Section VII. Technical Specifications

STATEMENT OF COMPLIANCE TO TECHNICAL SPECIFICATIONS

A. INSTRUCTION:

The bidder must state in the last column opposite each parameter and required specifications either **"Comply" or "Not Comply".** All pages shall be properly signed. Bidders must state here either "Comply" or "Not Comply" against each of the individual parameters of each Specification stating the corresponding performance parameter of the equipment offered. Statements of "Comply" or "Not Comply" must be supported by evidence in a Bidders Bid and cross-referenced to that evidence. Evidence shall be in the form of manufacturer's unamended sales literature, unconditional statements of specification and compliance issued by the manufacturer, samples, independent test data etc., as appropriate. A statement that is not supported by evidence or is subsequently found to be contradicted by the evidence presented will render the Bid under evaluation liable for rejection. A statement either in the Bidders statement of compliance or the supporting evidence that is found to be false either during Bid evaluation, post-qualification or the execution of the Contract may be regarded as fraudulent and render the Bidder or supplier liable for prosecution subject to the provisions of ITB Clause above goods manufactured by us.

	TECHNICAL REQUIREMENTS SPECIFICATION	
1	1. GENERAL REQUIREMENTS	Statement of Compliance
	1.1 The Service Provider shall provide and manage a Multi-Protocol Labeling Switching (MPLS) backhaul network that will interconnect the BOC head office, and all major ports and BOC sites enumerated here; and, a 200 Mbps direct internet link in the BOC main office . The delivery of the redundant MPLS and internet links shall include installation and delivery of new equipment (please refer to Section VII Part B for a list of coverage and bandwidth requirements per site).	
	1.1.1 For a period of twenty-four (24) months from Start of the Services, the Service Provider shall operate, maintain and manage the MPLS connectivity among the Major Ports and Sub Port Offices.	
	1.1.2Subscription of the Internet Connection shall be twenty-four (24) months upon issuance of Acceptance Notice;	
	1.1.2. Within four (4) months from the receipt of the Notice to Proceed (NTP), the Service Provider shall complete the necessary deployment of the MPLS and the Internet Direct link on specified BOC sites including connecting the new installations to the	

A. THE MPLS AND INTERNET SERVICE TECHNICAL SPECIFICATIONS

	existing CPE deployed on each sites of the agency's existing network.				
1.1.3.	The Service Provider shall be responsible for the supply, delivery, installation, configuration and maintenance of connectivity and the needed equipment / active components for the said connection for all sites nationwide. The Service Provider shall provide any and all equipment, parts or supplies necessary to accomplish this connection's Infrastructure from the BOC existing/new network. This includes providing the necessary CPE equipment (modems, routers, load balancers, etc.), physical lines and their required equipment, etc.				
1.1.4.	The Service Provider's MPLS network must have PE routers deployed in different areas in Luzon, Visayas and Mindanao.				
1.1.5.	During the contract period, the provider shall allow the provision to increase the bandwidth at a specific rate and shall be able to allow such change in any given office site. Monthly service charge will be adjusted according to the specific bandwidth rate increase and the office site.				
1.2. The Inter	met Direct Line must be IPv6 ready.				
1.3. The Inte addresses (DNS)	1.3. The Internet Direct Line must include at least 14 assignable Public IP addresses and a reliable primary and secondary Domain Name Service (DNS)				
1.4. The Serv or Tier 2	ice Provider must provide a proof that they are connected to Tier 1 Upstream networks or Global ISPs.				
1.5. The Serv network facilities, Internet,	ice Provider shall ensure that the service will not have any common elements, last mile fiber cable, copper cable or microwave radio , and nationwide backbone transmission network with the existing MPLS and IPVN networks of BOC.				
BOC's intent another privat for high avail	ion for the new MPLS and Internet Direct link services is to have te wide area network that is diverse from the existing MPLS service ability of its nationwide data network infrastructure.				
1.6. All sites directly ensuring	1.6. All sites shall have the ability to communicate with any and all other sites directly for both voice and data. The Service Provider is responsible for ensuring the proper routing for all communications to the proper site.				
1.7. The Ser Support when red	vice Provider shall provide a 24/7, whole-year round Technical Services. All Service Requests shall be immediately acted upon ceived.				
1.8. The Services address	rvice Provider shall provide managed network administration including but not limited to status monitoring, editing of routes, IP allocation, traffic report generation, basic troubleshooting, and				

	stopping/starting/restarting of network equipment if needed on all Managed Devices-	
	1.9. The Service Provider shall operate a Network Operations Center (NOC) that has a team of certified network professionals which includes at least 10 MEF-CECP (MEF – Carrier Ethernet Certified Professional) personnel, at least 200 Fiber Optic Association certified personnel; and 15 CCIE personnel for 24x7 operations to monitor, troubleshoot and maintain the BOC MPLS service/network.	
	1.9.1. The Service Provider must ensure that the NOC has relevant processes and systems in place on Quality Management, Information Security Management, Service Management, and Business Continuity which shall include (as minimum): ISO 22301:2012 Business Continuity Management System and ISO 27001:2013 Information Security Management Systems.	
	1.10. All services shall be provided 24 hours a day, 7 days a week, and 365 days a year continuously.	
	1.11. The Service Provider shall complete the first circuit test of any of the existing BOC sites within 120 days from the date that the Notice to Proceed (NTP) was received for all sites. If this is not met, the BOC will NOT issue an Acceptance Certificate to be used for billing purposes unless corrected. Acceptance per site will be considered in case where Service Provider cannot complete provisioning of the service on certain sites due to dependencies associated to BOC or due to force majeure.	
	1.12. All the equipment the Service Provider will provide shall be compatible with BOC's electrical system, which is 220-240V. The Service Provider is responsible for providing any converters necessary for connecting the electrical system at no cost to BOC.	
2	TECHNICAL REQUIREMENTS OF THE BACKUP BACKHAUL MPLS NETWORK AND THE 200 MBPS DIRECT INTERNET LINK	
	2.1. The Service Provider shall provide the Committed Information Rate (CIR) as the required line speeds for each BOC site as stated in the list of Sites and Bandwidth specifications enumerated in Part D of Section VII. Technical Specifications.	
	2.1.1. The bandwidth is synchronous. The bandwidth for upload and download must be the same for all sites.	
	2.1.2. For all the bandwidth specified, the CIR is 100% of the bandwidth requirement provided in a list in section D	
	2.1.3. If the Service Provider does not meet the required bandwidth for a particular site/s, an issue shall be logged with the Service Provider. The Service Provider is required to resolve the issue	

within the mentioned SLA in item 6 of Section VII.	
2.2. The Service Provider shall be fully responsible in delivering the required connectivity, as well as ALL the required OSI layer 1-3 materials, finishing and equipment.	
2.3. The Service Provider shall manage all the BOC links delivered and shall be the single point of contact for all the network links and managed equipment provided by the Service Provider.	
2.4. The Service Provider shall allow QoS profiling and bandwidth shaping of traffic along the entire network infrastructure.	
2.4.1. The Service Provider shall be capable of prioritizing traffic using on DSCP tagging of traffic based on layer 4 protocol (or application type).	
2.4.2. The Service Provider shall be capable of prioritizing traffic based on IP address destination.	
2.4.3. The Service Provider shall be capable of traffic shaping based on abovementioned prioritization (or a combination of both) both in the 350Mbps backhaul network and the 200Mbps internet link at the BOC Head Office.	
2.5. All sites shall have the ability to communicate with any and all other sites directly for both voice and data through the MPLS network. The Solution Provider shall be responsible for ensuring the proper L2/L3 routing for all communications to the proper sites.	
2.5.1. When performing a ping test from the BOC main office to any other destinations enumerated here, the latency of the connection should not be more than 60ms.	
2.5.2. When performing a ping test from any of the equipment in the list provided under Part B of Section VII, to another destination in that list except the BOC main office, the latency of the connection should not be more than 100 ms.	
2.5.3. In the case of the MPLS backhaul network, the Service Provider shall demonstrate, by showing real-time switch / router activity, that the entire network traverses along an L2/L3 MPLS network. This can be done in various ways but whatever the test to be employed, the Service Provider shall be able to show the established Labeled Switching Paths (LSP) from the origin (e.g. the BOC Head office), to the destination.	
2.5.4. In lieu of the MPLS backhaul network, the Service Provider should demonstrate that the traffic traverses through an LSP that is purely within its managed network elements; no traffic	

should go outside a network managed by the service provider.	
2.5.5. The MPLS network will make use of a hub and spoke topology with multiple hubs identified per regional cluster of offices. The topology will depend on how best the aggregated traffic is handled by the Service Provider. Thus, the Service Provider will be responsible in proposing the network topology to use.	
2.5.6. The Service Provider shall provide a detailed network diagram of the entire MPLS network.	
2.5.7. The Service Provider shall demonstrate their ability to re-route traffic through the MPLS network in cases where one specified MPLS network hub is down.	
2.6. The direct internet link shall be installed at the BOC main office. All traffic request to the public internet within the MPLS backhaul network shall be routed to the main office via its 350 Mbps backhaul line, and will go out to via the 200 Mbps internet line.	
2.6.1. The Service Provider shall provide the appropriate equipment to route the traffic as instructed.	
2.6.2. The network latency limit for the direct internet link shall be as follows:	
2.6.2.1. 60 ms average trip time from BOC to ISP's peer equipment;	
2.6.2.2. 100 ms average trip time from BOC to Singapore and Malaysia;	
2.6.2.3. 150 ms average trip time from BOC to International Port in the US;	
2.6.2.4. The Service Provider should have peering to Local Internet Exchange or other local ISPs for local routing and connectivity to contents hosted in the Philippines;	
2.6.2.5. The Service Provider must have IP peering connections to regional IP upstream providers which enables to regionalize internet traffic within Asia pacific region;	
2.6.2.6. The Service Provider must have a direct peering and exchanges IP traffic at PH OpenIX;	
2.6.2.7. The Service Provider must document all network segment such as but not limited to local loop, cable systems, peering connection to local and global Internet	

	Providers in Asia and US, and other Internet-related requirements like IP addresses, domain names, etc.;	
	2.6.2.8. The Service Provider shall immediately advice BOC if the Direct Internet Link was rerouted differently from the original approved link.	
	2.7. The Solution Provider shall provide two (2) separate pseudo-Random repeating test pattern of 32,767 bits Bit Error Rate (BER) test for each BOC site for both the MPLS network and the direct internet line for a continuous period of time mutually agreed between Service Provider and BOC.	
	2.7.1. The acceptable rate for BER testing is 99.995% (1/20,000).	
	2.8 The Service Provider shall allow the BOC a free five-day (business days) trial after successful completion of the second BER test to ensure the service is compatible with all specifications and BOC's equipment, software, and network. In the event that service encounters issues on service uptime during the trial period, Service Provider will conduct another test and the free five-day trial shall be repeated until the BOC deems the service acceptable.	
3	MONITORING OF THE MPLS NETWORK AND INTERNET SERVICES	
	3.1. Network Management System / Monitoring Tool: The Service Provider shall deliver an online solution for proactively monitoring all aspects of the MPLS and internet service they provided.	
	3.1.1. The monitoring solution shall be up for 24X7. It's downtime shall be considered a Severity 2 issue.	
	3.1.2. The monitoring service shall, at the minimum, monitor the following:	
	 3.1.2.1. Determining faults such as but not limited to: (a) when a link is down; (2) when a link is 80% utilized; (3) physical faults on any of the CPE devices provided; and, etc. 	
	3.1.2.2. Determining historical bandwidth utilization per internetwork line (MPLS and internet direct line).	
	3.1.2.3. Bandwidth utilization per site based on Layer 4 protocol, or application layer protocols.	
	3.1.3. The online network monitoring tool shall be capable of generating custom reports on demand at BOC management discretion.	
	3.1.4. All report logs should be protected from all forms of	

alteration and deletion as stated on Republic Act 9470.				
3.2. Notification : Service Provider shall deliver fault notification for the internetwork infrastructure. Service Provider's Network Operation Center (NOC) will create a trouble ticket and notify Customer's designated point of contact immediately. Service Provider will notify the Customer's designated point of contact via e-mail or automated phone message at Service Provider option. Upon the creation of a trouble ticket, the NOC will begin troubleshooting the circuit until the problem has been verified as fixed and the ticket will then be closed.				
 3.3. Monitoring Management: The NOC provides physical fault detection, isolation and monitoring services for Managed Devices. The NOC provides coverage 24 hours per day, seven days per week. Physical faults will be resolved by Service Provider on all components provisioned/delivered/installed by Service Provider. Customer will be responsible for initial fault detection testing and will inform Service Provider once it has completed its logical troubleshooting. Service Provider is responsible to resolve both logical and physical issues with Customer's cooperation on all components provisioned/delivered/installed by Service Provider is responsible to resolve both logical and physical issues with Customer's cooperation on all components provisioned/delivered/installed by Service Provider. 				
3.4. Threshold Proactive Performance Monitoring (PPM) : Threshold PPM provides analysis of Managed WAN performance against predefined thresholds for standard performance agreed between Customer and Service Provider. Performance-related threshold alerts from the Customer Network will result in a trouble notification by the Customer's helpdesk to the Customer and ticket generation. No additional graphical reports are to be provided.				
3.5. Third Party Transport Service: Service Provider will be responsible in monitoring, managing, and trouble restoration of 3rd Party Transport circuits that were delivered as part of Service Provider's solution.				
3.6. Monthly Report: The Customer will receive one report per month that contains the month-to-date SLA performance of the link; utilization and performance of the network segments; performance affecting incidents within the Customer Network. Volume statistics for the Customer's Network may also be included upon request. The incidences may be for a single technology or multiple technologies such as, but not limited to, the Managed Device and its physical and virtual interfaces. The monthly report is prepared and delivered as follows:				
 The monthly report is reviewed internally with the Service Provider account team and applicable Service Provider operation and engineering personnel prior to delivery. Service Provider issues with the Customer Network that are identified are referred to the appropriate Service Provider organization for resolution. The account team delivers the report to the Customer and will schedule a conference with the Customer to present and review the performance 				

	reporting.				
	3.7. Monthly Performance Report Customization : Customer may request that the report format be customized as provided in this section. Other requests for report customization will be considered on a case-by-case basis.				
	3.8. Quarterly Review: Service Provider will review the previous quarter reporting with the Customer. The report shall include the quarter's performance SLA, and a rolled up summary of the aggregate reports contained in the monthly reports. The quarterly review shall be performed with representatives of the BOC and the Service Provider present.				
4	PROJECT MANAGEMENT, COMMISSIONING, INTEGRATION, AND IMPLEMENTATION				
	4.1. The Service Provider shall designate a project manager who shall be the single point of contact of the project. The customer will also designate a project sponsor who shall coordinate all efforts required to complete the project from the customer's side.				
	4.1.1. Considering the complexity of the roll-out, the Project Manager of the Service Provider shall be a certified Project Management Professional (PMP).				
	 4.2. The Service Provider shall collect the detailed requirements from the customer, and create the project plan which shall include the following: (a) acceptance testing for each of the requirement; (b) project timeline; (c) assumptions and constraints; (d) requirements to be fulfilled for both Customer and Service Provider; (e) Work Breakdown Structure (WBS); (f) BOQ / BOM of equipment to be delivered; and, (g) proposed change management procedures. 				
	4.3. The Service Provider shall document the escalation procedures for issues encountered during implementation.				
	4.4. In each site listed under Section VII Part B, the rack or wall-mounted enclosures for the Service Provider's equipment shall be separate from the existing network infrastructure; and, shall be provided by the Service Provider as part of the deliverables of this project.				
	4.5. The Service Provider shall provide the turn-over documents to BOC which shall include the following: (a) signed results of acceptance testing including those done under change requests (if any); (b) compiled summary of all the BER tests, and other tests (e.g. fluke tests, etc.); (c) agreed Network Operations Center SLA with escalation procedures, and points of contact; (e) network topology diagram; (f) signed inventory of all turned-over equipment; (g) rack diagram (if any); (h) operating manuals of monitoring tools and ticketing systems that BOC can use for monitoring the network and reporting issues; and, (i) project performance (actual versus baseline) based on schedule (e.g. computation of schedule performance index, etc.)				

	4.6. Service Provider shall assist Customer in the integration of the backup					
	solution to the Customer's existing primary internetwork;					
	4.6.1. Service Provider shall provide, install, and manage the network equipment that will allow BOC to utilize both existing and new Internet, MPLS and IPVPN networks on an active-active configuration.					
	4.6.2. BOC shall be responsible in providing all necessary information and configuration needed for the integration. Service Provider, with BOC's endorsement, will coordinate and discuss with the Service Provider of Customer's existing MPLS network to ensure that the integration will have very minimal disruption to BOC's operation.					
	4.6.3. For the direct internet service, the provider shall assist the Customer in setting up all the DNS entries, including reverse lookups, etc. for the assigned classless network.					
	4.6.4. The Service Provider conduct activities such as switch over testing and Disaster Recovery simulation.					
	4.7. Service Provider will provide as-built documentation and corresponding updates consistent with major in-scope adds/moves/changes to the Customer Network.					
	4.8. Service Provider shall document and provide a copy of the network equipment configurations in print.					
5	5 NETWORK ENGINEERING (NE) CONSULTANCY SERVICES					
	5.1. Service Provider will render Network Engineering consultancy within the entire period of the contract. Consultancy services are those services which are not part of the regular network operations services defined in this TOR and includes the following:					
	5.1.1. Deployment, configuration, and integration BOC-owned or managed network elements into the provided MPLS backup network infrastructure or backup internet connection.					
	5.1.2. Implementing cybersecurity initiatives such as but not limited to: defining VLANs, (post-implementation); configuring DMZ, configuring and integrating firewalls with the QoS design of the MPLS network, etc.					
	5.1.3. Managing other links, internetwork connectivity, and devices not owned nor managed by the Service Provider but, at the request of the Customer, need to be integrated into the backup MPLS and internet services.					

	5.1.4. Request from the Customer to customize and/or enhance the capabilities of the existing network management and monitoring software provided by the Service Provider.					
6	6 SUPPORT SERVICE AND SERVICE LEVEL AGREEMENT					
	6.1. Service Provider will work on issues for the entire managed network including all managed devices, network elements, QoS and prioritization requests, and etc.					
	6.2. Service Provider will provide engineering and technical support for the Managed Devices for problem resolution of design-related issues identified by Service Provider engineers or Managed Device vendor's technical support.					
	6.3. All edge network components' operating system, and firmware or patched whenever relevant authorities from the Philippines, or other countries revealed there is a need because a new threat or vulnerability with Common Vulnerability Scoring System (CVSS) rating of Critical (9-10).					
	6.3.1. When a major vulnerability is discovered and published in authoritative vulnerability databases, the Service Provider shall provide proof that the network elements' operating system or exposed to the public internet are hardened, patched, or upgraded.					
	6.3.2. At the request of the Customer, the Service Provider will allow the Customer to perform a vulnerability scan on all the Customer Premise Equipment (CPE) and edge routers / switches.					
	6.4. The Service Provider shall provide a 24/7, whole-year round Technical Support Services. All Service Requests shall be immediately acted upon when received.					
	6.5. The Service Provider shall provide industry standard Service Level Agreement (SLA) which shall carry a corresponding "Performance Credit" or rebate in favor of BOC should any of the committed parameters mentioned below is not met.					
	6.6. There shall be a Service Level Agreement for speed of response (measured in hours) and its mean time to repair (MTTR, also known as resolution time) of the Service Provider based on the severity of the issues.					
	6.6.1. All types of issues must be responded (first response) within 30 minutes after the issue was logged.					
	6.6.2. The Service Provider shall ensure that all issues classified as Severity 1 are resolved within 4 hours. An hourly update shall be provided by the Service Provider to the BOC until the issue is resolved. Severity 1 issues are those that render an entire site unreachable or the link is unusable such as when an entire site's network connectivity is down; or when the network connectivity					

		is up but the service degradation is significant that it is unusable.	
	6.6.3.	The Service Provider shall ensure that all issues classified as Severity 2 are resolved within 24 hours. The Service Provider shall update BOC once every 4 hours for these type of issues. Severity 2 issues are those that partially impact the network connectivity of one or more sites such as when the network connectivity is usable, but its line speed degrades noticeably such as when network latency is already at three times the committed limit.	
	6.6.4.	For severity 3 issues, the service provider shall update BOC once a week until the issue is resolved or the request has been served. These type of issues are classified as normal and the Service Provider should resolve or provide the service requested for a period of 5 calendar days; or otherwise at a specific date agreed between the Service Provider and the Customer.	
6.	.7. The So issue resp above. In Majeure, credit eq maximum of Decen the BOC exclusive being una	ervice Provider shall maintain a 95% monthly SLA compliance on bonse time and mean time to repair based on the SLA enumerated the event that the SLA is not met, except for issues due to Force or due to Customer's fault, the Service Provider shall provide a uivalent of one day for every 1% of non SLA compliance, for a n of 5 days. Example, if the SLA on issue resolution for the month her is at 95%, the service provider will give a credit of 3 days to corresponding for the unmet target of -3%. This penalty is of the rebates the Customer is entitled for the network service available.	
6.	.8. To trac Provider system w response the time t	ck the Service Provider's response and resolution times, the Service shall give access to authorized BOC personnel to its issue tracking here the time an issue was logged will be timed, to the time the first was made (on the issue log, or on email copied in the ticket), until the issue's status was set to 'resolved'.	
6.	.9. There Availabil committe	will be an SLA based on the entire network's availability. ity is defined as a particular site being accessible with the agreed of information rates, and latency limits.	
6.	.10. Servic layer 1 m last mile	e availability targets of the MPLS backhaul network based on OSI edium used are as follows: (a) Fiber last mile – 99.8%; (b) Copper – 99.6%; (c) Microwave radio last mile – 99.5%.	
6.	.11. The se 99.6%.	ervice availability target of the dedicated internet service shall be	
6.1	12. If the in by the Set shall volu BOC with	terruption is attributable to the Service Provider, as acknowledged rvice Provider's Fault Management Center, the Service Provider ntarily make the appropriate "Performance Credit" or rebate to hout the need to report or claim on the outage. The credit	

	allowance/reba	ate shall be	applied to the ne	ext billing month.			
anowance/result shall be upplied to the next shining month.							
	Credit for Interruptions to service will be allowed as follows:						
	a. Interruptio	ns of 24 Ho	ours or less				
				1			
	Length of In						
	Less than 3	0 minutes	None				
	30 - 179 mir	nutes	1 / 10 day]			
	180 - 359 m	inutes	1 / 5 day				
	360 - 539 m	inutes	2 / 5 day				
	540 - 719 m	inutes	3 / 5 day				
	720 - 899 m	inutes	4 / 5 day				
	900 - 1440 1	ninutes	One day				
	1						
	b. For interru	ption over 2	24 hours, credit v	will be allowed in 1/5 day multiples			
	Ior each 3-	nour period	1 of interruption	or fraction thereof over 24 hours.			
	6.12 A summar	v of all is	sues logged alo	ng with their corresponding SLA			
	scores shall be	e included i	n the monthly re	eport.			
			j i	L			
	6.13. For interru	ptions due	to Force Majeuro	e, the Service Provider shall restore			
	service at the	earliest pos	ssible time. In th	e event that service is not restored			
	within specified period, then the Service Provider shall an additional credit						
	of 1 day for each 24 hour period the service is not restored beyond the						
	committed date.						
	6.14 Service Provider shall attend Customer Change Management technical						
	0.14. Service Flovider shall allend Customer Change Management technical meetings as scheduled						
	meetings as so	chequied.					
	6.15. Service Pi	rovider sha	all design and	implement changes on Managed			
	Devices base	d on Cust	omer request ar	nd requirements and recommends			
	design change	es to correc	t a Customer Ne	twork fault or problem.			
				-			
	6.16. Service Pro	ovider will	work with Custo	mer to define requirements, design,			
	document, and	d work with	n Service Provide	er operations to implement changes			
	on Managed	Devices of	only. Service P	rovider's Operations perform the			
	Change Mana	agement ac	tivities and Serv	vice Provider's Network Engineer			
	performs billable, design-impacting Managed Device changes.						
7		PECIFIC	ATION OF	MANAGED NETWORK			
/	FOUIPMENT						
	7.1. Head Offi	ce MPLS I	Router (for the	350 Mbps backhaul)			
	• Four (4) or	n-board GE	ports	1			
	8GB Flash	Memory d	etault upgradeal	ble to 32GB			
	• 4GB DRA	M default u	pgradeable to 1	6GB			
	1 Gbps forwarding speed throughput						

•	Supports Static, OSPF, EIGRP, and BGP v.2 routing protocols and VPN	
	single universal software image for all features and performance-on-	
	demand licensing flexibility	
•	Backplane architecture supports high bandwidth module-to-module	
	Communication at Gigabit speed Has traditional console and auxiliary ports	
	Redundant AC power supply	
7.2		
1.2	"meet-me" room)	
•	24 onboard data ports and 4xGigabit Ethernet uplink SFP-based	
•	2GB Flash Memory	
•	4GB DRAM	
•	Supports Advanced Layer 3 routing such as OSPF, EIGRP, BGP 88 Gbps switching capacity	
•	Single, universal software image for all features and performance-on-	
	demand licensing flexibility	
•	Supports license portability	
•	Has management console port or can be managed through Ethernet port	
7.3	. BOC Large Port MPLS Router (for ports with 40 Mbps required bandwidth)	
•	Two (2) on-board GE ports	
•	4GB Flash Memory default upgradeable to 8GB	
•	4GB DRAM default upgradeable to 8GB	
•	Supports Static, OSPF, EIGRP, and BGP routing protocols and VPN tunneling configuration	
•	Single, universal software image for all features and performance-on- demand licensing flexibility	
•	Backplane architecture supports high bandwidth module-to-module communication at Gigabit speed	
•	Modular network interfaces with diverse connection options	
	kouter capacity can be increased with performance-on-demand license upgrade (no hardware upgrade)	
•	Supports aggregate throughput up to 100 Mbps	
•	High-performance multicore processors support high-speed WAN connections	
•	Has traditional console and auxiliary ports	
•	Has a mini type B USB console port as option for management connectivity	
7.4	. BOC Small/Medium Port MPLS Router (for ports 20 Mbps required	
	bandwidth)	
	Two (2) on-board GE ports	

•	8GB Flash Memory	
•	4GB DRAM	
•	Supports Static, OSPF, EIGRP, and BGP routing protocols and VPN tunneling configuration	
•	Single, universal software image for all features and performance-on- demand licensing flexibility	
•	Backplane architecture supports high bandwidth module-to-module	
	Modular network interfaces with diverse connection entions	
	Router capacity can be increased with performance-on-demand license	
	upgrade (no hardware upgrade)	
•	Supports aggregate throughput up to 75 Mbps	
•	Has traditional console and auxiliary ports	
•	Has a mini type B USB console port as option for management	
	connectivity	
7.5.	5x BOC Large Port Layer 3 Switch	
•	24 onboard data ports and 4xGigabit Ethernet unlink SFP-based	
	2GB Flash Memory	
•	4GB DRAM	
•	Supports Advanced Layer 3 routing such as OSPF, EIGRP, BGP	
•	88 Gbps switching capacity	
•	Single, universal software image for all features and performance-on-	
	demand licensing flexibility	
•	Supports license portability	
	Has management console port of can be managed through Ethernet port	
7.6.	Direct Internet Service Router Specifications	
•	Three (3) on-board GE ports	
•	4GB Flash Memory default upgradeable to 16GB	
•	4GB DRAM default upgradeable to 16GB	
•	Single, universal software image for all features and performance-on-	
	demand licensing flexibility	
•	Backplane architecture supports high bandwidth module-to-module	
	Modular network interfaces with diverse connection options	
	Router capacity can be increased with performance-on-demand license	
	upgrade (no hardware upgrade)	
•	Supports aggregate throughput up to 400 Mbps	
•	High-performance multicore processors support high-speed WAN connections	
	Has traditional console and auxiliary ports.	
	Has a mini type B USB console port as option for management	
	connectivity	
•	High-performance multicore processors support high-speed WAN connections Has traditional console and auxiliary ports; Has a mini type B USB console port as option for management connectivity	

NETWORK DIAGRAM FOR MPLS NETWORK



NETWORK DIAGRAM FOR INTERNET CONNECTION



B. COVERAGE AND BANDWIDTH:

ltem	Service	Address	Bandwidth
Direct Internet			
1	Direct Internet	BOC Head Office	200Mbps
48	Broadband internet	PEZA satellite offices	Up to 4Mbps
ltem	Port	Address	Bandwidth

	BACKHAUL		
1	BOC Head	16th St. Port Area, Manila	350Mbps
2	BOC-MK2	MK2 GovNet Backup	200Mbps
	LARGE PORTS		
3	MANILA INTERNATIONAL CONTAINER PORT	Isla Putting Bato, North Harbor, Tondo Manila.	40Mbps
4	NAIA	Bureau of Customs - NAIA	40Mbps
		Old Mia Road, Pasay City	
	MEDIUM PORTS		
5	Port of Cebu	BOC Building, CIP Complex, Osmeña Blvd.	20Mbps
		North Reclamation Area, Cebu City	
		Contact : Bong Romero (MISTG Unit) Tel: 032-2322449	
6	Port of Batangas	Bureau of Customs	20Mbps
		Port of Batangas	
		Brgy. Sta. Clara, Batangas City	
7	Port of Davao	Km. 10 Sasa Wharf, Sasa, Davao City	20Mbps
8	PORT OF SUBIC	Bureau of Customs	20Mbps
		BLDG. 307 CANAL RD. SBMA	
		OLONGAPO CITY	
9	PORT OF CLARK	Bureau of Customs	20Mbps
		M.A. Roxas Hi way, Clark Freeport Zone (back of American Cemetery), Angeles City	
		Telefax No.: (045) 599-7189 to 90	
		Tel. No.: (045) 599-7189 and 599-7191	
	SMALL PORTS		
10	Subport of North Harbor	along Negros Navigation, PIER 2	6Mbps
11	Port of San Fernando	1300 Pennsylvania Ave., Poro Point	6Mbps
		San Fernando City, La Union	
12	Sub-Port of PEZA-Baguio	Bureau of Customs	6Mbps
		PEZA Bldg. Loakan Road, Baguio City	
13	Sub-Port of Sual	Bureau of Customs	6Mbps
		Pob. Sual, Pangasinan	
14	Sub-Port of Salumague	Bureau of Customs	6Mbps
		Cabugao, Ilocos Sur	
15	Port of Aparri	Bureau of Customs	6Mbps
		Punta, Aparri, Cagayan	
16	Sub-Port of Laoag International Airport	Bureau of Customs	6Mbps
		Brgy. Araniw, Airport Ave., Laoag City	

17	Sub-Port of Currimao	Bureau of Customs	6Mbps
		Brgy. Pias Sur, Currimao, Ilocos Norte	
18	Sub- Port of Puerto Princesa	Bureau of Customs	6Mbps
		Jango Building, Puerto Princesa City	
		Palawan 5300	
		Telno : (048) 4332118	
19	Sub- Port of Siain	Bureau of Customs	6Mbps
		Sub- Port of Siain , Plaridel, Quezon	
		Tel/fax No. 042-3029704	
20	Sub-Port of Bauan	Bureau of Customs	6Mbps
		Bauan Int'I. Port Inc One-Stop-Shop (BIPI- OSS), Bauan Int'I Port Inc.	
		Brgy. San Roque, Bauan Batangas	
21	Mactan	Bureau of Customs Building	6Mbps
		Mactan-Cebu International Airport Cargo Area	
		Lapu Lapu City 6015	
22	Customs Peza Clearing Office (CPCO)	MEZ1 Compound, Lapu-Lapu City.	6Mbps
		Bureau of Customs	
23	Sub-Port of Dumagute	Address: Port of Dumaguete, Port Area	6Mbps
		Tel No. 035-4223361	
24	Sub-Port of ILOILO	BOC Building, Port of ILOILO,	6Mbps
		COR MUELLE LONEY, GEN MACARIO,	
		PERALTA ST. ILOILO CITY	
25	Sub-Port of Pulupandan	Bureau of Customs	6Mbps
		Sub-Port of Pulupandan	
		Wescosita Street, Zone 5	
		Pulupandan, Negros Occidental	
26	Port of Tacloban	Trece Martirez St. Tacloban City	6Mbps
27	Sub-port of Isabel	Mabini St., Isabel, Leyte	6Mbps
		With Bayantel and Globe DSL connections	
28	Sub-port of Catbalogan	McKinley St., Catbalogan, Samar (No DSL connection yet)	6Mbps
29	Sub-Port of Dadiangas	Makar Wharf, Gen. Santos City	6Mbps
30	Port of Surigao	Bureau of Customs	6Mbps
		PPA Compound, Port Area, Surigao City	
		Telefax No.: (086) 826-8678	
		Tel. No.: (086) 232-7535	
31	Sub-Port of Nasipit	Bureau of Customs	6Mbps

	(Masao)		
		Rudy Tiu Building, Montilla Street	
		Butuan City	
		Telefax Nos: (085) 342-5576	
		Tel. No.: (085) 341-5140	
32	Sub-Port of Bislig	Bureau of Customs	6Mbps
		Gomez Building, Mangagoy, Bislig City	
		Telefax No.: (086) 853-2209	
33	Port of Cagayan de Oro	Bureau of Customs	6Mbps
		Corrales Extension, Macabalan	
		Cagayan de Oro City	
34	Port of Iligan	Bureau of Customs	6Mbps
		Sub-port of Iligan, Port Area, Iligan City	
35	Port of Ozamis	Bureau of Customs	6Mbps
		Casa Esperanza Bldg.	
		Bernad Ave., Ozamis City	
36	Port of MCT-PHIVIDEC	Bureau of Customs	6Mbps
		Mindanao Container Terminal	
		Phividec Industrial Estate	
		Tagoloan, Misamis Oriental	
37	Port of Zamboanga	Bureau of Customs - XIth Collection DISTRICTS	6Mbps
		Port of Zamboanga, Zamboanga City	
38	Sub Port Of Kalibo	Bureau of Customs, Kalibo International Airport, Brgy. Pook, Kalibo, Aklan	6mbps
39	Mariveles Bataan	AFAB Admin Building Mariveles Bataan	6MBPS
40	Legaspi	Port of Legaspi,Quezon Ave. Ext. Pier Side Legapi City	6mbps
41	CEPZA Cavite	Cavite Export Processing Zone, Rosario Cavite	6Mbps
42	Laguna PEZA	Laguna Technopark Inc. Don Jose, Sta Rosa Laguna	6mbps
	-		
43	Limay Bataan	Old national Rd. Lamao, Limay Bataan	6Mbps
44	Port of Caticlan	Aklan West Road, Brgy. Caticlan, Malay,	ombps

		Aklan	
45	Laguna Gateway	San Cristobal, Calamba Laguna	6Mbps

C. NETWORK LAYOUT (proposed)



I hereby certify to comply with all the above Technical Specifications.

Name of Company (in print)

Signature of Company Authorized Representative

Name & Designation (in print)

Date