BNG / CGNAT
NETCONF/YANG · CoA · sessions
AAA / RADIUS
IPoE circuit-id · PPPoE · CoA
Field teams
Mobile portal · QR scan · as-built
OSS module
BSS domain
Network / field
Physical EMS
Regulatory

1.5 Project Objectives

- Establish a single source of truth for all network inventory (physical and logical) for the Client's GPON/FTTx network;
- Automate MCMC MS-QOS regulatory reporting to support the Client's compliance obligations;
- Enable seamless, API-driven integration with Nokia GPON, Huawei GPON and Infinera TNMS;
- Provide regional field teams with a mobile-accessible portal for ONT provisioning, fault attendance and as-built updates;
- Implement an ITIL-aligned Trouble Ticketing system with full SLA enforcement, escalation and regulatory audit trails;
- Deliver GIS capabilities supporting KMZ/KML import from Google Earth and OSP/FTTX planning workflows from strategic planning through to as-built documentation;
- Implement a BSS-agnostic integration architecture that supports both the Client's current BSS environment and any future evolution; and
- Achieve a configuration-driven system that minimises vendor dependency for routine customisations;
- Support the Client's IPoE migration programme by enabling circuit-based subscriber provisioning (DHCP Option 82 / circuit-id) alongside legacy PPPoE account management during the transition period; and
- Be fully IPv6-capable across all modules, supporting dual-stack operation, DHCPv6, SLAAC and IPv6-only subscriber sessions.

SECTION II: GENERAL REQUIREMENTS

2.1 Architecture Requirements

- The solution shall be based on a modular, API-first architecture that allows individual modules to be deployed, upgraded or replaced independently.
- All modules shall expose REST APIs (JSON over HTTPS) with OpenAPI/Swagger documentation. GraphQL is desirable.
- The solution shall support both on-premise and cloud-hosted (private cloud/hybrid) deployment models. The Tenderer shall clearly state the deployment model offered.
- The solution shall support high availability (HA) deployment with a minimum guaranteed uptime of 99.5% for the production environment.
- The solution shall be multi-tenant capable with strict role-based access control (RBAC) segregating access by region, function and seniority.
- All data shall be stored within Malaysia in compliance with the Personal Data Protection Act 2010 (PDPA) and any applicable MCMC data sovereignty requirements.
- The solution shall support a minimum of 200 concurrent users without degradation in performance.
- The solution shall provide a comprehensive audit log of all data changes, user actions and API calls, retained for a minimum of three (3) years.

2.2 Integration Requirements

- The solution shall provide a documented integration adapter or connector for Nokia 5520 AMS via RESTCONF or REST API.
- The solution shall provide a documented integration adapter for Huawei NCE Lite via SNMP NBI, REST API or XML/SOAP NBI.
- The solution shall provide a documented integration adapter for Infinera TNMS via SNMP NBI or REST API.
- The solution shall integrate with the Client’s existing network monitoring system (NMS) via webhook or REST API for alarm-to-ticket automation.
- The solution shall support integration with the Client's incumbent BSS (Alepo) and shall be designed to support future BSS replacement without re-architecting the OSS integration layer.
- The solution shall support event-driven integration via webhooks, Kafka or equivalent message bus.
- The Tenderer shall provide a detailed Integration Architecture document describing all integration points, protocols, data flows and frequency of synchronisation.

2.3 Security Requirements

- The solution shall enforce HTTPS/TLS 1.2 or higher for all data in transit.

- The solution shall support Single Sign-On (SSO) via SAML 2.0 or OpenID Connect.
- User authentication shall support multi-factor authentication (MFA).
- The solution shall implement role-based access control (RBAC) with configurable permission sets.
- All data at rest shall be encrypted using AES-256 or equivalent.
- The solution shall undergo a security assessment prior to go-live and the Tenderer shall provide a penetration test report from a qualified third party within six (6) months of commissioning.

2.4 Performance Requirements

Metric	Minimum Requirement
System availability (production)	99.5% uptime measured monthly, excluding scheduled maintenance
RTO (Recovery Time Objective)	4 hours for P1 system failure
RPO (Recovery Point Objective)	1 hour maximum data loss on system failure
API response time	< 2 seconds for 95th percentile of queries
Concurrent users	Minimum 100 concurrent users without performance degradation
Inventory scale	Support minimum 10,000 network elements and 100,000 cable/port records
Ticket volume	Process minimum 1,000 tickets per month
Report generation	MCMC monthly report generated within 15 minutes

2.5 Hardware and Infrastructure Requirements

This is a standalone scope of the RFP covering the underlying hardware/infrastructure required to host the entire OSS solution (all modules stated in Section 1.3), separate from the software licensing costs quoted in Form FS-B. The Tenderer shall propose Option (1) On-Premise, Option (2) On-Cloud, or both, and shall clearly indicate which option(s) are being offered.

(1) On-Premise Solution

- Option A - New Physical Server Hardware: the Tenderer shall propose dedicated server hardware (make, model, CPU cores/threads, RAM, storage type and capacity, and network interfaces) sized to run all in-scope OSS modules and supporting components (application, database, integration middleware) at the performance, concurrency and inventory-scale levels specified in Section 2.4.
- Option B - Virtual Machine Specification: where the solution is designed to run virtualised, the Tenderer shall propose detailed VM sizing (vCPU, vRAM, storage capacity, IOPS) per component/module, compatible with the Client's existing hyper-converged infrastructure (HCI) environment.

- The Tenderer shall state minimum and recommended specifications separately for Production, Disaster Recovery/High Availability, and UAT/Staging environments.
- The Tenderer shall specify storage redundancy/data protection requirements (e.g. RAID level or equivalent) and backup storage sizing.
- The Tenderer shall specify operating system and hypervisor/platform compatibility requirements (e.g. VMware, Hyper-V, KVM) and any associated licensing implications.

(2) On-Cloud Solution (if available)

- Where the Tenderer offers a cloud-hosted or SaaS deployment option, the Tenderer shall specify the cloud provider(s) supported and the equivalent compute/storage /network sizing (instance types and storage tiers).
- The hosting region(s) shall be within Malaysia, in compliance with the data sovereignty requirement stated in Section 2.1.
- The Tenderer shall provide estimated monthly bandwidth/data transfer requirements and the associated cost basis.
- The Tenderer shall state the uptime/SLA commitment for the cloud environment and the shared-responsibility matrix between the Tenderer/cloud provider and the Client covering security, patching, backup and monitoring.
- The Tenderer shall describe the data ownership, exit and data extraction/migration provisions applicable upon contract termination or expiry.
- The Tenderer shall clearly state whether the cloud option is offered as a stand-alone alternative or only in combination with the on-premise option.

Regardless of the option(s) proposed, the Tenderer shall provide a complete Bill of Materials (BOM) for all hardware/VM/cloud resources required, quoted separately from software licensing in Form FS-B (Schedule of Rates). The proposed sizing shall include a minimum of 30% headroom for growth over the contract period.

SECTION III: TECHNICAL SPECIFICATIONS — OSS MODULES

3.1 Module 1 – Inventory Management System (IMS)

3.1.1 Physical Network Inventory

- The system shall support inventory management of all physical network elements including but not limited to: OLTs, ONTs, ODFs, FDPs, FDCs, primary and secondary splitters, splice closures, poles, manholes, ducts, trenches, cables (at individual fiber strand level), patch panels and building access points.
- The system shall support a hierarchical site model: Country → Region → State → PMU → Exchange/PoP → Cabinet/Rack → Device → Card → Port.
- The system shall maintain a complete lifecycle record for each asset including procurement date, installation date, warranty expiry, last maintenance date and decommission date.
- The system shall support custom fields and configurable device types without requiring code changes or vendor engagement.

3.1.2 Logical Network Inventory

- The system shall support IP address management (IPAM) including IPv4 and IPv6 prefix management, VRF, VLAN and VLAN group management.
- The system shall support end-to-end circuit management — physical and logical — with complete path tracing from OLT port through splitter to ONT.
- The system shall support service instance management linking customer services to physical and logical network resources.
- The system shall support configuration management with version history of device configurations.

3.1.3 Data Management and API

- The system shall provide a complete REST API with CRUD operations for all inventory objects, documented via OpenAPI/Swagger.
- The system shall support bulk import of inventory data via CSV, Excel or API from existing inventory sources. The Respondent shall describe the data migration tools and methodology available.
- The system shall support webhook notifications for all inventory change events, enabling downstream systems (EMS, TT, provisioning) to react to changes in near-real-time.
- The system shall provide GraphQL API support for efficient, client-defined queries.

3.2 Module 2 – GIS / Outside Plant (OSP) Management

- The system shall provide map-based visualisation of the Client's outside plant network on a geographic map background (OpenStreetMap or Google Maps satellite imagery).
- The system shall support direct import of Google Earth KMZ and KML files, including embedded imagery and feature metadata, without data loss.
- The system shall support export of network elements and routes to KMZ/KML format for use by field teams via Google Earth or mobile GIS applications.
- The system shall provide the following views: Outside Plant View, Field View, Circuit View, Schematic/SLD View, Rack View, Vault and Floor Plan View.
- The system shall support the complete OSP/FTTX planning workflow: Strategic Planning → Low-Level Design → Field Survey/ROW → Design Editing → Detailed Design → As-Built.
- The system shall support automated BOM (Bill of Materials) and BOQ (Bill of Quantities) generation from network designs, including cable lengths, splitter counts, trench depths, manhole quantities and associated unit rates.
- The system shall support generation of splice plans at core level and single-line diagrams (SLD) from inventory data.
- The system shall maintain bidirectional synchronisation between GIS geographic data and IMS inventory records, ensuring that geographic coordinates, site locations and cable routes are consistent across both modules.
- The system shall support multi-user concurrent editing of OSP designs with conflict detection and version control.
- The system shall support definition of Feeder Service Areas (FSA), Distribution Service Areas (DSA) and Customer Service Areas (CSA) with automatic demand coverage calculations.

3.3 Module 3 – Trouble Ticketing System

3.3.1 Core Ticketing Requirements

- The system shall support full ITIL v3/v4 aligned processes: Incident Management, Problem Management and Change Management.
- The system shall support automatic ticket creation triggered by alarms from the Client’s network monitoring system (NMS) via webhook or REST API, with automatic ticket closure or status update when the alarm clears.
- Each ticket shall be linkable to one or more Configuration Items (CIs) in the IMS inventory, enabling the system to display affected equipment, location, upstream connectivity and potentially affected services on the ticket.
- The system shall support configurable ticket categories, priorities, escalation paths and routing rules without code changes.

- The system shall support multi-channel ticket intake: automated alarm integration, careline (from BSS), customer self-service portal, email-to-ticket, and field team mobile app.
- The system shall support ticket templates for common fault types (e.g. OLT fibre cut, ONT offline, power failure, planned maintenance).
- The system shall maintain an immutable audit trail of all ticket actions with user attribution and timestamps.
- The system shall support mass ticket operations for network-wide incidents affecting multiple customers (parent-child ticket relationship).

3.3.2 SLA Management

- The system shall support definition of multiple SLA policies applicable to different service tiers (residential, SME, enterprise, regulatory escalation).
- The system shall track SLA timers from ticket creation, automatically pause timers for customer-caused delays, and restart timers upon relevant events.
- The system shall generate real-time SLA breach alerts via email, SMS and dashboard notification, with configurable warning thresholds (e.g. alert at 75% of SLA time elapsed).
- The system shall maintain SLA compliance statistics per ticket category, service tier and geographic region.

3.3.3 MCMC MS-QOS Regulatory Reporting

IMPORTANT: This is a critical requirement. The Client is currently obligated to submit quarterly MS-QOS performance data to MCMC under the Communications and Multimedia Act 1998. The operation team currently performs manual data extraction and massaging before each submission — a process that is error-prone and resource-intensive. The proposed OSS must eliminate this manual process.

- The system shall track and report the following MCMC MS-QOS KPIs as a minimum: Mean Time to Restore (MTTR) per incident category, total network outage duration, network availability percentage, customer complaint rate, complaint resolution rate within prescribed timeframes, service installation timeframes, and number of repeat complaints.
- The system shall provide pre-built, configurable MS-QOS report templates that automatically aggregate ticket data into the format required for MCMC submission.
- The system shall support scheduled automated report generation and distribution (daily, weekly, monthly, quarterly) via email and dashboard, eliminating manual data extraction.
- The system shall export MS-QOS reports in Excel, CSV and PDF formats compatible with MCMC submission requirements.
- The system shall retain all underlying ticket data and derived KPI calculations for a minimum of three (3) years for MCMC audit purposes.

- The system shall provide drill-down capability from summary KPI to individual ticket records to support MCMC audit inquiries.
- The Tenderer shall provide sample MCMC MS-QOS report outputs demonstrating how their system captures and presents the required KPIs.

3.4 Module 4 – Service Fulfilment and Provisioning

- The system shall provide end-to-end service order management from order receipt (from BSS) through provisioning completion, with status tracking visible to all stakeholders.
- The system shall support automated ONT registration and service activation via the Nokia 5520 AMS RESTCONF or REST API without manual EMS intervention.
- The system shall support automated ONT registration and service activation via the Huawei NCE Lite REST API or SNMP NBI without manual EMS intervention.
- The system shall provide a mobile-friendly web portal (responsive design, accessible via smartphone or tablet) for regional provisioning teams to perform the following without direct EMS access: ONT serial number lookup via QR code scan, service order retrieval by customer ID or site address, ONT registration and service activation submission, real-time provisioning status monitoring, and as-built record update in IMS upon job completion.
- The system shall implement role-based regional access control so that field technicians see only their assigned geographic region's devices, orders and tickets.
- The system shall support a configurable provisioning workflow engine with approval gates, automated activation triggers, failure handling and rollback capabilities.
- The system shall maintain a complete audit trail of all provisioning actions with user, timestamp and result.
- The system shall support service catalogue integration — service profiles (bandwidth tier, VLAN, QoS, CPE configuration) defined in the catalogue and automatically applied during provisioning.
- The system shall accept service orders from the Client's BSS via REST API and return provisioning status updates to the BSS in real time.

3.5 Module 5 – Analytics and Reporting

3.5.1 Infrastructure and Network Performance Dashboards

- The system shall provide pre-built, out-of-the-box dashboards for network infrastructure covering: OLT port utilisation per region and exchange, upstream bandwidth utilisation per link and node, GPON splitter and ONT capacity, fibre cable

utilisation (strand-level), power and environmental status for data centres and exchanges — ready to use without custom development.

- The system shall provide real-time network topology visualisation showing active alarms, degraded nodes and traffic load across the full network from OLT to BNG, updated at configurable intervals (minimum every five minutes).
- The system shall provide a network availability dashboard tracking uptime percentage per site, per OLT, per circuit and per service tier on a daily, weekly, monthly and quarterly basis.

3.5.2 MCMC MS-QOS Regulatory Reporting

- The system shall provide pre-built report templates covering all MCMC MS-QOS KPIs including: Mean Time to Restore (MTTR) per incident category, total network outage duration, network availability percentage, customer complaint rate, complaint resolution rate within prescribed timeframes, service installation timeframes, and repeat complaint rate.
- The system shall generate MCMC MS-QOS reports automatically on a scheduled basis (daily operational summary, monthly regulatory submission, quarterly performance review) without manual data extraction or manipulation by the operations team.
- The system shall provide drill-down capability from any MCMC KPI summary figure to the underlying individual ticket or incident records, supporting MCMC audit inquiries.
- The system shall export MCMC reports in Excel, CSV and PDF formats compatible with MCMC submission portal requirements.
- The system shall track IPv6 adoption KPIs as required for MCMC IPv6 reporting obligations, including: percentage of subscribers on dual-stack, IPv6 session counts, DHCPv6/SLAAC assignment rates, and IPv6 vs IPv4 traffic ratio.

3.5.3 Capacity Planning and Forecasting

- The system shall provide a network capacity planning module that forecasts: OLT port exhaustion date based on current subscriber growth rate per exchange, upstream bandwidth exhaustion date per peering link and transit circuit, CGNAT public IP pool utilisation trend and exhaustion forecast, and IPv6 prefix pool utilisation forecast.
- The system shall allow the operations team to model capacity scenarios — for example, the impact of a new housing development on a specific OLT, or the effect of a planned bandwidth upgrade on headroom — using configurable growth rate inputs.
- The system shall generate automated capacity alerts when any resource reaches a configurable threshold (default: 70% and 85% utilisation) with sufficient lead time to trigger procurement or network expansion planning.
- The system shall provide a five-year capital expenditure (capex) planning dashboard showing projected equipment procurement requirements based on subscriber growth forecasts, enabling the network planning team to prepare annual budget submissions.

3.5.4 Subscriber and Service Analytics

- The system shall provide subscriber analytics covering: total active subscribers by region and service tier, new activations and churn per month, PPPoE versus IPoE subscriber split and migration progress tracking, average session duration and reconnect frequency, and CGNAT public IP sharing ratio per pool.
- The system shall track and report on the IPoE migration programme — providing a per-OLT, per-region view of subscriber migration status from PPPoE to IPoE with configurable migration target tracking.
- The system shall provide service quality analytics per subscriber tier, including: average broadband speed test results (where TR-069/TR-369 data is available), ONT offline frequency per customer, and repeat fault rate per customer.

3.5.5 Logistics and Stock Analytics

- The system shall provide stock level dashboards for all warehouse locations (HQ, regional depots, technician van stock) showing current quantities versus minimum threshold for each serialised and bulk material type.
- The system shall provide a stock runway indicator — calculated as current stock quantity divided by average weekly consumption rate — displayed as weeks of stock remaining per item per location, with configurable alert thresholds.
- The system shall provide material consumption analytics: planned versus actual consumption per job type, consumption variance trends, and material cost per activated subscriber.
- The system shall provide procurement analytics: average supplier lead time per material category, goods received versus purchase order quantity variance, and pending jobs blocked due to insufficient stock.

3.5.6 SLA and Operational Performance Analytics

- The system shall provide SLA compliance dashboards tracking vendor support SLA performance (response time and resolution time) against contracted targets (P1: 15 minutes response, 4 hours resolution; P2: 30 minutes response, 8 hours resolution) with breach count and breach rate trend.
- The system shall provide field team performance analytics: jobs completed per technician per day, first-time fix rate (jobs resolved without return visit), average time on site per job type, and SLA compliance rate per technician and per region.
- The system shall provide trouble ticket analytics: ticket volume trend by category and priority, average resolution time per category, reopened ticket rate, and tickets per 1,000 subscribers as a service quality index.
- The system shall provide a management executive dashboard — suitable for monthly board or management review — combining: network availability, subscriber growth, fault trend, capacity headroom, field team performance and regulatory compliance status in a single printable view.

3.5.7 Self-Service Reporting and Integration

- The system shall provide a self-service report builder enabling non-technical users (operations managers, NOC supervisors, planning engineers) to create, save and

schedule custom reports by selecting data fields, applying filters, grouping by dimensions and setting output formats — without developer involvement.

- The system shall support integration with industry-standard BI and dashboard tools via REST API, ODBC/JDBC direct database connector, or published data export, enabling the Client to build custom visualisations on top of OSS data.
- The system shall support scheduled automated report distribution via email to configurable recipient lists, with reports attached in the recipient's preferred format (Excel, CSV or PDF).
- The system shall retain a minimum of three (3) years of all performance, incident, capacity, subscriber and logistics data in queryable format for MCMC audit purposes and long-term trend analysis.
- The system shall provide real-time KPI threshold alerts delivered via email, SMS and in-system push notification, with configurable alert rules per metric, per threshold level and per recipient group.

3.6 Module 6 – Ipv6 Readiness and Dual-stack Support

CONTEXT: Malaysia's MCMC has mandated progressive IPv6 adoption across licensed ISPs. The Client is planning a dual-stack (IPv4 + IPv6) deployment using DHCPv6 and SLAAC on the Juniper BNG, with a long-term target of IPv6-only operation for new subscribers. All OSS modules must be IPv6-aware from the outset to avoid costly re-engineering during the IPv6 transition.

- All OSS modules shall natively support IPv6 addressing — the IMS, provisioning portal, MCMC reporting, API endpoints and administrative interfaces shall all be accessible and functional over IPv6.
- The IMS shall support IPv6 prefix management including: DHCPv6 prefix delegation pools, SLAAC prefix tracking, IPv6 address assignment records per subscriber, and dual-stack (IPv4 + IPv6) address inventory.
- The provisioning workflow shall support dual-stack subscriber activation: simultaneous IPv4 CGNAT assignment and IPv6 prefix delegation (DHCPv6-PD) or SLAAC configuration on the Juniper BNG as part of a single provisioning transaction.
- The provisioning workflow shall support three IPv6 transition modes: (a) IPv4-only (legacy PPPoE/IPoE, existing subscribers), (b) dual-stack IPv4 + IPv6 (target state for new and migrated subscribers), and (c) IPv6-only (future state for new activations once IPv6 penetration targets are met).
- The system shall support FreeRADIUS IPv6 attributes — specifically Framed-IPv6-Prefix, Delegated-IPv6-Prefix, and Framed-IPv6-Route — for subscriber IPv6 policy delivery during authentication.
- The system shall support Juniper BNG DHCPv6 local server configuration and RADIUS-triggered IPv6 prefix delegation as part of the service provisioning workflow.
- The MCMC reporting module shall capture and report IPv6 adoption metrics as required for MCMC's IPv6 KPI reporting obligations, including: percentage of

subscribers on dual-stack, IPv6 session counts, DHCPv6/SLAAC assignment rates, and IPv6 traffic volumes.

- The IMS capacity planning module shall include IPv6 prefix pool utilisation reporting, alerting the operations team when DHCPv6 prefix pools approach exhaustion thresholds.
- The GIS/OSP module shall support documentation of IPv6 address plan assignments at site, exchange and node level, enabling the operations team to manage IPv6 prefix hierarchies geographically.
- The Respondent shall describe their solution's current IPv6 deployment maturity — specifically: whether IPv6 is supported in production deployments today, which modules are fully IPv6-capable, and any known gaps or roadmap items for full IPv6 support.

3.7 Module 7 – EMS Integration Layer

The EMS and Network Integration Layer is a critical component of this procurement. The Respondent shall demonstrate documented integration experience with at least two (2) of the three (3) EMS platforms, and shall describe their approach to AAA/BNG integration.

Platform	Interface Required	Data to be Exchanged
Nokia 5520 AMS (GPON/FTTx)	RESTCONF / REST API / Kafka	Device inventory, ONT status, alarms, provisioning commands, performance counters
Huawei NCE Lite (GPON/FTTx)	REST API / SNMP NBI / XML NBI	Device inventory, ONT registration status, alarms, fault data, performance data
Infinera TNMS (Optical Transport)	SNMP NBI / REST API	Circuit inventory, port status, alarms, performance metrics, wavelength data
FreeRADIUS (AAA)	REST API / MySQL / rlm_rest	PPPoE account mgmt, IPoE circuit-id binding, CoA trigger, accounting records
Juniper BNG / CGNAT	NETCONF/YANG / Junos REST API	Subscriber profile binding, bandwidth policy push, CoA, session query, CGNAT mapping

- The integration layer shall support automated synchronisation of device inventory from EMS to IMS at configurable intervals, with delta-only updates to minimise system load.
- The integration layer shall support real-time alarm forwarding from EMS to the Trouble Ticketing module, with alarm enrichment using IMS inventory data (site name, upstream path, affected services).
- The integration layer shall support provisioning commands from the Service Fulfilment module to EMS (ONT registration, service activation, deactivation) with acknowledgement and error handling.

- The Tenderer shall provide a detailed Integration Architecture document and evidence of prior EMS integration deployments.

SECTION IV: MAINTENANCE AND SUPPORT SERVICES

4.1 Support SLA Requirements

Priority	Definition	Response Time	Resolution Target	Support Hours	Uptime SLA	Penalty / Credit
P1 — Critical	Production system down; all users affected; data at risk	**15 minutes**	**4 hours**	**24x7x365**	**99.9% / month**	5% monthly fee per breach
P2 — High	Major module non-functional; significant business impact; workaround unavailable	**30 minutes**	**8 hours**	**24x7x365**	—	3% monthly fee per breach
P3 — Medium	Module partially functional; workaround available	**4 hours**	**3 business days**	Business hours	—	—
P4 — Low	Minor issue; cosmetic; documentation; enhancement request	**1 business day**	**Scheduled release**	Business hours	—	—

4.1.1 Definitions and Measurement

"Response Time" means the elapsed time from the moment the Respondent receives a support ticket (by email, portal or phone) to the moment the Respondent provides a written acknowledgement confirming the incident is under active investigation by a qualified engineer.

"Resolution Time" means the elapsed time from the moment of acknowledgement to the moment the affected system or module is fully restored to normal operation and confirmed by the Client.

"Business Hours" means 9:00 a.m. to 6:00 p.m. Malaysian Standard Time (MST), Monday to Friday, excluding Malaysian public holidays.

"Monthly Uptime" means the total minutes in a calendar month minus total minutes of unplanned downtime, divided by total minutes in the month, expressed as a percentage. Planned maintenance windows agreed in advance with the Client are excluded from downtime calculations.

4.1.2 System Availability SLA

The Respondent shall guarantee a minimum monthly system availability of 99.9% for the production OSS platform, calculated across all core modules (IMS, TT, GIS/OSP, Analytics, Service Fulfilment). This equates to a maximum of 43.8 minutes of unplanned downtime per calendar month.

The Respondent shall provide a monthly availability report to the Client within five (5) business days of month-end, detailing: total uptime minutes, total downtime minutes, root cause of each downtime event, and corrective action taken.

Where monthly availability falls below 99.9%, the Client shall be entitled to a service credit in addition to any incident-level penalties as described in Section 4.1.4.

4.1.3 Support Coverage Hours

P1 and P2 incidents: The Respondent shall provide 24 hours a day, 7 days a week, 365 days a year (24x7x365) support coverage. Response time obligations apply at all hours including weekends and public holidays.

P3 and P4 incidents: Support during Business Hours only. Incidents raised outside Business Hours will be acknowledged on the next Business Day.

The Respondent shall maintain a dedicated 24x7 on-call escalation path for P1 incidents, with a named primary and secondary escalation contact provided to the Client. Contact details shall be updated within 24 hours of any personnel change.

For P1 incidents where remote resolution has not been achieved within eight (8) hours, the Respondent shall dispatch qualified on-site engineering support to the Client's primary data centre location within forty-eight (48) hours.

4.1.4 SLA Breach Penalties and Service Credits

Where the Respondent fails to meet the Response Time or Resolution Target for any P1 or P2 incident, the Client shall be entitled to a service credit against the monthly support fee as follows:

Incident	SLA Breach Condition	Service Credit Entitlement
P1 — Critical	Response time exceeded (> 15 minutes)	5% of monthly support fee per breach event
P1 — Critical	Resolution time exceeded (> 4 hours)	10% of monthly support fee per breach event
P2 — High	Response time exceeded (> 30 minutes)	3% of monthly support fee per breach event
P2 — High	Resolution time exceeded (> 8 hours)	5% of monthly support fee per breach event
Monthly availability < 99.9%	Uptime SLA breach in any calendar month	10% of monthly support fee for that month

Service credits shall be capped at a maximum of thirty percent (30%) of the monthly support fee in any single calendar month. Service credits are the Client's sole financial remedy for SLA breach and do not constitute a waiver of any other rights under the contract.

The Respondent shall raise a service credit note within ten (10) business days of month-end for any breach events occurring in that month, without requiring the Client to make a formal claim.

- The Tenderer shall provide 24x7x365 support coverage for P1 and P2 incidents.
- The Tenderer shall have local or APAC-based technical staff capable of on-site attendance at the Client's primary data centre location (Cyberjaya, Selangor) within forty-eight (48) hours for P1 incidents.
- The Tenderer shall provide a dedicated Customer Success Manager for the first year of operation.
- All support interactions shall be logged in a support portal accessible to the Client with real-time status tracking.
- The Tenderer shall provide quarterly service review meetings with the Client's Operations and IT teams.
- The Tenderer shall propose major product releases per year with documented release notes and upgrade procedures.

- The Tenderer shall provide minimum three (3) years of product support guarantee from the date of commissioning.

4.2 Training Requirements

- The Tenderer shall provide a comprehensive training programme covering system administration, user operations and integration development for the Client's technical team.
- Training shall be conducted on-site at the Client's premises in Malaysia in English.
- The Tenderer shall provide training materials, user manuals and administrator guides in English.
- The Tenderer shall conduct a minimum of one (1) day of training for system administrators and one (1) day of training for end users per module.
- Training videos and e-learning materials shall be provided and remain accessible throughout the contract period.
- The training programme shall include a dedicated module that simulates the Client's actual end-to-end operational workflow cycle - for example, from key-in of an asset deployed/installed at site through to preparation of the Site Handover Document used by the Operations team upon project build completion - to ensure attendees can operate the system confidently in real working scenarios.
- The proposed solution's user interface and workflows shall be designed to be usable by non-IT operations/field personnel without hesitation, minimising reliance on IT support for routine day-to-day tasks.
- User manuals and quick-reference guides provided by the Tenderer shall be practical, task-based and easy to understand (e.g. step-by-step screenshots for common workflows), and shall not simply consist of the system's built-in help documentation exported or printed as a reference manual.

4.3 Implementation and Migration Requirements

- The Tenderer shall provide a detailed Project Implementation Plan with milestones, deliverables, responsibilities and timelines. The target go-live period is within six (6) months of contract award.
- The Respondent shall describe their data migration methodology, including data mapping, validation procedures, rollback procedures and the recommended parallel operation approach for transitioning from an existing inventory system to the new IMS.
- The Tenderer shall conduct User Acceptance Testing (UAT) in a dedicated staging environment with the Client's team prior to production go-live.
- The Respondent shall propose a parallel operation period — typically a minimum of sixty (60) days — during which the existing system and the new OSS are operated concurrently prior to full cutover.
- The Tenderer shall provide a comprehensive cutover plan with a detailed rollback procedure.

4.4 Proof of Concept (POC) Requirements

- Following technical evaluation, the shortlisted Tenderer(s) will be required to conduct a Proof of Concept (POC), at the Tenderer's own cost, prior to contract award.
- The POC shall be conducted at the Client's premises (or via a remote demonstration environment, at the Client's discretion) within a timeframe to be specified in the invitation to POC.
- The shortlisted Tenderer(s) will be required to do a Proof of Concept (POC) for, at minimum, the following:
  - Live inventory creation and hierarchical site modelling (Country to Region to Exchange to Device to Port) in the IMS module;
  - EMS integration - real-time alarm ingestion from at least one of Nokia or Huawei EMS (test/staging instance) and automatic conversion to a trouble ticket;
  - Generation of a sample MCMC MS-QOS regulatory report from the Analytics module;
  - Mobile/field portal ONT provisioning and activation workflow;
  - IPv6 dual-stack subscriber provisioning simulation;
  - A system usability walkthrough performed by a non-technical Client user completing a common end-to-end workflow (e.g. asset deployment to site handover document); and
  - A walkthrough of the proposed hardware/VM or cloud environment sizing for at least one non-production module, per Section 2.5.
- The Client's evaluation committee shall assess the POC using a structured scorecard, and POC performance shall form part of the final technical evaluation score. Failure to satisfactorily demonstrate the above during the POC may result in disqualification from further evaluation, at the Client's discretion.

SECTION V: TECHNICAL REQUIREMENTS — FORMS TO BE COMPLETED BY TENDERER

The following forms shall be completed and submitted as part of the Technical Proposal. Each form shall be accompanied by supporting evidence as specified.

Form TS-A1: Company Profile

Company Legal Name	
Company Registration Number	
Date of Incorporation	
Registered Business Address	
Principal Office Address (if different)	
Nature of Business	
SSM Registration Type (Sdn Bhd / Berhad / etc.)	
CIDB / RDCE Registration (if applicable)	
Bumiputera Status (if applicable)	
Total Number of Employees	
Number of Technical/Engineering Staff	
Authorised Signatory Name	

Authorised Signatory Designation	
Contact Person (Technical)	
Contact Person (Commercial)	
Company Website	

Form TS-D: Tenderer's Experience

Please complete the following table for each comparable OSS deployment. Attach reference letters or contact details for verification.

Field	Project 1	Project 2	Project 3
Client/Operator Name			
Country			
Network Type (GPON/FTTx/Other)			
Subscriber Scale			
OSS Modules Deployed			
EMS Integration (Vendor/Product)			
Contract Value (approx. RM)			
Project Duration			
Go-Live Date			
Reference Contact Name & Email			

Form TS-H: MCMC MS-QOS Compliance Statement

The Tenderer shall describe in detail how the proposed solution supports each of the following MCMC MS-QOS reporting requirements. Attach sample report screenshots where available.

MS-QOS KPI	How the system captures this KPI	Report format available
Mean Time to Restore (MTTR) per incident category		
Network availability (%)		
Total outage duration per month		
Customer complaint rate		
Complaint resolution within prescribed timeframe		
Repeat complaint rate		
Service installation timeframe		
P1/P2 SLA breach rate		

SECTION VI: COMMERCIAL / FINANCIAL REQUIREMENTS

Form FS-A: Letter of Tender

To: Procurement Department, Allo Technology Sdn. Bhd., Level 3, Left Wing, NOVA Building, Universiti Tenaga Nasional (UNITEN), 43000 Kajang, Selangor, Malaysia.

We, the undersigned, having examined the Request for Proposal No. ALLO-OSS-2026-001 and all related documents and addenda, hereby offer to supply, install, commission, operate and maintain the Operational Support System (OSS) in accordance with the said documents for the sums and on the terms set out in our Commercial Proposal.

Total Proposed Contract Value (RM, excl. SST)	
SST (if applicable)	
Total Proposed Contract Value (RM, incl. SST)	
Contract Duration	
Proposed Payment Milestones	
Tender Validity Period	
Authorised Signatory Name	
Designation	
Date	
Company Stamp	

Form FS-B: Schedule of Rates

The Tenderer shall provide itemised pricing for all components. Prices shall be in Malaysian Ringgit (RM) and inclusive of all taxes unless explicitly stated otherwise.

Item	Module / Component	Description	One-Time (RM)	Annual (RM)
1	Inventory Management System (IMS)	Software licence — unlimited (or minimum 50) users		
2	GIS / OSP Module	Software licence + KMZ/KML integration		
3	Trouble Ticketing System	Software licence — unlimited (or minimum 50) agents		
4	MCMC MS-QOS Reporting Module	Pre-built report templates + scheduling		
5	Service Fulfilment & Provisioning	Software licence + mobile portal		
6	Analytics & BI Module	Dashboard + report builder licence		
7	Nokia GPON EMS Integration	Integration adapter development & licence		
8	Huawei GPON EMS Integration	Integration adapter development & licence		
9	Infinera TNMS Integration	Integration adapter development & licence		
10	NMS Integration	Alarm-to-ticket webhook integration		
11	BSS (Alepo) Integration	REST API integration adapter		
12	Data Migration from Existing System	Migration toolset, execution & validation		
13	Implementation & Project Management	Professional services — fixed price		
14	Training	On-site training — all modules		
15	Hardware & Infrastructure Requirement	Proposed Platform ***		
16	Annual Support & Maintenance	Year 1 — 24x7 support, updates, upgrades		

Item	Module / Component	Description	One-Time (RM)	Annual (RM)
17	Annual Support & Maintenance	Year 2		
18	Annual Support & Maintenance	Year 3		
	TOTAL (3-Year TCO)			

Remarks:

*** Hardware & Infrastructure costs shall be itemised within the proposed solution. However, the Client reserves the right to procure and prepare its own hardware platform separately, should the Tenderer's proposed hardware/infrastructure cost be considered non-competitive.

Each module has been itemised individually to allow the Client the flexibility to select which module(s) to implement in the initial phase, and which module(s) may be deferred or omitted based on cost considerations and technical features requirement.

The outcome of this RFP shall serve as a reference guideline for subsequent tendering exercises.

APPENDIX A: SAMPLE SUBMISSION LABEL AND PROCESS FLOW

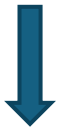
This RFP uses online submission. No physical envelope or hardcopy is required. Please follow the email submission format below:

Flow process for RFP documents submission as per below:

SINGLE MASTER ENVELOPE / SINGLE PARCEL PACKAGE

What to do:

1. Include the RFP documents into either a single master file or multiple files, and ensure all files are properly named.
2. Submission shall be in **SEALED WITH PASSWORD** Single Master Files or Multiple Files and email to procurement Allo.



EMAIL TO:

amir@allo.my
Cc: procurementallo@allo.my

Allo Technology Sdn Bhd,
Level 3, Left Wing,
NOVA Building, Universiti Tenaga Nasional (UNITEN),
43000 Kajang, Selangor.

(Attn: Procurement & Supply Chain Department)
(Subject: ALLO-OSS-2026-001)

No later than 12.00 Noon on Monday, 10th August 2026

APPENDIX B: SAMPLE CLARIFICATION FORM

REQUEST FOR PROPOSAL — CLARIFICATION FORM

RFP No. ALLO-OSS-2026-001

SUPPLY, INSTALLATION, COMMISSIONING, OPERATION AND MAINTENANCE OF OPERATIONAL SUPPORT SYSTEM (OSS)

Tenderer's Legal Name	
Company Registration Number	
Contact Person (Name & Designation)	
Contact Email	
Contact Phone Number	
Date of Query	
Closing Date for Query (7 days before tender closing)	

No.	RFP Section / Clause Reference	Page No.	Query / Clarification Required
1			
2			
3			
4			
5			

Dated this _____ day of _____ 2026	

Authorised Signatory (Signature)	
Name	
Designation	
Company Stamp	

Note: This form shall be sent to the Client's Procurement Department via email only. Verbal queries will not be entertained. The Client will respond to all clarification queries received not later than seven (7) calendar days before the closing date.

APPENDIX C: COMPLIANCE MATRIX

The Tenderer shall complete this Compliance Matrix for every requirement listed. Use the following response codes:

Code	Meaning	Instruction
C — Comply	The proposed solution fully meets the requirement as stated	No further explanation required unless clarification is beneficial
P — Partial	The proposed solution partially meets the requirement	Describe the gap and proposed workaround or roadmap in the Remarks column
N — Non-Comply	The proposed solution does not meet the requirement	Explain and state whether it is on the product roadmap

2.1–2.4 General / Architecture / Security			
Ref.	**Requirement**	**C / P / N**	**Remarks / Evidence**
2.1.1	Modular, API-first architecture		
2.1.2	On-premise and cloud-hosted deployment support		
2.1.3	99.5% production uptime SLA		
2.1.4	Multi-tenant with RBAC		
2.2.1	Data sovereignty — data stored within Malaysia		
2.3.1	HTTPS/TLS 1.2+ for all data in transit		
2.3.2	SSO via SAML 2.0 or OpenID Connect		
2.3.3	Multi-factor authentication (MFA)		
2.3.4	AES-256 encryption at rest		

2.5 Hardware and Infrastructure Requirements			
Ref.	**Requirement**	**C / P / N**	**Remarks / Evidence**
2.5.1	On-premise Option A – new physical server hardware sized per Section 2.4 performance levels		
2.5.2	On-premise Option B – VM sizing (vCPU/vRAM/storage/IOPS) compatible with Client's HCI environment		
2.5.3	Separate sizing stated for Production, DR/HA and UAT/Staging environments		
2.5.4	Storage redundancy/data protection (e.g. RAID or equivalent) and backup storage sizing		
2.5.5	OS and hypervisor/platform compatibility (e.g. VMware, Hyper-V, KVM) and licensing implications stated		
2.5.6	On-cloud option (if available) – provider, region within Malaysia, and equivalent compute/storage sizing		
2.5.7	Cloud uptime/SLA commitment and shared-responsibility matrix (security, patching, backup, monitoring)		
2.5.8	Complete Bill of Materials (BOM) quoted separately in Form FS-B, with minimum 30% growth headroom		

3.1 Inventory Management System (IMS)			
Ref.	**Requirement**	**C / P / N**	**Remarks / Evidence**
3.1.1	Physical inventory — OLT, ONT, ODF, FAT, FDC, splitter, cable (strand level)		
3.1.2	Hierarchical site model (Country → Region → Exchange → Device → Port)		
3.1.3	Logical inventory — IP, VLAN, circuit, service instance		
3.1.4	Custom fields and device types — configurable without code changes		
3.1.5	Full REST API with OpenAPI/Swagger documentation		
3.1.6	Bulk import of inventory data from existing systems via CSV, Excel or API		
3.1.7	Webhook notifications for inventory change events		
3.1.8	GraphQL API support		

3.2 GIS / Outside Plant (OSP)			
Ref.	**Requirement**	**C / P / N**	**Remarks / Evidence**
3.2.1	Map-based OSP visualisation on geographic background map		
3.2.2	Direct import of Google Earth KMZ and KML files		
3.2.3	Export to KMZ/KML format		
3.2.4	Outside Plant, Field, Circuit, Schematic, Rack and Floor Plan views		
3.2.5	FTTX planning workflow (strategic → design → as-built)		
3.2.6	Automated BOM/BOQ generation from network designs		
3.2.7	Splice plan and SLD diagram generation		
3.2.8	Bidirectional GIS ↔ IMS synchronisation		

3.3 Trouble Ticketing and MCMC Reporting			
Ref.	**Requirement**	**C / P / N**	**Remarks / Evidence**
3.3.1	ITIL v3/v4 aligned Incident, Problem and Change Management		
3.3.2	Auto-ticket creation from NMS alarms via webhook		
3.3.3	Ticket linkage to IMS Configuration Items (CIs)		
3.3.4	Configurable ticket categories, priorities and routing rules — no code changes		
3.3.5	Multi-channel ticket intake (alarm, careline, portal, email, mobile)		
3.3.6	SLA policy definition per service tier with breach alerting		
3.3.7	MCMC MS-QOS KPI tracking (MTTR, availability, complaint rate, etc.)		

3.3.8	Pre-built MCMC MS-QOS report templates — automated generation		
3.3.9	Scheduled report distribution (daily, monthly, quarterly)		
3.3.10	Export to Excel, CSV, PDF for MCMC submission		
3.3.11	Minimum 3-year data retention for MCMC audit		
3.3.12	Immutable audit trail with user attribution and timestamps		

3.4 Service Fulfilment and Provisioning			
Ref.	**Requirement**	**C / P / N**	**Remarks / Evidence**
3.4.1	End-to-end service order management from BSS to provisioning completion		
3.4.2	Automated ONT registration and activation via Nokia GPON EMS		
3.4.3	Automated ONT registration and activation via Huawei GPON EMS		
3.4.4	Mobile-friendly field portal (QR scan, order lookup, activation, as-built update)		
3.4.5	Role-based regional access control for field teams		
3.4.6	Configurable provisioning workflow engine with approval gates		
3.4.7	Service catalogue integration for profile-based provisioning		
3.4.8	BSS order intake via REST API with status callback		

3.5 Analytics and Reporting			
Ref.	**Requirement**	**C / P / N**	**Remarks / Evidence**
3.5.1	Pre-built infrastructure dashboards — no custom development required for basics		

3.5.2	Self-service report builder for non-technical users		
3.5.3	BI / dashboard tool integration via REST API or database		
3.5.4	Export to Excel, CSV, PDF		
3.5.5	Minimum 3-year data retention		

3.6 IPv6 Readiness and Dual-Stack Support			
Ref.	**Requirement**	**C / P / N**	**Remarks / Evidence**
3.6.1	All OSS modules accessible and functional over IPv6		
3.6.2	IMS supports IPv6 prefix management: DHCPv6-PD pools, SLAAC, dual-stack inventory		
3.6.3	Provisioning supports dual-stack activation (IPv4 CGNAT + IPv6 prefix delegation)		
3.6.4	Three IPv6 transition modes: IPv4-only, dual-stack, IPv6-only		
3.6.5	FreeRADIUS IPv6 attribute support: Framed-IPv6-Prefix, Delegated-IPv6-Prefix		
3.6.6	Juniper BNG DHCPv6 local server + RADIUS IPv6 prefix delegation provisioning		
3.6.7	MCMC IPv6 adoption KPI reporting: dual-stack %, session counts, prefix utilisation		
3.6.8	IPv6 prefix pool utilisation alerting in capacity planning		
3.6.9	GIS/OSP supports IPv6 address plan documentation by site and node		

3.7 EMS Integration Layer (incl. AAA/BNG)			
Ref.	**Requirement**	**C / P / N**	**Remarks / Evidence**
3.7.1	Nokia GPON EMS — RESTCONF/REST API (inventory, alarms, provisioning)		
3.7.2	Huawei GPON EMS — XML NBI / SNMP NBI (inventory, alarms, provisioning)		

3.7.3	Infinera TNMS — SNMP NBI / REST (inventory, alarms)		
3.7.4	FreeRADIUS — REST/MySQL integration (PPPoE accounts, IPoE circuit-ids, CoA, accounting)		
3.7.5	Juniper BNG — NETCONF/YANG or REST (subscriber profile, bandwidth policy, CoA, session query)		
3.7.6	Automated EMS-to-IMS inventory synchronisation		
3.7.7	Real-time alarm forwarding with IMS enrichment		
3.7.8	Provisioning command push to EMS/AAA/BNG with rollback		

3.8 IPoE Migration and AAA / BNG Integration

Ref.	Requirement	C / P / N	Remarks / Evidence
3.8.1	PPPoE RADIUS account create/modify/delete via FreeRADIUS integration		
3.8.2	IPoE circuit-id / DHCP Option 82 subscriber binding in FreeRADIUS		
3.8.3	Dual-mode provisioning: PPPoE and IPoE simultaneously		
3.8.4	RADIUS CoA for real-time plan changes without session disconnect		
3.8.5	Juniper BNG subscriber profile management via NETCONF/YANG or REST		
3.8.6	Atomic provisioning with rollback across OLT + RADIUS + BNG		
3.8.7	Migration management view: per-subscriber PPPoE/IPoE status tracking		
3.8.8	Bulk PPPoE-to-IPoE migration with per-subscriber status and rollback		

I/We acknowledge that I/We have read, understand, and comply to the above technical specification and capable of performing all of the stated requirements:

(Vendor's Signature)

Name:

Designation:

Company Name:

Date:

Company Stamp: