FINANCIAL PROPOSAL (PRICE BID FORMAT)

S.Nos	Description	UOM	Recommended Brands	SMB Grade Rate	Specify SMB Grade Brand	Enterprise Grade Rate	Specify Enterprise Grade Brand
A	**LAN COPPER CABLING**						
	Supply, Installation, Termination, Testing and Commissioning of following Copper Components (Supply of Cat 6 cables ,23awg, LSZH as per IEC -60322-3 with ETL third party channel certificate for all accessories like IO, Patch cord ,Face plate, jack panel etc from same OEM. 25 year OEM warranty preffered)						
1	4 Pair UTP - Category 6 cable	Mtrs	Panduit, Commscope, Nexus, Actassi, Siemon				
2	Category 6 Information Outlet with faceplate and SMB	Nos	Panduit, Commscope, Nexus, Actassi, Siemon				
3	Category 6 Information Outlet with dual faceplate and SMB	Nos	Panduit, Commscope, Nexus, Actassi, Siemon				
4	Category 6 Patch Cord 4 ft. For Data Rack Side	Nos	Panduit, Commscope,				

S.Nos	Description	UOM	Recommended Brands	SMB Grade	Specify SMB Grade	Enterprise Grade	Specify Enterprise Grade
				Rate	Brand	Rate	Brand
			Nexus, Actassi, Siemon				
5	Category 6 Patch Cord 7 ft. For Data Field Side	Nos	Panduit, Commscope, Nexus, Actassi, Siemon				
6	Category 6 Loaded Patch Panel	Nos	Panduit, Commscope, Nexus, Actassi, Siemon				
7	Category 6 I/O for patch panel	Nos	Panduit, Commscope, Nexus, Actassi, Siemon				
8	27U/24U ,Standard DIN 41494, 575 mm Depth 1000mm Doors Rear door, perforated Front Glass Door, The rack doors to have locking system, General Angle support for equipments, Castors with brakes, Cable management accessories, Vertical managers:2 Nos , Horizontal managers Rack trays : 2 nos min, Power distribution box with 10 nos of 5/15A power sockets, Fan and fan trays, Keyboard Tray,	Nos	Startronics, Schneider, DLInk				

S.N os	Description	UOM	Recommended Brands	SMB Grade	Specify SMB Grade	Enterprise Grade	Specify Enterprise Grade
				Rate	Brand	Rate	Brand
9	19" 9 U wall mount closed rack with Horizontal power strips of 5 sockets (1 Nos) , Fans , vertical cable managers 2Nos ,bolts nuts and all accessories. Additional rack, DIN 41494	Nos	Startronics, Schneider, DLInk				
10	19" 6 U wall mount closed rack with Horizontal power strips of 5 sockets (1 Nos) , Fans , vertical cable managers 2Nos ,bolts nuts and all accessories. Additional rack, DIN 41494	Nos	Startronics, Schneider, DLInk				
11	25mm PVC Cap on Casing/ Flexible / Conduit	Mtrs	ISI Mark				
12	38mm PVC Cap on Casing/ Flexible / Conduit	Mtrs	ISI Mark				
B	**FIBER CABLING**						
	Supply, Installation, Termination, Testing and Commissioning of following Copper Components (Supply of Cat 6 cables ,23awg, LSZH as per IEC -60322-3 with ETL third party channel certificate for all accessories like IO, Patch cord ,Face plate, jack panel etc from same OEM. 25 year OEM warranty preffered)						
1	6 F Core SM Low Water leak OSP Fiber Cable (Indoor)	Mtrs	Panduit, Commscope,				

S.Nos	Description	UOM	Recommended Brands	SMB Grade	Specify SMB Grade	Enterprise Grade	Specify Enterprise Grade
				Rate	Brand	Rate	Brand
			Nexus, Actassi, Siemon				
2	12F Core SM Low Water leak OSP Fiber Cable (Indoor)	Mtrs	Panduit, Commscope, Nexus, Actassi, Siemon				
3	24F Core SM Low Water leak OSP Fiber Cable(Indoor)	Mtrs	Panduit, Commscope, Nexus, Actassi, Siemon				
4	48F Core SM Low Water leak OSP Fiber Cable (Indoor)	Mtrs	Panduit, Commscope, Nexus, Actassi, Siemon				
1	6 F Core SM Low Water leak OSP Fiber Cable (Outdoor)	Mtrs	Panduit, Commscope, Nexus, Actassi, Siemon				
2	12F Core SM Low Water leak OSP Fiber Cable (Outdoor)	Mtrs	Panduit, Commscope, Nexus, Actassi, Siemon				
3	24F Core SM Low Water leak OSP Fiber Cable (Outdoor)	Mtrs	Panduit, Commscope,				

S.N os	Description	UOM	Recommended Brands	SMB Grade	Specify SMB Grade	Enterprise Grade	Specify Enterprise Grade
				Rate	Brand	Rate	Brand
			Nexus, Actassi, Siemon				
4	48F Core SM Low Water leak OSP Fiber Cable (Outdoor)	Mtrs	Panduit, Commscope, Nexus, Actassi, Siemon				
5	SC-LC Duplex SM Patchcords-2 Mtr	Nos	Panduit, Commscope, Nexus, Actassi, Siemon				
6	12-fiber SC-Style, Singlemode, 19-inch Rack mount Patch Panel, 1U, Loaded with adapter Plates and Pigtail with connectors	Nos	Panduit, Commscope, Nexus, Actassi, Siemon				
7	24-fiber SC-Style, Singlemode, 19-inch Rack mount Patch Panel, 4U, Loaded with adapter Plates and Pigtail with connectors	Nos	Panduit, Commscope, Nexus, Actassi, Siemon				
8	LSZH jacket with Armour	Mtrs	ISI Mark				
9	HDPE Pipe with Armour	Mtrs	ISI Mark				
C	**Supply, Installation, Testing and Commissioning of Active Components (The components should be compatible with existing KFON End office devices)**						

S.Nos	Description	UOM	Recommended Brands	SMB Grade	Specify SMB Grade	Enterprise Grade	Specify Enterprise Grade
				Rate	Brand	Rate	Brand
1	24 Port 10/100/1000Mbps Web Managed Switch	Nos	Cisco/ HPE/ Juniper/ Dlink/ Tejas	NA	NA		
2	24 Port 10/100/1000Mbps Web Managed Switch with 2 Gig SFP ports	Nos	Cisco/ HPE/ Juniper/ Dlink/ Tejas	NA	NA		
3	48 Port 10/100/1000Mbps Web Managed Switch with 2 Gig SFP ports	Nos	Cisco/ HPE/ Juniper/ Dlink/ Tejas	NA	NA		
4	16 Port 10/100/1000Mbps Web Managed Switch	Nos	Cisco/ HPE/ Juniper/ Dlink/ Tejas			NA	NA
6	8 port 100/1000 Mbps Mbps Fast Ethernet Unmanaged PoE Switch with 8 PoE Ports	Nos	Cisco/ HPE/ Juniper/ Dlink/ Tejas			NA	NA
7	Media Convertors for Fiber	Nos					
8	Wifi Access Point (POE enabled) (2X2)	Nos	Cisco/ HPE/ Juniper/ Reckus/ Dlink				
9	Wifi Access Point (POE enabled) (4X4)	Nos	Cisco/ HPE/ Juniper/ Reckus/ Dlink				
9	Wireless Router (2X2)	Nos	Tejas or Alphion with Fibre Input				

S.N os	Description	UOM	Recommended Brands	SMB Grade	Specify SMB Grade	Enterprise Grade	Specify Enterprise Grade
				Rate	Brand	Rate	Brand
	Wireless Router (4X4)	Nos	Tejas or Alphion with Fibre Input				
	Wired Router - Multi WAN router with URL based routing	Nos	Cisco/ HPE/ Juniper or Make in India Preferable				
D	**Electrical Components**						
	Electrical Distribution Board & wiring						
D-1	**Supply, errection testing and commissioning of following distribution board including all accesseries and commissioning etc as required (single Phase Supply)**						
1	64 A DP MCB	Nos	Legrand, Havells, L&T				
2	32 A DP MCB	Nos	Legrand, Havells, L&T				
3	8WSPN MCB DB	Nos	Legrand, Havells, L&T				
4	32 A DP MCB with Encloure	Nos	Legrand, Havells, L&T				
5	32 A 2 pole Change over Switch	Nos	Legrand, Havells, L&T				
6	32 A isolator	Nos	Legrand, Havells, L&T				

S.Nos	Description	UOM	Recommended Brands	SMB Grade Rate	Specify SMB Grade Brand	Enterprise Grade Rate	Specify Enterprise Grade Brand
7	16 A DP MCB	Nos	Legrand, Havells, L&T				
8	10 A SP MCB	Nos	Legrand, Havells, L&T				
9	Incomer 8 WDB	Nos	Legrand, Havells, L&T				
10	Incomer 6 WDB	Nos	Legrand, Havells, L&T				
D-2	**Supply, errection testing and commissioning of following distribution board including all accesseries and commissioning etc as required (three Phase Supply)**						
1	16 WAY TPN DB	Nos	Legrand, Havells, L&T				
2	63 A 4P MCB	Nos	Legrand, Havells, L&T				
3	32 A 4P MCB	Nos	Legrand, Havells, L&T				
4	32 A 4 Pole change Over Switch	Nos	Legrand, Havells, L&T				
5	32 A 4P MCB with Encloure	Nos	Legrand, Havells, L&T				
6	32 A 4P MCB isolator	Nos	Legrand, Havells, L&T				

S.Nos	Description	UOM	Recommended Brands	SMB Grade	Specify SMB Grade	Enterprise Grade	Specify Enterprise Grade
				Rate	Brand	Rate	Brand
7	10 A SP MCB	Nos	Legrand, Havells, L&T				
8	16 WAY TPN DB (for IT Distribution DB)	Nos	Legrand, Havells, L&T				
9	32 A DP MCB	Nos	Legrand, Havells, L&T				
D-3	END POINT AND ELECTRICAL CABLE- Supply, Installation, Termination, Testing and Commissioning with accessories						
1	5A socket 2 nos with box and face plate	Nos	Legrand, Havells, L&T				
2	5A SP switch 1 nos	Nos	Legrand, Havells, L&T				
3	2x1.5 sq mm wiring As reqd	Mtrs	Legrand, Havells, L&T				
4	1.5 sq mm wiring As reqd (for earthing)	Mtrs	Legrand, Havells, L&T				
5	15A socket 1 nos with switch main Rack	Nos	Legrand, Havells, L&T				
6	Earthing for main rack	Lot					
7	2x 4 sq mm Aluminium armoured cable wiring As reqd	Mtrs	Panduit, Commscope, Nexus, Actassi, Siemon				

S.Nos	Description	UOM	Recommended Brands	SMB Grade	Specify SMB Grade	Enterprise Grade	Specify Enterprise Grade
				Rate	Brand	Rate	Brand
8	2x 4 sq mm copper cable wiring As reqd	Mtrs	Panduit, Commscope, Nexus, Actassi, Siemon				
9	1 kVA Online UPS with 1 hour battery Backup	Nos	APC Luminous, Vertiv, Microtek				
10	600 VA Online UPS with 30 minits battery Backup for Rack	Nos	APC Luminous, Vertiv, Microtek				
E	**Labour Charge**						
1	Rate per Node	Rs					

Annexures 1- Wireless Access Point

SI.No.	Specification (Access point should meet the minimum specification as below)	Complianc e (Please mention Yes/No)
	Wireless Access Point	
1	Industry Standard Security – The product should be compliant with IEEE 802.11ac (MIMO2x2) with backward compatibility to 802.11a/n/ac. and should support multiple security methods, WEP, WPA/WPA2-PSK, 802.1x	
2	WLAN Hardare/Cloud Compatibility	
3	Networking Specifications – Layer2/Layer 3- 802.1Q, 802.1D, Layer3 routing, WDS, port forwarding, VLAN tag mapping to SSID	
4	Security – NAT,802.1x, 802.11i, WPA2-TKIP, WPA2-A E S, MAC filtering, Captive portal support, IP filtering etc.	
5	Management – HTTPS, SNMP, web-based local management	
6	QoS – WLAN and per user	
7	WLAN (AP) – AP management, WLAN QoS, WLAN security, WLAN Radio Management, WLAN user management	
8	Network Services – DNS proxy, DHCP Server	
9	Interfaces – 802.11 Wireless interface- Dual Radio, 802.11a/b/g/n/ac. 2.4GHz and 5 GHz	
10	Ethernet – 10/100/1000 Base-T interface MDI/MDIX auto-sense	
11	Radio Specifications – 802.11ac capabilities - 1.16 Gbps data rates on dual concurrent radio operations Upto 100 Concurrent users includes both radio bands Data rates supported – upto 867 Mbps	

Annexure 2- 8 port Switch

S. No	Items	Specifications (8 port switch should meet the minimum specification as below)	Compliance (Please mention Yes/No)
	Switch Hardware		
1	Switch Hardware	a) 8 Port 10/100/1000BaseT RJ45 and 4 x SFP ports	
		b) PoE switch (240W) with Layer2+ software, AC supply |Loaded with 2*1G SFP)	
		c) Switching Capacity- 24 Gbps minimum	
		d) Forwarding Rate- 17 Mpps minimum	
		e)MAC table 16K	
2	Higher Availability	Switch Should be Accessible Via GUI Web-managed Switch	
		Shall support ITU-T G.8032 for 50m sub-second ring protection	
		Persistance POE	
3	L2	4K VLAN ID's and 4K active VLAN,VLAN double tagging (Q-in-Q)	
		STP/RSTP/MSTP	
		IGMP snooping (IGMPv1, v2 and v3)	
4	Layer 3 Features	Should support Static routing for IPV4 and IPV6.	
5	Security	Should support ACLs, DHCP snooping, IP source guard and Dynamic ARP Inspection (DAI),	
		IEEE 802.1x, IP Source Guard, SSH, SSL, Storm Control, DHCP Snooping, DOS, Port Mirroring.	
6	Management	CLI, GUI LLDP, SNMP v1,v2c and v3,	

7	Environmental	Operating Temperature range0 degC to +55 degC or better, Operating Humidity: 0% to 95% or better.	
		Switch Should have Low power consumption when NO POE Load | 15 W .	
8	IPR	• The intellectual Property Right (IPR) resides in India for Hardware Design.	
		• The Copyright is in India for software design & Development and Network operating system copyright is owned by Indian Company.	
	Other Mandatory Certifications /Compliance	Switch OEM should have QUALITY MANAGEMENT SYSTEM - ISO 9001	
		Switch OEM should have QUALITY MANAGEMENT SYSTEM - TL 9000	
		Switch OEM should have have implemented ISO14001	
9		Comply to Preference to Make In India products |PMA Policy	

Annexure -3 – 24 port Switch

S.No	Items	Specifications	Compliance (Please mention Yes/No)
Switch Hardware		
1	Switch Hardware	a) 24x1G Base-T	
		b) Additional 4x1G/10G SFP port	
		c) Switching Capacity- 208 Gbps minimum	
		d) Forwarding Rate- 154 Mpps minimum	
		e)MAC table 16K	
2	Higher Availability	Switch Should be Accessible Via GUI Web-managed Switch	
		Shall support ITU-T G.8032 for 50m sub-second ring protection	
3	L3	4K VLAN ID's and 4K active VLAN,VLAN double tagging (Q-in-Q)	
		STP/RSTP/MSTP	
		IGMP snooping (IGMPv1, v2 and v3)	
4	Layer 3 Features	Should support Static routing for IPV4 and IPV6.	
5	Security	Should support ACLs, DHCP snooping, IP source guard and Dynamic ARP Inspection (DAI),	
		IEEE 802.1x, IP Source Guard, SSH, SSL, Storm Control, DHCP Snooping, DOS, Port Mirroring.	

6	Management	CLI, GUI LLDP, SNMP v1,v2c and v3,	
7	Environmental	Operating Temperature range0 degC to +55 degC or better, Operating Humidity: 0% to 95% or better.	
8	IPR	• The intellectual Property Right (IPR) resides in India for Hardware Design.	
		• The Copyright is in India for software design & Development and Network operating system copyright is owned by Indian Company.	
9	Other Mandatory Certifications /Compliance	Switch OEM should have QUALITY MANAGEMENT SYSTEM - ISO 9001	
		Switch OEM should have QUALITY MANAGEMENT SYSTEM - TL 9000	
		Switch OEM should have have implemented ISO14001	
		Comply to Preference to Make In India products |PMA Policy	

Annexure -3 – 24 port Switch

S.No	Items	Specifications	Compliance (Please mention Yes/No)
1	Switch Hardware	Switch with following port density:	
		a) 48 Port 10/100/1000Mbps Web Managed Switch with Loaded 2 *1Gig SFP ports for uplink	
		b)Switching Capacity-256 Gbps	
		c) Forwarding Rate-190 Mpps	
		d)MAC Table 16K	
2	Higher Availability	Switch Should be Accessible Via GUI Web-managed Switch	
		Shall support ITU-T G.8032 for 50m sub-second ring protection	
3	L3	4K VLAN ID's and 4K active VLAN,VLAN double tagging (Q-in-Q)	
		STP/RSTP/MSTP	
		IGMP snooping (IGMPv1, v2 and v3)	
4	Layer 3 Features	Should support Static routing for IPV4 and IPV6.	
5	Security	Should support ACLs, DHCP snooping, IP source guard and Dynamic ARP Inspection (DAI),	
		IEEE 802.1x, IP Source Guard, SSH, SSL, Storm Control, DHCP Snooping, DOS, Port Mirroring.	
6	Management	CLI, GUI LLDP, SNMP v1,v2c and v3,	
7	Environmental	Operating Temperature range0 degC to +65 degC or better,	

		Operating Humidity: 0% to 95% or better.	
8	IPR	• The intellectual Property Right (IPR) resides in India for Hardware Design.	
		• The Copyright is in India for software design & Development and Network operating system copyright is owned by Indian Company.	
9	Other Mandatory Certifications /Compliance	Switch OEM should have QUALITY MANAGEMENT SYSTEM - ISO 9001	
		Switch OEM should have QUALITY MANAGEMENT SYSTEM - TL 9000	
		Switch OEM should have have implemented ISO14001	
		Comply to Preference to Make In India products |PMA Policy	

Annexure 4 – 48 Switch

S.No	Items	Specifications	Compliance (Please mention Yes/No)
		Switch Hardware	
1	Switch Hardware	Switch with following port density:	
		a) 48 Port 10/100/1000Mbps Web Managed Switch with Loaded 2 *1Gig SFP ports for uplink	
		b)Switching Capacity-256 Gbps	
		c) Forwarding Rate-190 Mpps	
		d)MAC Table 16K	
2	Higher Availability	Switch Should be Accessible Via GUI Web-managed Switch	
		Shall support ITU-T G.8032 for 50m sub-second ring protection	
3	L3	4K VLAN ID's and 4K active VLAN,VLAN double tagging (Q-in-Q)	
		STP/RSTP/MSTP	
		IGMP snooping (IGMPv1, v2 and v3)	
4	Layer 3 Features	Should support Static routing for IPV4 and IPV6.	
5	Security	Should support ACLs, DHCP snooping, IP source guard and Dynamic ARP Inspection (DAI),	
		IEEE 802.1x, IP Source Guard, SSH, SSL, Storm Control, DHCP Snooping, DOS, Port Mirroring.	

6	Management	CLI, GUI LLDP, SNMP v1,v2c and v3,	
7	Environmental	Operating Temperature range0 degC to +65 degC or better, Operating Humidity: 0% to 95% or better.	
8	IPR	• The intellectual Property Right (IPR) resides in India for Hardware Design.	
		• The Copyright is in India for software design & Development and Network operating system copyright is owned by Indian Company.	
9	Other Mandatory Certifications /Compliance	Switch OEM should have QUALITY MANAGEMENT SYSTEM - ISO 9001	
		Switch OEM should have QUALITY MANAGEMENT SYSTEM - TL 9000	
		Switch OEM should have have implemented ISO14001	
		Comply to Preference to Make In India products |PMA Policy	

Annexure – 5 – Routers

	Router Hardware	
A	**General Features**	**Compliance (Please mention Yes/No)**
A1	Attach router document containing detailed bill of material (make, model, OS details: version, date of release, date of release of next version, end of sale & support date, product development path, etc.)	
A2	Router should integrate seamlessly with existing network infrastructure comprising of Cisco/juniper and other make router, switches,firewalls, IPS,VPN-IPSEC devices and various types of WAN links	
A3	Router should provide Data, Voice, Security and mobility services(5G/4G LTE,3G)	
A4	Router should be having OEM support (Hardware, Software, Firmware etc.) for next minimum 3 years from the date of PO	
A5	Branch Router less than 20 Users- Router should support minimum 200 Mbps real world WAN bandwidth with all the services enabled on the router	
A5	Branch Router less than 50 Users Router should support minimum 1 Gbps real world WAN bandwidth with all the services enabled on the router	
A5	Branch Router More than 50 users Router should support minimum 2 Gbps real world WAN bandwidth with all the services enabled on the router	
A6	The router should have adequate DRAM, Flash Memory, CPU and other hardware to support all the services configured	
A7	The router should have adequate flash memory and other hardware to ensure storage of multiple router operating system images (minimum 2), configuration file backups, event logs etc.	
A8	Further, the router should have adequate memory, storage, processing power, other components so that router should be able to upgrade and patch the operating system till the end of life date without any additional hardware requirement such as flash memory, storage etc	
A9	Should have Mean Time Between Failure of 10000 hours or higher to ensure long life of router hardware.Should have MTTR as 4 hours for the provided router.	
A10	The router Shall support various boot options like booting from TFTP server, Network node and Flash Memory	

A11	Extensive debugging capabilities to assist in hardware and software problem resolution.	
A12	The router should be capable of IP routing protocols like RIPV1 & V2,OSPF,BGP-IBGP &EBGP, Policy Routing, NATetc	
A13	The router should be capable of WAN protocols like PPP, Multilink PPP, etc.	
A14	Router should support Firewall Services with Standard Access Lists, Extended Access Lists to provide supervision and control.	
A15	Control SNMP access through the use of SNMP V2, V3 with SHA-1, SHA-2 authentication	
A16	Implement Access Lists on the router to ensure SNMP access only to the SNMP manager or the NMS workstation.	
A17	The router should support multiple privilege levels to support role based access control with and without use of external RADIUS or TACACS+ and other AAA servers	
A18	Support for Remote Authentication Dial-In User Service (RADIUS), TACACS+ and AAA.	
A18.1	a) SHA-1, SHA-2 Route Authentication.	
A18.2	b) PPP: PAP & CHAP support.	
A19	Should be able to manage & administer point-to- point VPNs by actively pushing new security policies from a single headend to remote sites	
A20	Should support ability to Layer 2 P2P (Point to point) or MPLS networks to provide full-mesh connectivity by providing tunnel-less VPN's, without any impact on the router performance	
A21	Should support dynamic and static routing	
A22	The router should be able to make use of dynamic routing adjustments based on criteria such as reachability, response time, packet loss, jitter, path availability, traffic load distribution, and cost minimization policies when doing path selection.	
A23	The router should support dead peer detection or equivalent which enable the router to take down IPSec tunnel when the remote peer goes down due to physical or logical issues.	
A24	Router should be rack mountable and support side rails if required	
A25	Router should support for embedded RMON for central NMS management and monitoring	
A26	Router should support for sending logs to multiple centralized syslog server for monitoring and audit trail	
A27	Router should provide remote logging for administration using:	
A27.1	a. Telnet	
A27.2	b. SSH V.2 etc.	
A28	Support for multilevel security to access the switch with different administrative privilege	

A29	Router should support for basic administrative tools like:	
A29.1	a. Ping	
A29.2	b. Trace route etc.	
A30	Router should have capability to upgrade, patch the operating system automatically, manually and remotely	
A31	Please submit a list of all features provided by proposed router in addition to the specifications mentioned in this document that will be available to the customer without any additional charges and will be under support. These features will be treated at par with other features	
A32	Router resources utilization like CPU, Memory should not exceed 60% for continuous one month during the contract period for required throughput.	
A33	It must be possible to fast boot the router to ensure that software upgrades can be done with minimum network downtime.	
A34	Router should be certified by EAL 2 and above	
A35	Should be Energy Efficient Ethernet or equivalent compliant. Details of Green Initiative and compliance RFC has to be given	
A36	Should have 1U form factor/rack unit Size	
B	**Interface requirements:**	
B1	Branch Router less than 20 Users The router should be supplied with minimum 2 numbers of Gigabit Ethernet WAN (10/100/1000 Mbps) and 2 number of Ethernet LAN (10/100/1000 Mbps) ports	
B1	Branch Router less than 50 Users The router should be supplied with minimum 3 numbers of Gigabit Ethernet WAN (10/100/1000 Mbps) and 4 number of Ethernet LAN (10/100/1000 Mbps) ports	
B1	Branch Router More than 50 users The router should be supplied with minimum 3 numbers of Gigabit Ethernet WAN (10/100/1000 Mbps) and 8 number of Ethernet LAN (10/100/1000 Mbps) ports	
B2	Apart from above, the router should have at least one slot wherein customer can place any of the following cards provided by Bidder:	
B2.1	GSM, 3G, 4G LTE, 5G sim based Inbuilt card with antenna and 10 meter cable	
B2.2	1G Single mode/Multi Mode fiber interface card	
B3	Router should be able to support Cellular WAN (5G,4G LTE, 3G, GSM) interface for cellular multihoming without changing the base router along with the above supplied configuration. The router should be able to display the Received Signal Strength, Current Channel	

B4	Router should support diversity antenna & low loss cable for antenna extension and should support all TSP in India.	
B5	Router shall support use USB dongle for 5G/4G/GSM/3G/connectivity	
B6	Router should have a dedicated console port for Router configuration.	
B7	All fixed Ethernet WAN ports should be routable	
C	**SOFTWARE FEATURES:**	
C1	Routing Information Protocol (RIPv1 and RIPv2), Layer 2 Tunneling Protocol (L2TP, L2TPv3), Port Address Translation (PAT)	
C2	Branch Router less than 20 Users The router should support at least 25,000 routes in the routing information base using any of the routing protocol including RIPV1 & V2, EIGRP,OSPF,BGP-IBGP & EBGP , policy routing, NAT etc.	
C2	Branch Router less than 50 Users The router should support at least 1,00,000 routes in the routing information base using any of the routing protocol including RIPV1 & V2, EIGRP,OSPF,BGP-IBGP & EBGP , policy routing, NAT etc.	
C2	Branch Router More than 50 users The router should support at least 3,00,000 routes in the routing information base using any of the routing protocol including RIPV1 & V2, EIGRP,OSPF,BGP-IBGP & EBGP , policy routing, NAT etc.	
C3	Dynamic Host Configuration Protocol (DHCP) server/relay/client	
C4	Support for 802.1q VLANs	
C5	Support for Multicast Routing Protocol - PIM Sparse Mode, PIM Sparse Dense Mode, MLD, Auto route processing (Auto-RP) or equivalent	
C6	The router shall have support for discovering network traffic with application-level insight with deep packet visibility into traffic. The router should be able to support classification at application level for QoS and control classifications to improve business-critical application performance, facilitate capacity management	
C7	Router should have the capability of holding multiple OS images to support resilience & easy rollbacks during the version upgrades etc. and should support in service software upgrade including:	
C7.1	a. Multiple System image	
C7.2	b. Multiple system configuration	
C7.3	c. Option of Configuration roll-back	

C8	Router should support for different logical interface types like loopback, GRE and IPIP tunnel, VLAN etc.	
C9	Router should have capability to automatically failover from primary link to secondary link and vice-versa when primary interface is not reachable or there is a latency observed in any of the links/ports using following real-time parameters:	
C9.1	a. Jitter	
C9.2	b. Network path availability	
C9.3	c. Network Response Time	
C9.4	d. Packet loss	
C9.5	IP SLA / Latency	
D	**IPv6 Features:**	
D1	The Device should be on the IPv6 Ready Logo or higher certification	
D2	IPv6 addressing architecture, IPv6 name resolution, IPv6 statistics	
D3	IPv6 transport packets between IPv6-only and IPv4 transport packets between IPv4-only endpoints	
D4	ICMPv6, IPv6 DHCP	
D5	Support for the following IP v6 features: RIP NG, OSPF v3, BGP Support for V6, IP V6 Dual Stack, NAT 64, and IP v6 Policy based Routing, and IP v6 QoS.	
D6	Router should support VRF lite	
D7	Router should support VRF-aware IPsec	
D8	Should support following IP v6 Tunneling mechanisms: IP v6 to 4 tunnels, IP v4 compatible tunnels, IP v6 over IP v4 GRE Tunnels, ISATAP Tunneling Support.	
E	**Security Features:**	
E1	Stateful Inspection Firewall	
E2	NAT transparency, Firewall support for clients	
E3	The router should support IPSec Framework for Secured Data transfer with Next Generation Encryption (NGE) based on standard Suite-B algorithms	
E3.1	a. IPSec Data Encapsulation AH and ESP	
E3.2	b. Key Exchange : Internet Key Exchange (IKE), IKEv2, Pre-Shared Keys (PSK), Public Key Infrastructure PKI (X.509), RSA encrypted nonce etc.	
E3.3	c. Encryption Algorithm: AES-128/192/256 , AES-GCM-256	
E3.4	d. Authentication Algorithm: SHA1 and SHA2	
E3.5	e. Group: Diffie-Hellman (DH) Group 1, 2, 5	
E3.6	f. Different mode of communication: Tunnel mode and Transport mode	
E3.7	g. Router should support minimum 20 IPSec tunnels	

E4	Router should support embedded hardware based IP SEC encryption and acceleration	
E5	IPSec AES-128/192/256 termination/initiation, IPSecpassthrough, AES-GCM-256	
E6	Should be able to build IPSec tunnel dynamically, point to point or point to Multipoint.	
E7	The router shall support full mesh tunnel based and also tunnel-less IPSec (3DES or AES) VPN with the capacity to encrypt the packets that are transferred over the Network. Router should support dynamic establishment of Tunnel-less VPNs using the GDOI Protocol as per RFC 6407.	
E8	Support for 802.1X	
E9	SFTP, SSH and Telnet. Access should be through centralized and/or distributed TACACS+, RADIUS auth	
F	**QoS Features :**	
F1	Support for Weighted Fair Queuing (WFQ), Support for IPSecQoS Pre classification & Pre fragmentation, Class-Based Marking (CBM), Priority and custom queuing, Weighted Random Early Detection.	
F2	Management Features :	
F2.1	Management should support : Telnet, Simple Network Management Protocol (SNMP), CLI	
F2.1	management/Web based HTTPs management, RADIUS,SSH,TACACS+	
F2.2	Router should have hardware health monitoring capabilities and should provide different parameters through SNMP	
F2.3	Support for SNMP v1,v2 & v3 over IPV6 and subsequent versions of IPv4	
F2.4	The router should have the capability to respond to real-time events, automate tasks, create customer commands and take local automated action based on conditions detected by the	
	Router's Operating System.	
F3	Router system should support 802.1P classification and marking of packet using :	
F3	a. CoS (Class of Service)	
F3	b. DSCP (Differential Service Code Point)	
	c. Source physical interfaces.	
	d. Source/destination IP subnet	
	e. Protocol types (IP/TCP/UDP)	
	f. Source/Destination TCP/UDP ports	
F4	Router Should support controlling incoming and outgoing traffic using :	
F4	a. Traffic Shaping	

	b. Traffic Policing	
F5	Router should support managing congested network connectivity using :	
	a. TCP congestion protocol	
	b. IP Precedence	
	c. Ingress and Egress Rate limiting etc	
F6	Router should support for packet classification and fragmentation before applying IPSec security encryption for providing end to end QoS treatment	
F7	Router should support hierarchical QoS for providing granular policy per application basis for providing bandwidth provisioning and management	
G	**High-Availability Features**	
G1	Router should support industry standard redundancy protocol such as VRRP etc	
G2	Router should provide control plane policy control to protect the router from unnecessary or DoS traffic by supporting control plane policy to protect the router from excessive and malicious traffic and giving priority to important control plane and management traffic	
H	**Licensing Requirement**	
H1	Router should have enterprise license without any restrictions. If during the contract, router is not performing as per specifications in this RFP, bidder has to upgrade/enhance the devices or place additional devices and reconfigure the system without any cost to customer	
H2	Router and its various components like 5G,4G/3G card and other inbuilt features etc should not have any licensing restriction on number of users, concurrent connections, total connections, new connections, number of vlan, zones, number of policies, number of appliances, other network parameters, number of equipments / servers etc	
H3	The offered product part codes have to be General Availability Part codes and not custom built Part Code for SBI. There should be cross reference to the public website of the OEM	
H4	Any third-party product required to achieve the functionality should be provided with the necessary enterprise version license of software/appliance and necessary hardware, database and other relevant software or hardware etc should be provided with the solution	

Annexure – 6 – Wireless Router

Wifi Router Hardware		
A	**General Features**	**Compliance (Please mention Yes/No)**
1	Device Interfaces – 802.11 a/b/g/n/ac wireless LAN, 10/100/1000 Gigabit WAN port, Four 10/100/1000 Gigabit LAN ports, USB port	
2	Antenna Type – 2x2 (2.4GHz) and 2x2 (5GHz) internal antennas	
3	Standards: IEEE 802.11ac (draft), IEEE 802.11a, IEEE 802.11n, IEEE 802.3, IEEE 802.11g, IEEE 802.3u, IEEE 802.11b	
4	Wireless Security – WPA & WPA2 (Wi-Fi protected access), WPS	
5	Others – IPv6 ready, DLNA media Server Support, Dual Active Firewall, NAT, SPI, VPN pass through, Accessibility through web browser	