Attachment E

Technical capability statement: Applicants must include a statement relating to their experience providing broadband, whether they currently provide broadband at the minimum 100/100 Mbps speeds, the useful life of the facilities, and how the project will be resilient and sustainable in the long-term. This statement should also include the number of technical staff that will be dedicated to serving the project area once the project is complete, the level of technical ability of staff, the technological components used and which components may require more frequent repair or replacement, a detailed description of the proposed network architecture including homes passed, fiber miles, and the specific technology to be used to provide service to end users, a description of the applicant's technical capability to meet the requirement to provide a minimum 100/100 Mbps in all locations that receive grant funding, and their plans to meet the minimum statutory technical and speed requirements in place for the NBBP throughout the fifteen-year period, and how the service area will be maintained throughout the useful life of the facilities, and any other relevant technical expertise of the applicant. (Attachment Letter: E)

Experience Providing Broadband

Nextlink Internet was founded in rural North Texas in 2012 by Bill Baker with a focus on serving the rural countryside with high quality internet and phone service along with great customer service. Bill continues as Nextlink's CEO today and keeps that philosophy core to how Nextlink conducts its business. As a result of that philosophy, Nextlink has grown to over 90,000 subscribers across twelve states (Texas, Oklahoma, Nebraska, Kansas, South Dakota, Indiana, Iowa, Illinois, Louisiana, Wyoming, Wisconsin, and Minnesota).

With an approach of serving the entire community and not cherry-picking certain types of customers or parts of town, Nextlink has a robust business, governmental entities, and school districts clientele. In Texas, where Nextlink has operated the longest, it is the largest provider of internet service to rural school districts in the state.

Nextlink's ultimate mission is to serve the unserved and underserved rural areas across the heartland of America with high-quality, high-speed broadband internet service via fiber or wireless service. We pride ourselves on operating a company with a heavy focus on the overall customer experience and for treating our employees like family.

Nextlink has millions of fixed wireless passings and tens of thousands of fiber passings currently across its twelve state footprint. The company's operating roots are in serving the rural markets with high-quality internet service. In 2018, Nextlink was the largest winner in the FCC (Federal Communications Commission) CAF2 (Connect America Fund Phase 2) auction program addressing the rural unserved. The FCC awarded Nextlink $429,152,518 in 2022 through the RDOF (Rural Digital Opportunity Fund). As a result of the RDOF award, Nextlink is committed to meeting, and already delivering in some locations, the requirements to bring gigabit fiber and wireless internet to underserved rural communities across 11 states in the Midwest. Since the initial CAF2 and through the RDOF awards, Nextlink has exceeded the required coverage and milestone requirements of the programs and built internet service networks covering hundreds of thousands of locations. During that service expansion, Nextlink added over 60,000 active subscribers and currently adds approximately 2,000 new subscribers every month.

In addition to the CAF2 and RDOF programs expansion, Nextlink is investing millions of its own capital by independently expanding fixed wireless and fiber networks across many rural areas and small communities in multiple states.

Nextlink expands and upgrades its current service network daily and has an extensive sales and marketing team working to educate the market regarding increase of speed availability and expansion of services into new areas/markets. That marketing effort is comprised of a mix of traditional marketing such as billboards and mailers combined with digital marketing via Google and other digital platforms. Nextlink currently spends approximately 5% of its revenues on sales and marketing efforts. Beyond brand education and outreach efforts, Nextlink and our employees are continually active in the communities we serve with community engagement and charitable activities.

Network Sustainability and Resiliency

Nextlink utilizes a variety of technologies and network architectures for the delivery of high-speed internet services to customers in rural communities. The services are delivered through both fiber and wireless technologies that are interconnected into multiple data centers across multiple states to provide customers with an exceptionally reliable and resilient customer experience. The fiber-related technologies and architectures used are further elaborated below.

For last-mile fiber connections to the premise, Nextlink utilizes standards-based G-PON (Gigabit Passive Optical Network), XGS-PON (10 Gigabit Symmetrical Passive Optical Network) PtMP (point-to-multipoint) access mechanisms. In PtP (Point-to-point) applications Nextlink utilizes Active Ethernet (1000BASE-LR, 1000BASE-ER, 1000BASE-ZR, 10GBASE-LR, 10GBASE-ER, 10GBASE-ZR,). Table-1 below summarizes the last mile technologies for fiber and associated performance tier.

Table 1 - Nextlink's Last Mile Fiber Technology Currently in Use

Method	Technology	Performance Tier
Fiber	XGS-PON	Residential - Up to 2 Gbps
Fiber	XGS-PON	Commercial – Up to 10 Gbps
Fiber	G-PON	Residential – Up to 1 Gbps
Fiber	Active Ethernet	Residential – Up to 1 Gbps
Fiber	Active Ethernet	Commercial –10 Gbps+

Note: As one of the largest internet providers for rural school districts across its multi-state service area, Nextlink has numerous gig and multi-gig school districts it serves in both fiber as well as fixed wireless delivery technologies.

Nextlink's core network (see Figure 1 for a Logical Architecture Diagram) is located across six states in multiple Tier 3 data centers are positioned in multiple states (see Table 2) and utilizes scalable, carrier-grade infrastructure including embedded redundancy within the core (primarily Nokia 7750 SR2 or SR12e with redundant route processors and switch fabric cards) with existing traffic capacity capable of 10x the current subscriber traffic levels. At those data centers, Nextlink has engineered its upstream traffic via numerous Internet transit vendors such as Hurricane Electric, Zayo and Cogent as well as peering relationships and direct connectivity at the data centers which improves latency.

Nextlink takes full Internet routing tables from all its upstream providers allowing the 7750 SRs to select the most optimal route to any destination on the Internet keeping under the 10 Autonomous System hop count target to any domestic (US) site. Nextlink is directly peered or connected with the top content providers in the nation such as Microsoft, Google, Netflix, Hulu and many more.

Figure 1 – Logical Architecture Diagram

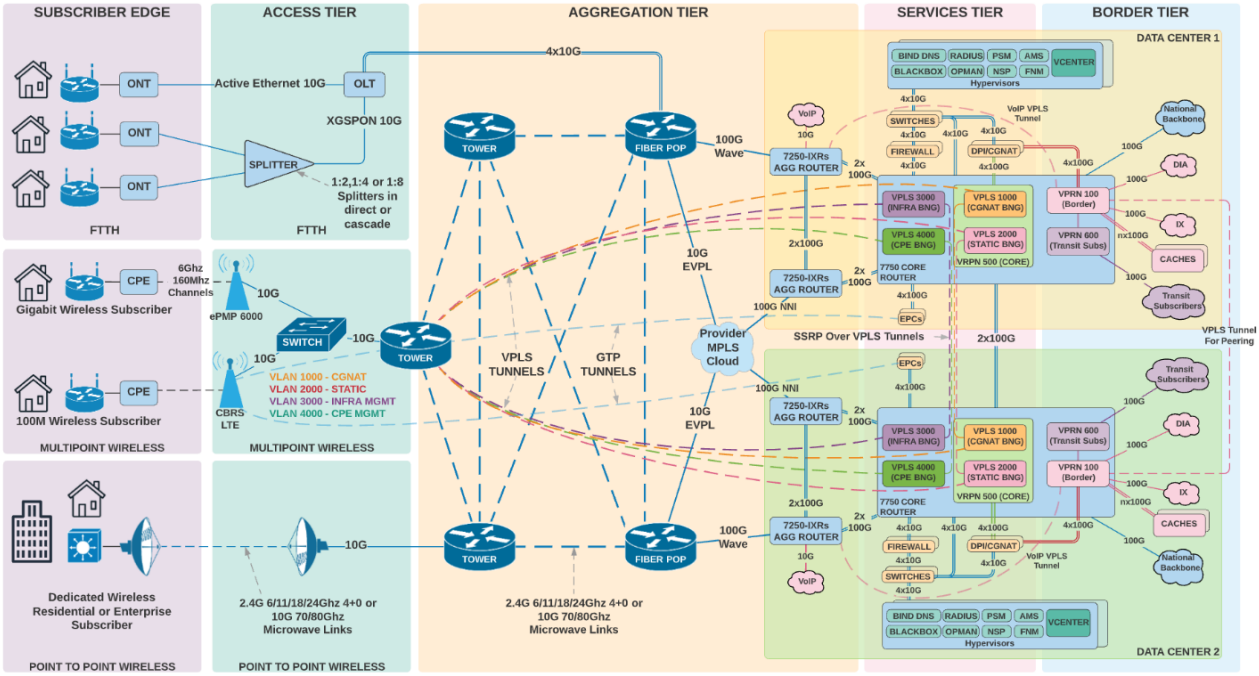

Table 2 – Nextlink Data Center Locations

State	Facility	Ownership	Address
Texas	Equinix	Leased	1950 Stemmons Fwy, Dallas, TX
Texas	QTS	Leased	6431 Longhorn Dr, Irving, TX
Oklahoma	Rack 59	Leased	7725 W Reno Ave Ste #304, Oklahoma City, OK
Kansas	Databank	Leased	14500 W 105th St. Lenexa, KS
Illinois	Equinix	Leased	350 E Cermac, Chicago, IL
Iowa	Connect Des Moines	Leased	666 Walnut Ave, Des Moines, IA
Nebraska	1623 Farnham	Leased	1623 Farnham St, Omaha, NE

Due to the continued growth in traffic demand, all these links will start at the 100G size. As demand grows, Nextlink will expand to multiples of these 100G or 400G links as the need arises. In addition to Nextlink's peering design, added care is provided via BGP routing with ample primary and redundant DIA (Virtual Private Routed Networks) connectivity to allow for 100% of traffic to route via Internet transit options or alternative data centers if all peering connections were to fail. Although engineered to

handle a complete peering connection failure with no impact on traffic, we highlight that no such complete peering failure has ever occurred over Nextlink's ten-year history. Additionally, each of Nextlink's data centers are engineered for redundant power systems designed for 99.999% uptime.

The 7750 SR core routers house the BNG (Broadband Network Gateway) service with redundancy to other datacenters 7750 SRs in the event of a complete data center outage. When this happens, the routes for the BNG VPRN (Virtual Private Routed Networks) will be withdrawn from the VPRN 100 cloud and the secondary routes are inserted at the alternate BNG sites. Nextlink hosts both its authoritative and recursive DNS (Domain Name System) servers at its data centers using the open-source BIND (Berkeley Internet Name Domain) DNS system configured to be redundant across multiple data centers.

These physical and logical components make up the framework of Nextlink's product set. At a high level, Nextlink's architecture consists of multiple core routers. WAN transport elements are comprised of multiple fiber rings and Layer 2 circuits and interconnect to the core routing infrastructure. This transport network allows Nextlink to operate routing protocols from the core routers to fiber-based transport POPs located throughout the Nextlink service footprint.

As part of its future-proofing strategy, Nextlink hosts multiple streaming traffic caches within its network providing the bulk of Netflix downloads to our subscriber base as well as Google server caches. We highlight this design as almost 50% of Nextlink's data traffic at peak time is comprised of data coming from the Netflix and Google caches and direct peering relationships. All these in-network elements result in a more robust network with a lower latency level experience for the subscriber even in a highly rural environment. Nextlink's latency target is sub-30ms RTT (Round Trip Time) for all subscribers regardless of their rural location or distance from the data center.

To strengthen our physical plant, Nextlink has invested in the hardware and gear needed to create a robust transport network and product offering. Nextlink maintains a centralized warehouse along with numerous warehouses across the diverse areas we serve in which spares for all types of network and transmission gear are maintained. This allows Nextlink to operate in a vibrant and secure network environment with high uptime and provide quick responses to outages.

Each level of the Nextlink network has the resiliency and redundancy needed to set the foundation for scalability built in. Here are just a few of the ways scalability is accomplished:

At the Core

Core Routers – Each core site has redundant core routers provided by the Nokia 7750 routing platform (https://www.nokia.com/networks/products/7750-service-router/. These routers perform several functions including border routing for the upstream peers as well as BNG functions such as DHCP (Dynamic Host Configuration Protocol) and customer traffic shaping. Each one of these routers can scale to at least 19.2Tbps of throughput capacity. If that capacity is reached, customer traffic can be failed over to their alternate sites through SRRP (Subscriber Router Redundancy Protocol). Then the under-capacity router can be replaced with a high-capacity model with zero impact to the subscriber. See Exhibit A for technology currently used for these deployments.

Deep Packet Inspection (DPI) – Nextlink has deployed redundant DPI and QoE (Quality of Experience) devices provided by Procera iQ42300 platform. These devices provide CGNAT (Carrier Grade Network Address Translation), Access Point level shaping, customer level shaping, application prioritization, DSCP (Differentiated Services Code Point) traffic marking and customer and application performance reporting. Each one of these devices has a throughput capacity of 160Gbps. If an IQ starts to reach its capacity, another can be placed in parallel adding an additional 160Gbps of throughput capacity.

Aggregation Routers – These Nokia 7250 IXRs routers provide a point to aggregate the transport network connections to terminate at the datacenter. They also provide a place to tunnel traffic to the 7750s various internal VPRNs (Virtual Private Routed Networks) in the case of smaller 10G upstream peers. These can be scaled by adding more additional units and directly connecting them to the 7750 SRs.

Server clusters – All of the network services such as DNS, RADIUS and monitoring are deployed on clusters of 3 VM hosts running Vmware ESXi. As demand and new functions are required, new VMs and VM hosts can be deployed and added to the cluster increasing NextLink's data processing and service capacity.

Fiber Pop/Site – A fiber pop or fiber site in the Nextlink network is defined as any site that terminates an upstream transport fiber circuit. Due to the expected high-capacity requirements, these sites will have a Nokia 7250-IXRe router at a minimum. The primary function of these sites is to distribute the fiber network connectivity out to the other sites via other fiber connections or microwave backhaul. A secondary function is to serve wireless and fiber customers directly off these sites as well. The electronics are powered from DC power control systems which will afford them 8+ hours of uptime. In the event of the loss of communication or degeneration of service, with the electronics, the NOC (Network Operations Center) will receive a notification to alert on-call field technicians to bring temporary power solutions to the site.

Fiber Access – In the fiber access network each headend hosts an OLT (Optical Line Terminal). The OLT supports multiple PON (Passive Optical Network) and AON (Active Optical Network) standards. The OLT chassis has four LT (Line Terminal) card slots. The LT cards support multiple fiber access protocols. The PON LT cards support GPON (Gigabit Passive Optical Network), XGS-PON (10 Gigabit Symmetrical Passive Optical Network), and the 25GPON (25 Gigabit Symmetric Passive Optical Network). Nextlink does not have plans currently to run 25GPON, however we are currently testing the technology. In the passive optical network, we use central split, cascaded split, and distributed tap architectures. The AON LT card supports 1000BASE-LR, 1000BASE-ER, 1000BASE-ZR, 10GBASE-LR, 10GBASE-ER, 10GBASE-ZR, and optics for our Active Ethernet point-to-point customers along media converters at the customer location. The OLT has two NT (Network Terminal) cards configured in Active/Active redundancy. The OLT has redundant power connections to the power control system with 8+ hours of battery backup with standby generators in certain situations. In the case of loss of communication or degradation in communication with ONT (Optical Network Terminal) and the Subscriber's location the NOC is notified. The NOC will resolve any network issues or dispatch the appropriate field personnel to address any issues. Before a PON port or AON hits its capacity, Nextlink can address the issue in a multitude of ways. In the PON network, Nextlink can add a higher capacity PON Protocol to the combiner element or change to a Multi-PON Optic. On the AON, Nextlink will upgrade the optics, as necessary. There are currently 100GBASE ZR optics in the market. Nextlink will upgrade the OLT chassis, LT cards, and NT cards as necessary to meet the growth in demand and performance now and into the future.

Fiber Subscriber – A Nextlink fiber subscriber will enjoy multi-gigabit bandwidth and latency under 30 milliseconds. The subscriber gets Internet to the Nextlink network through a fiber ONT. Each Nextlink installation will include an ONT, and router. Subscribers can also have VOIP services with their existing 4 wire hardware via an ATA (analog telephone adapter) device. The ATA's power is backed up using the same battery backup system. Nextlink offers a 24-hour battery back-up solution.

As part of Nextlink's growth, quality has always been at the forefront. Nextlink has Nokia core and transport routers and Procera for QoS (Quality of Service) that are dynamic, scalable, and interactive with our users demands and built with a foundation for growth. Nextlink currently has a core capacity of 3.6Tbps which can be easily upgraded with additional cards in the 7750 chassis. The interstate transport network is currently capable of 200Gbps with scale to 800Gbps with circuit upgrades and additional 800Gbps with card updates with the Nokia 7750 and 7250 route/switch platforms.

Further to quality, Nextlink actively manages its networks in terms of distance from the furthest subscriber in an area to middle mile transport locations and works to ensure as the network grows that latency remains low by identifying where additional middle mile transport locations should be inserted into the network to ensure that hops whether over fiber or fixed wireless do not negatively impact quality and latency.

As mentioned above when additional capacity is needed and latency needs to be reduced due to circuit loading, we will introduce/convert our aggregation datacenters into IP transit facilities with local caching, peering and additional connections as demand dictates. The route/switch architecture is built in such a way that we are expecting to add additional Nokia 7750 core routers as the network demand suggests a call for action.

Nextlink is aggressive in working with platform applications to bring them physically into the Nextlink core if possible or direct peer in the data centers rather than transit such traffic through the internet exchange and add unnecessary latency and hops to the traffic.

Nextlink deploys and maintains carrier-grade equipment with a large MTBF (Mean Time Between Failure). Frequent repair or replacement is not expected from failure. In a more likely scenario upgrades as determined by network growth. As technology improves over the lifecycle of the program along with network growth. Nextlink continues to invest in upgraded technology to perpetually provide a best-in-class user experience.

Nextlink will serve 4 unserved and 82 underserved locations with this project. This endeavor will result in all 86 households being able to receive 1Gig/1Gig speeds. See Exhibit B for further details.

Field Offices and Staff Technical Experience

Nextlink has multiple field offices throughout Nebraska, including a major operating hub in Lincoln with a total employee headcount of 53 across the state. We would expect to open at least three additional field offices in Nebraska within the next two years to support the expansion required for its Nebraska Broadband Bridge awards and continued CAF2 and RDOF network expansion. Each office would have between 10-15 field personnel including tower technicians, installation technicians and construction personnel. We currently have active broadband service in 37 counties in Nebraska.

The strength and resilience of Nextlink's overall network infrastructure, professional installations and

proactive management systems is reflected in Nextlink's tremendous organic demand for service, low customer churn rates, and a Google review score of 4.8 out of 5.0 with over 10,000 customer reviews.

Our Nebraska operations are led by the Regional Director of Operations, Aaron Clark. Leading the construction of our fiber network backhaul will be our Fiber Infrastructure Supervisor for Nebraska, Justin Tatum. We have included a projected project timeline in Exhibit C below.

Justin Tatum, Fiber Infrastructure Supervisor – Justin has over 11 years of fiber construction experience having worked for Infinity 8 Broadband prior to the acquisition of the company by Nextlink in early 2021. He played a significant role in the completion of the Hickman, Nebraska fiber project and leads one of Nextlink's nine fiber crews. He will lead one of the fiber teams that will help complete the project.

Aaron Clark, Regional Director of Operations – Aaron is Nextlink's Regional Director of Operations in the state of Nebraska and is the manager of the Lincoln, Nebraska office. He has over 15 years of combined fixed wireless, wireline, and network engineering experience. Aaron was heavily involved in ensuring the Hickman, Nebraska fiber project was completed on time and within budget. Aaron has significant project management experience.

David Law, Vice President of Field Deployment – David joined Nextlink when the company started in 2012 as an Infrastructure Supervisor. David now manages all phases of planning and construction, through to activation of over 2,240 active towers serving over 90,000 subscribers. He also has overall responsibility for Nextlink's field and operational deployment teams, including tower climbers, construction technicians, and electricians.

Mike Johnson, Vice President of Planning & Development – Mike joined Nextlink in 2019 as VP of Planning & Development. He has played a key role in the planning and development of Nextlink's fixed wireless and fiber deployment for CAF2, RDOF and expansion of the legacy network. Mike has planned and deployed over 1,300 wireless sites, hundreds of fiber circuits to meet CAF2 milestones and the operational needs of Nextlink. Prior to joining Nextlink, Mike was an enlisted Marine for 24 years. He led Marines in the planning, deploying, and executing of communication networks across the globe in hostile, humanitarian, and training environments supporting hundreds of Department of Defense personnel in austere conditions.

Seth Anderson, Chief Operating Officer – Seth joined Nextlink in 2019 as COO. He oversees the deployment and maintenance of the Nextlink network and customer-facing operations and is critical to meeting high quality service standards. Prior to Nextlink, Seth spent 20 years in the fixed wireless industry focused on deployment and maintenance of large-scale wireless networks and operations.
Seth earned a degree from Weber State University.

Cameron Kilton, Chief Technology Officer – Cameron joined Nextlink in 2020 as CTO. He has experience designing, building, and operating wireless broadband, cellular, AMI (Advanced Metering Infrastructure), and fiber-optic networks. Prior to Nextlink, Cameron was Director of Sales at Alpha Wireless and Director of Engineering Services at Baicells Technologies.

Bill Baker, Chief Executive Officer - Bill co-founded Nextlink in 2012. He actively directs the operational and growth strategy, manages all aspects of the day-to-day operations, and sits on the boards of four other companies. Prior to Nextlink, Bill was a Senior Partner in KPMG's Deal Advisory practice, served in management roles at startups, and was in corporate development at a Fortune 100 company. Bill earned a BBA in Accounting and an MBA in Finance from Baylor University and is a licensed CPA in Texas.

Engineering Services

Nextlink also expects to engage Black & Veatch to assist with engineering and other aspects of the proposed project. Black & Veatch is a long-time operating partner for Nextlink having assisted with numerous wireless and fiber projects.

Black & Veatch Bio: Black & Veatch has a proven history of serving the unique network integration needs of a variety of clients, including wireless carriers and government agencies. They have the required skills and background necessary to execute projects with the utmost quality, on time, and on budget. As a true turnkey service provider with nationwide scale, Black & Veatch integrates consulting, project management, site acquisition, engineering, procurement, construction, and program management capabilities to produce valuable solutions for a provider's wireless and wireline network needs.

Black & Veatch is the service provider of choice for operators with complex network upgrades and expansion needs who face critical deadlines and tight budgets. Their self-performance model eliminates unnecessary markups and handoffs and improves quality, schedule, and overall cost.

NOKIA

IP Routing Portfolio

Explore the Nokia IP Router portfolio

Explore the Nokia Data Center Fabric portfolio

7950 Extensible Routing System (XRS)

- Scalable, deterministic and versatile core routing for 5G and the cloud
- Powered by Nokia 3.0 Tb/s FP5, 3.0 Tb/s FP4 silicon and 400 Gb/s FP3 silicon
- Versatile 10GE, 40GE, 100GE, 400G, and up to 1T class channel interfaces
- Optical breakout options include 4 x 100GE, 2 x 400GE, 10 x 10GE, 4 x 25GE
- Proven and highly resilient SR OS software delivers a rich set of IP routing capabilities

7950 XRS-20
- 64 Tb/s (HD), 1 RU
- 20 slots, 1.6 Tb/s (FD) each
- 160 x QSFP-DD 400GE
- 320 x QSFP28 100GE
- 120 x CFP2-DCO 100G

7950 XRS-20e
- 96 Tb/s (HD), 44RU
- 20 slots, 2 x Tb/s (FD) each
- 240 x QSFP-DD 400GE
- 480 x QSFP28 100GE
- 120 x CFP2-DCO 100G

Portfolio Building Blocks

Nokia FPS: 6.0 Tb/s network processor

- Highly programmable network processor for the most powerful, scalable and high-performance IP routing platforms
- Deterministic, delivering performance certainty under all network loads, capacities, and service and function scale, without compromise
- Fully buffered architecture with line-rate memories for buffers and tables ensures deterministic performance for all demanding network rules
- Enables silicon-based IP network security with line-rate MACsec encryption and 100% DDoS mitigation capabilities, without performance impact
- Massive silicon miniaturization and small thermal profile significantly drives down power consumption for highly sustainable IP networking

Service Router Operating System (SR OS)

- One OS at the heart of the Nokia IP routing product portfolio supports the industry's most comprehensive suite of IP, MPLS and segment routing features
- A proven, robust and highly reliable OS, broad feature set is deployed in more than 2,000 service provider, web-scale and enterprise networks worldwide
- Unleashes the power and performance of multi-core processing to deliver unmatched scale and routing performance
- Highly secure, designed to be impervious to attacks that try to violate its integrity, consume its resources or sabotage its ability to view or control the network
- Advanced high-availability features enable resilient IP network architectures; in-service software upgrades (ISSU) update software on a live system without a network-impacting system reboot
- Model-driven programmability provides configuration and state management through the YO-CLI, NETCONF and gNMI; gNMI using YANG models; streaming telemetry through gNMI; gNMI subscriptions; operations through NETCONF using YANG models and gNOI

Network Services Platform (NSP)

- Delivers a programmable, network automation framework for large-scale IP/MPLS, Ethernet, optical, IP/optical and microwave networks
- Abstracts ever-increasing network complexity and diversity by using intent-based networking that turns high-level service definitions into device-specific commands
- Accelerates network operations through ready-to-use, model-driven applications for the entire network life-cycle management
- Improves network availability with powerful assurance and analytics capabilities to troubleshoot the network and fix issues quickly
- Enables network control and traffic optimization in real time by functioning as a software-defined networking (SDN) controller
- Eases integration with end-to-end orchestrators and operations support systems (OSS) through open interfaces

7750 Service Router (SR)

- Scalable, comprehensive and deterministic routing for 5G and the cloud
- Powered by Nokia 6.0 Tb/s FP5, 3.0 Tb/s FP4 silicon and 400 Gb/s FP3 silicon
- Versatile 10GE, 25GE, 50GE, 100GE, 200GE, 400GE, 800GE and up to 1.6T class channel interfaces
- Optical breakout options include 8 x 100GE, 2 x 400GE, 4 x 100GE, 2 x 100GE, 10 x 10GE, 4 x 25GE, 4 x 10GE
- Secure IP networks with ubiquitous, line-rate MACsec encryption, without performance impact
- Precise attack sensor and mitigation element in a network-based DDoS protection solution
- Proven and highly resilient SR OS software delivers a rich set of IP routing capabilities

7750 SR-1x (fixed, modular)
- 6.6 Tb/s (HD), 6 Tb/s (HD) or 4.8 Tb/s (HD), 3RU
- 1 slot, up to 4.8 Tb/s (FD), with 12 Tb/s intelligent aggregation
- 24 x QSFP-DD 400GE
- 120 x QSFP28 100GE
- 360 x QSFP28 10GE
- 32 x SFP-DD 10/25/100GE

7750 SR-1se
- 38.4 Tb/s (HD), 24U
- 1 slot, up to 19.2 Tb/s (FD), all ports are line-rate
- 24 x QSFP-DD 800GE
- 48 x QSFP-DD 400GE
- 192 x QSFP28 100GE
- 360 x QSFP28 10GE

7750 SR-2s
- 19.2 Tb/s (HD), 8RU
- 2 slots, 6.8 Tb/s (FD) each, with 12 Tb/s intelligent aggregation
- 48 x QSFP-DD 400GE
- 240 x QSFP28 100GE
- 720 x QSFP28 10GE
- 64 x SFP-DD 10/25/100GE

7750 SR-2se
- 72 Tb/s (HD), 8RU
- 2 slots, 18 Tb/s (FD) each, with 19.2 Tb/s intelligent aggregation
- 48 x QSFP-DD 800GE
- 96 x QSFP-DD 400GE
- 288 x QSFP28 100GE
- 720 x QSFP28 10GE
- 64 x SFP-DD 10/25/100GE

7750 SR-7s
- 216 Tb/s (HD), 164U or 178U
- 6 slots, 19 Tb/s (FD) each, with 19.2 Tb/s intelligent aggregation
- 144 x QSFP-DD 800GE
- 288 x QSFP-DD 400GE
- 1152 x QSFP28 100GE
- 2160 x QSFP28 10GE
- 192 x SFP-DD 10/25/100/200GE

7750 SR-14s
- 432 Tb/s (HD), 279U or 288U
- 12 slots, 19 Tb/s (FD) each, with 19.2 Tb/s intelligent aggregation
- 288 x QSFP-DD 800GE
- 576 x QSFP-DD 400GE
- 2304 x QSFP28 100GE
- 4320 x QSFP28 10GE
- 384 x SFP-DD 10/25/100/200GE

7750 SR-1
- 3.2 Tb/s (HD), 2RU
- 1 slot, 1.5 Tb/s (FD), with 4.8 Tb/s intelligent aggregation
- 8 x QSFP-DD 400GE
- 40 x QSFP28 100GE
- 240 x QSFP28 10GE
- 32 x SFP28 10/25GE

7750 SR-1s-48D, SR-1-48D, SR-1-24D
- 12 Tb/s or 6.4 Tb/s (HD), 2RU
- 1 slot, up to 6.0 Tb/s (FD), with 19.2 Tb/s intelligent aggregation
- 48 x QSFP-DD 800GE
- 96 x QSFP-DD 400GE
- 384 x QSFP28 100GE
- 480 x QSFP28 10GE

7750 SR-1s-40S, SR-1-40S, SR-1-40S
- 12 Tb/s or 6.4 Tb/s (HD), 2RU
- 1 slot, up to 6.0 Tb/s (FD), with 12.8 Tb/s intelligent aggregation
- 12 x QSFP-DD 800GE
- 24 x QSFP-DD 400GE
- 128 x QSFP28 100GE
- 200 x QSFP28 10GE
- 80 x SFP-DD 10/25/50/100GE
- 40 x SFP-DD 25GE

7750 SR-7/7450 ESS-7
- 8 Tb/s (HD), 8RU
- 4 slots, 800 Gb/s (FD) each, with 1.2 Tb/s intelligent aggregation
- 20 x QSFP-DD 400GE
- 80 x QSFP28 100GE
- 600 x QSFP28 10GE
- 160 x SFP28 10/25GE
- 400 x CSFP GE

7750 SR-12/7450 ESS-12
- 16 Tb/s (HD), 14RU
- 10 slots, 800 Gb/s (FD) each, with 1.2 Tb/s intelligent aggregation
- 40 x QSFP-DD 400GE
- 120 x QSFP28 100GE
- 1200 x QSFP28 10GE
- 320 x SFP28 10/25GE
- 800 x CSFP GE

7750 SR-13s
- 27 Tb/s (HD), 22RU
- 8 slots, 1.5 Tb/s (FD) each, with 6.0 Tb/s intelligent aggregation
- 72 x QSFP-DD 400GE
- 360 x QSFP28 100GE
- 2160 x QSFP28 10GE
- 288 x SFP28 10/25GE
- 720 x CSFP GE

7750 SR-s4
- 300 Gb/s (HD), 1RU
- 1 slot, 150 Gb/s (FD)
- 4 x CFP2 100GE
- 60 x SFP+ 10GE
- 176 x CSFP GE

7750 SR-s8
- 600 Gb/s (HD), 1RU
- 2 slots, 300 Gb/s (FD) each
- 8 x CFP2 100GE
- 80 x SFP+ 10GE
- 352 x CSFP GE

7750 SR-1s
- 600 Gb/s (HD), 6RU
- 1 slot, 200 Gb/s (FD), with 600 Gb/s intelligent aggregation
- 8 x QSFP28 100GE
- 40 x SFP+ 10GE
- 160 x CSFP GE

7750 SR-2s
- 800 Gb/s (HD), 10RU
- 2 slots, 200 Gb/s (FD) each, with 400 Gb/s intelligent aggregation
- 16 x QSFP28 100GE
- 80 x SFP+ 10GE
- 320 x CSFP GE

7750 SR-3s
- 1.2 Tb/s (HD), 13RU
- 3 slots, 200 Gb/s (FD) each, with 400 Gb/s intelligent aggregation
- 24 x QSFP28 100GE
- 120 x SFP+ 10GE
- 480 x CSFP GE

Virtualized Service Router (VSR)

- Flexible, high-performance, virtualized IP router designed and optimized for cloud-scale in x86-based server environment
- Advanced control plane (CP) and data plane (DP) features, including resiliency
- Allows simplified life-cycle management, operations and maintenance, ensuring uniform operational practices in hybrid network scenarios (i.e., when deployed along with physical network elements)
- Enables agile delivery of enterprise, residential and mobile services through modular licensing and flexible configuration of many applications, such as Route Reflector, Provider Edge, Application Assurance, Layer 7 Stateful Firewall, Broadband Network Gateway, Security Gateway, Network Address Translation, LSTP Network Server, Mapping of Address and Port using Translation (MAP-T) Border Relay, Network Group Encryption, Wireless LAN Gateway, Virtualized Residential Gateway.

7250 Interconnect Router (IXR)

- High-port density, highly scalable interconnect routers
- Terabit-scale routing within data centers and across WAN
- Optical breakout options include 4 x 100GE, 2 x 100GE, 4 x 25GE, 4 x 10GE
- Optimized for next-generation of IP mobile transport (anyhaul, fixed-mobile convergence, and mission-critical applications
- Proven and highly resilient SR OS software delivers a rich set of IP routing capabilities

7250 IXR-e series
- 600, 240 or 120 Gb/s (HD)
- Fixed/1RU ETR
- IXR-e 3sg: 2 x 100/40GE, 8 x 25/10GE, 24 x 10/1GE
- IXR-e small: 14 x 10/1GE, 4 xTDGE
- IXR-e: 6 x 10/1GE, 20 x 1GE, 4 xTDGE

7250 IXR-s
- 600 Gb/s (HD), 2RU ETR
- 4 slots, 150 Gb/s (FD) each
- 4 x 100/40GE, 16 x 25GE, 62 x 10GE, 80 x GE ports

7250 IXR-R6
- 1.6 Tb/s (HD), 3RU, ETR
- 6 slots, 160 Gb/s (FD) each
- 6 x 100/40GE, 24 x 25GE, 60 x 10GE, 80 x GE, SONET/SDH, T1/E1 ports

7250 IXR-R6d
- 4.8 Tb/s (HD), 6RU
- 6 half-width slots, 600/300 Gb/s (FD)
- 6 x 400GE, 24 x 100GE, 52 x 50GE, 80 x 25GE, 120 x 10GE, 150 x GE

7250 IXR-R6d1
- 4.8 Tb/s (HD), 7RU
- 6 full-width slots, 1200/600 Gb/s (FD)
- 6 x 400GE, 24 x 100GE, 52 x 50GE, 80 x 25GE, 210 x 10GE, 480 x GE

7250 IXR-X series, IXR-s
- IXR-X3: 28.8 Tb/s (HD), IXR-X13/X: 9.6 Tb/s (HD), IXR-s: 1.6 Tb/s (HD), 1RU
- IXR-X3: 34x 400GE
- IXR-X1: 4 x 400GE, 32 x 100GE
- IXR-X1e: 4 x 400GE, 48 x 10/1/2.5/10GE
- IXR-s: 6 x 100GE, 48 x 10/1GE

7250 IXR-6
- 28.8 Tb/s (HD), 7RU
- 6 slots, 3.6 Tb/s (FD) each
- 144 x 100/40GE, 192 x 10/1GE ports

7250 IXR-10
- 17.6 Tb/s (HD), 13RU
- 8 slots, 3.6 Tb/s (FD) each
- 288 x 100/40GE, 384 x 10/1GE ports

7210 Service Access System (SAS)

- Access, demarcation and cost-effective GE aggregation routers
- High-density and line-rate throughput
- 7210 SAS-S series models: 7x50 satellite port extender and stand-alone router
- Proven and highly resilient SR OS software delivers a rich set of IP routing capabilities

7210 SAS-R12
- 1.92 Tb/s (HD), 6RU
- 12 slots, 100 Gb/s (FD) each
- 264 x GE, 48 x 10GE, 12 x 100GE ports

7210 SAS-R6
- 960 Gb/s (HD), 2RU
- 6 slots, 160 Gb/s (FD) each
- 132 x GE, 24 x 10GE, 2 x 100GE ports

7210 SAS-Mxp (ETR option)
- 128 Gb/s (HD), 1 SRU
- 24 x GE (2 with PoE/PoE+), 4 x 10GE ports

7210 SAS-Sx 10/100GE
- 2.08 Tb/s (HD), 1RU
- 64 x GE or 10GE, 4 x 100GE ports

7210 SAS-Sx and SAS-S 1/10GE
- 128 or 176 Gb/s (HD), 1RU
- 24 or 48 GE, 4 x 10GE ports, PoE/PoE+

7210 SAS-Sx SONET/SDH (ETR)
- Satellite mode only, 1RU
- 4 x channelized OC-3/STM-1 or 1 x channelized OC-12/STM-1, 1 x GE port

7210 SAS-Dxp (ETR option)
- 60 Gb/s (HD), 1RU, fanless
- 2 x 10GE, 10 x GE ports

7210 SAS-Dxp-16tp and Dxp-24p (DIN rail and ETR)
- Dxp-16tp: 68 Gb/s (HD), 2 x 1/10GE, 4 x GE, 10 x GE with PoE/PoE+/-HMVIP
- Dxp-24p: 86 Gb/s (HD), 2 x 1/10GE, 6 x GE, 16 x GE with PoE/PoE+/-HMVIP, MACsec on 4 uplinks

7210 SAS-K3B ETR
- 60 Gb/s (HD), 2RU, fanless
- 3 x 10GE, 8 x GE ports, MACsec

7210 SAS-K12 (ETR option)
- 156 Gb/s (HD), 1RU, fanless, IP/D
- 12 x GE ports, MACsec

7210 SAS-K3 (ETR option)
- 110 Gb/s (HD), 1RU, fanless, IP/D
- 4 x GE ports

7705 Service Aggregation Router (SAR)

- Access and aggregation routers with hardware-based encryption support
- Multiservice interfaces delivering Ethernet, TDM, ATM, Frame Relay, HDLC, and GPON
- PoE/PoE+, integrated packet microwave, serial data, voice and teleprotection applications
- Proven and highly resilient SR OS software delivers a rich set of IP routing capabilities

7705 SAR-18
- 140 Gb/s (HD), 1SRU
- 12 slots, 2.5 Gb/s (FD) each; 6 slots with 10 Gb/s per slot (FD)
- 136 x GE, 28 x 10GE, multiservice interface ports

7705 SAR-8
- 80 Gb/s (HD), 2RU
- 4 slots, 2.5 Gb/s (FD) each; 2 slots with 10 Gb/s (FD) each
- 48 x GE, 12 x 10GE, multiservice interface ports

7705 SAR-X
- 34 Gb/s (HD), 1RU
- 12 x GE ports, 2 x 10GE ports, 8 x T1/E1 ports

7705 SAR-H12 variants
- 10 Gb/s (HD) plus expansion slot, 1RU
- 1 slot for a 4 x Ethernet/GE, 2 x 10GE or CWDM module
- 7 x GE ports, optional 14 x T1/E1 ports

7705 SAR-Ax
- 10 Gb/s (HD), fanless, 1RU
- 12 x GE ports, GNSS receiver

7705 SAR-A12 variants
- 10 Gb/s (HD), 1RU
- 4 x Ethernet, 8 x GE ports, optional 8 x T1/E1 ports

7705 SAR-M (2 variants)
- 8.0 Gb/s (HD), 1 TRU
- 2 slots for a 4 Ethernet, 2 x T1/E1 and 2 x RS-232 or 1 x GNSS port modules
- 8 x GE ports (6 with PoE/PoE+)

7705 SAR-Hc
- 8.0 Gb/s (HD), DIN rail-mountable
- 6 x GE (2 with PoE/PoE+), 2 x RS-232 serial ports

7705 SAR-Hm and SAR-Hmc
- 1.76, 3G, Wi-Fi (SAR-Hmc), GNSS receiver
- SAR-Hm: 6 x 10/100 Mb/s; 2 x RS-232 async. raw socket
- SAR-Hmc: 3 x 10/100 Mb/s; 2 x RS-232 async. raw socket

7705 SAR-Wx (2 variants)
- 10 Gb/s (HD), outdoor mountable
- 5 GE ports, optional PoE+, GPS

Exhibit A

Exhibit B

Exhibit C