FILED
April 1, 2021
INDIANA UTILITY
REGULATORY COMMISSION

**STATE OF INDIANA**

**INDIANA UTILITY REGULATORY COMMISSION**

| | | |
|---|---|---|
| **IN THE MATTER OF THE PETITION OF JACKSON COUNTY RURAL ELECTRIC MEMBERSHIP CORPORATION FOR DESIGNATION AS AN ELIGIBLE TELECOMMUNICATIONS CARRIER FOR THE PURPOSE OF RECEIVING RURAL DIGITAL OPPORTUNITY FUND PHASE I SUPPORT** | **)** | **CAUSE NO. 41052-ETC 94** |

**PETITIONER'S RESPONSE TO MARCH 29, 2021 DOCKET ENTRY**

Jackson County Rural Electric Membership Corporation ("Petitioner"), by counsel, hereby responds to the Indiana Utility Regulatory Commission's March 29, 2021 Docket Entry as follows:

**Request No. 1:** Please identify any other companies or entities (either affiliated or unaffiliated) with which Petitioner is partnering, or intends to partner, in offering or providing supported services in Indiana, including the specific services covered under Jackson County REMC's ("Jackson's") provisional award of Federal Communications Commission ("FCC") Rural Digital Opportunity Fund ("RDOF") Phase I support. If applicable, please explain whether each partner is an affiliate or subsidiary of Petitioner or an unaffiliated entity.

**Response:** Petitioner will partner with Momentum Telecom ("Momentum") for the provision of VoIP telephone services within the RDOF-supported area for which Petitioner seeks ETC designation. Momentum's VoIP services will be resold and provided over Petitioner's own fiber network. Momentum is not affiliated with Petitioner.

**Request No. 2:** Residential broadband upstream speeds are not listed in A.11 in Mr. McKinney's testimony. Also, it is not clear whether small business customers are eligible for the "Commercial" broadband tier pricing. Accordingly, please identify the minimum downstream and upstream broadband speeds, the monthly usage allowance, and the latency commitment that Jackson will offer to all eligible residential and small business customers to fulfill its RDOF commitments to the FCC.

**Response:** Petitioner will offer the following service plans to residential and small business customers within its designated ETC service area:

- Residential Essential 100 (100/100 Mbps) – $54.95/month
- Residential Advanced 500 (500/500 Mbps) – $69.95/month
- Residential 1G Ultra (1,000/1,000 Mbps) – $99.95/month
- Commercial 50 (50/50 Mbps) – $99.95/month

- Commercial 100 (100/100 Mbps) – $149.95/month
- Commercial 500 (500/500 Mbps) – $229.95/month
- Commercial 1,000 (1,000/1,000 Mbps) – $349.95/month

None of the listed plans contain data caps or monthly usages allowances. Petitioner's latency commitment is less than/equal to 100ms, which meets the FCC's RDOF requirement for low-latency service. Small businesses are eligible for the commercial broadband tier pricing based upon their needs. If a business needs more than one static IP address or 24/7 customer service, it would receive service in the commercial tier; otherwise it would be eligible for plans within the residential tier. The commercial tier pricing includes additional static IP addresses and 24/7 service, while the residential tier does not.

**Request No. 3:** Please explain whether Petitioner will offer its proposed RDOF services to all eligible residential and small business customers, and to all high cost/RDOF non-Lifeline subscribers and Lifeline subscribers, in the proposed ETC designation area at rates that are reasonably comparable to rates in urban areas for similar services.

**Response:** Petitioner will offer its proposed RDOF services to all eligible residential and small business customers and to all high-cost/RDOF non-Lifeline subscribers and eligible Lifeline subscribers in the proposed ETC service area at rates that are reasonably comparable to rates in urban areas for similar services. Petitioner has provided above the pricing for its various broadband service plans. As stated in Petitioner's direct testimony filed in this Cause, pricing for Petitioner's unlimited voice service is $54.95 per month as standalone service and $29.95 per month when bundled with internet service.

**Request No. 4**: Please explain the following:

a. Whether Petitioner will charge Lifeline subscribers a fee for toll calls in addition to the per month or per billing cycle price of the subscribers' Lifeline services;

b. Whether Petitioner's Lifeline subscribers will have their local exchange service disconnected for non-payment of toll charges; and

c. Whether and how Petitioner will offer Lifeline subscriber credits for both voice telephony-broadband bundles and voice telephony-only service, consistent with current FCC regulations. Please provide the dollar amounts of those credits and the associated terms and conditions (e.g., broadband speeds and usage allowances), as well as the expiration date (if any) for the credits.

**Response:** In response to Request No. 4, Petitioner states as follows:

a. Petitioner's Lifeline subscribers will not be charged a fee for toll calls because the residential VoIP service offers unlimited local and domestic long-distance calls.

b. Petitioner's Lifeline subscribers will not have their local exchange service disconnected for non-payment of toll charges because there are no toll charges associated with local and domestic long-distance calls.

c. Petitioner will offer Lifeline subscribers credits in the amount of $9.25 per month for voice-broadband bundles and $5.25 per month for voice-only service, the terms and conditions of which will be consistent with FCC regulations. The voice-only Lifeline credit will expire as of December 1, 2021 in accordance with FCC regulations.

**Request No. 5**: Please advise whether Petitioner requests an Eligible Telecommunications Carrier ("ETC") designation at the census block ("CB") level or at the census block group ("CBG") level.

**Response:** Petitioner requests ETC designation at the census block level. A map of Petitioner's RDOF-awarded census blocks was attached as Exhibit A to the Verified Petition filed in this Cause. Additionally, Petitioner has attached hereto an amended Exhibit B to the Verified Petition, which lists the 1,105 census blocks for which Petitioner will receive RDOF support and is seeking ETC designation.

**Request No. 6:** According to FCC data, Petitioner was allocated 1,105 census blocks from the NRTC Phase I RDOF Consortium, which included 7,999 estimated locations. Please amend Exhibit B to the Verified Petition to show all census blocks for which Petitioner is seeking ETC designation from this Commission that were allocated to Petitioner from the NRTC Phase I RDOF Consortium. In addition, please provide a complete list of the census blocks for which Jackson is seeking ETC designation in a single column in an Excel spreadsheet, pursuant to GAO 2019-5 (Item No. 6.c.).

**Response:** Petitioner has attached hereto an amended Exhibit B to the Verified Petition, which lists the 1,105 census blocks for which Petitioner will receive RDOF support and is seeking ETC designation. Contemporaneously herewith, Petitioner is filing a complete list of these 1,105 census blocks in a single-column Excel spreadsheet.

**Request No. 7:** Please affirm that Petitioner will update its website descriptions of its residential and small business broadband service plans, including the applicable monthly rates, and will describe its offered Lifeline plan(s) in a timely manner consistent with the Commission's final Order in this Cause.

**Response:** Petitioner will update its website descriptions of its residential and small business broadband service plans, including the applicable monthly rates, and will describe its offered Lifeline plan(s) in a timely manner consistent with the Commission's final Order in this Cause.

**Request No. 8:** Petitioner requests a waiver of the requirement to file a five-year improvement plan. In lieu of filing a five-year improvement plan, please provide more information regarding Petitioner's plan to provide the supported voice and broadband services to its proposed designated service area.

**Response:** Petitioner's proposed deployment timeline is consistent with RDOF requirements, and planning/construction activities will begin when Petitioner begins receiving its awarded RDOF funding. Attached hereto as **Exhibit A** are portions of Petitioner's RDOF long-form application describing Petitioner's proposed network infrastructure and services to be provided over the same.

**Request No. 9:** In its Petition, Petitioner states, among other things, that it will provide a router with a firewall, antivirus and anti-spam protections and a battery backup for VoIP services if applicable." Please describe the specific consumer protections and service quality standards that will be implemented for Petitioner's voice telephony telecommunications service customers in Indiana.

**Response:** Petitioner will implement all FCC service quality and consumer protections applicable to VoIP service, including, but not limited to, local number portability rules, limits on the use and disclosure of CPNI, 911 service requirements and 711 abbreviated dialing for access to relay services. In addition, Petitioner will implement all voice subscriber consumer rights and protections required by to Ind. Code ch. 8-1-29 and 170 IAC § 7-1.3, including those relating to unauthorized switching of providers or billing for services, confirmation of preferred carrier change order, notice of proposed rate changes, and compliance with billing requirements. In addition, pursuant to Ind. Code ch. 8-1-29 and 170 IAC 7-1.3-9, voice subscribers will have the ability to bring complaints forward to the Commission. Additionally, Petitioner has attached hereto as **Exhibit B** materials from Petitioner's VoIP service provider, Momentum, that describe the service quality and customer service standards that Momentum will provide to Petitioner in the delivery of the VoIP service.

Respectfully submitted,

By: */s/ Aleasha J. Boling*

Aleasha J. Boling (31897-49)
Jeremy L. Fetty (26811-06)
PARR RICHEY FRANDSEN
PATTERSON KRUSE LLP
251 N. Illinois Street, Suite 1800
Indianapolis, Indiana 46204
Telephone: (317) 269-2500
Facsimile: (317) 269-2514
Email: aboling@parrlaw.com
jfetty@parrlaw.com

*Attorneys for Jackson County Rural Electric Membership Corporation*

## CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Petitioner's Response to March 29, 2021 Docket Entry has been electronically served upon the following on April 1, 2021:

Indiana Office of Utility Consumer Counselor
115 W. Washington Street, Suite 1500 South
Indianapolis, Indiana 46204
infomgt@oucc.in.gov

*/s/ Aleasha J. Boling*

Aleasha J. Boling (31897-49)
PARR RICHEY FRANDSEN
PATTERSON KRUSE LLP
251 N. Illinois Street, Suite 1800
Indianapolis, Indiana 46204
Telephone: (317) 269-2500
Facsimile: (317) 269-2514
Email: aboling@parrlaw.com

1631708

# Exhibit A

## 1 Overall Network Design

Jackson County Rural Electric Membership Corporation (Applicant) proposes to construct a Fiber to the Premise (FTTP) network to provide Gigabit Performance Tier Broadband services in the Census Block Groups (CBGs) outlined in Table 1 - Census Block Groups Addressed. This project will be an extension of a proposed project that provides FTTP broadband services to several communities in Southern Indiana.

| | | | |
|---|---|---|---|
| 180139749002 | 180719682001 | 180939504001 | 181759672001 |
| 180719675001 | 180719682002 | 180939504002 | 181759672002 |
| 180719675002 | 180719682003 | 180939504003 | 181759673001 |
| 180719675003 | 180719682004 | 180939505002 | 181759673004 |
| 180719675004 | 180719683001 | 180939505003 | 181759674001 |
| 180719680001 | 180719683002 | 180939512001 | 181759674002 |
| 180719680002 | 180799603012 | 181439667002 | 181759674003 |
| 180719680003 | 180799604002 | 181439667003 | 181759676001 |
| 180719680004 | 180799604004 | 181439669001 | 181759676002 |
| 180719681001 | 180799606004 | 181439669002 | 181759677001 |
| | | | 181759677003 |

*Table 1 - Census Block Groups Addressed*

Figure 1 Removed- Proprietary Information

Applicant's Network architecture (*Figure 1 – Network Overview)* will serve these CBGs by employing an optical fiber network using Fiber to the Premise (FTTP) technology providing Gigabit Performance Tier services to these low-density rural markets. This architecture meets all Gigabit speed and low latency specifications outlined in the FCC 20-77 requirements.

Gigabit service delivery is key to transforming communities, rebuilding urban centers, revitalizing schools, enhancing power grid reliability, stimulating economic growth, and improving the quality of life. FTTP architectures provide the most scalable and future-proof technology to deliver gigabit services now and into the future.

The foundation of the FTTP design is a Passive Optical Network (PON) architecture that brings Gigabit Performance Tier broadband services to the customer premise using a fiber optic-based point-to-multipoint methodology that enables a single optical fiber to serve multiple premises. PON architecture employs an Optical Line Termination (OLT) unit deployed in a remote cabinet located primarily at power sub-stations fed by multiple Gigabit Ethernet transport using Ethernet Ring Protection Switching (ERPS) to provide redundancy as reflected in Figure 3 - Middle-Mile Transport Architecture. The OLT then feeds passive optical splitters utilizing both centralized and distributed architectures to serve residential and business customer locations throughout the Census Block Group (CBG).

Applicant's FTTP Architecture also provides a significant pathway to future technologies including XGS-PON and 5G. XGS-PON technology provides downstream and upstream data paths of 10Gbps and can be layered onto the existing GPON implementation allowing simultaneous GPON and XGS-PON over the same optical network. This allows services up to 1Gbps on standard GPON as well as multi-gigabit services on XGS-PON.

"High-performance fiber access networks are a key ingredient to the delivery of 5G experiences." - Ana Pesovic of Nokia Fixed Networks

FTTH architectures are also foundational to 5G network implementations. 5G is set to change the world and is at the center of every network operator's strategy. 5G networks however must be far denser than previous generations, with many more small cells. The applicant's FTTP network allows 5G operators to quickly and cost effectively connect these small cell locations and eliminate the need for their own dedicated transport networks.

## 1.1 Last Mile Fiber to the Premise (FTTP) Architecture:

A PON architecture was chosen due to its efficient use of Outside Plant (OSP) fiber since a single fiber strand can serve up to 128 subscribers and reduces operational cost by significantly reducing power cost, upgrades and maintenance from active network elements. PON architecture also supports Carrier Ethernet Services (CES), such as point to point Ethernet Private Line (E-LINE) and point to multipoint Ethernet Private LAN (E-LAN) technologies for enterprise, government, education and mobile services, allowing for high-bandwidth (10Gbps to 40Gbps) dedicated connections for Direct Internet Access (DIA), Enterprise and Mobile transport.

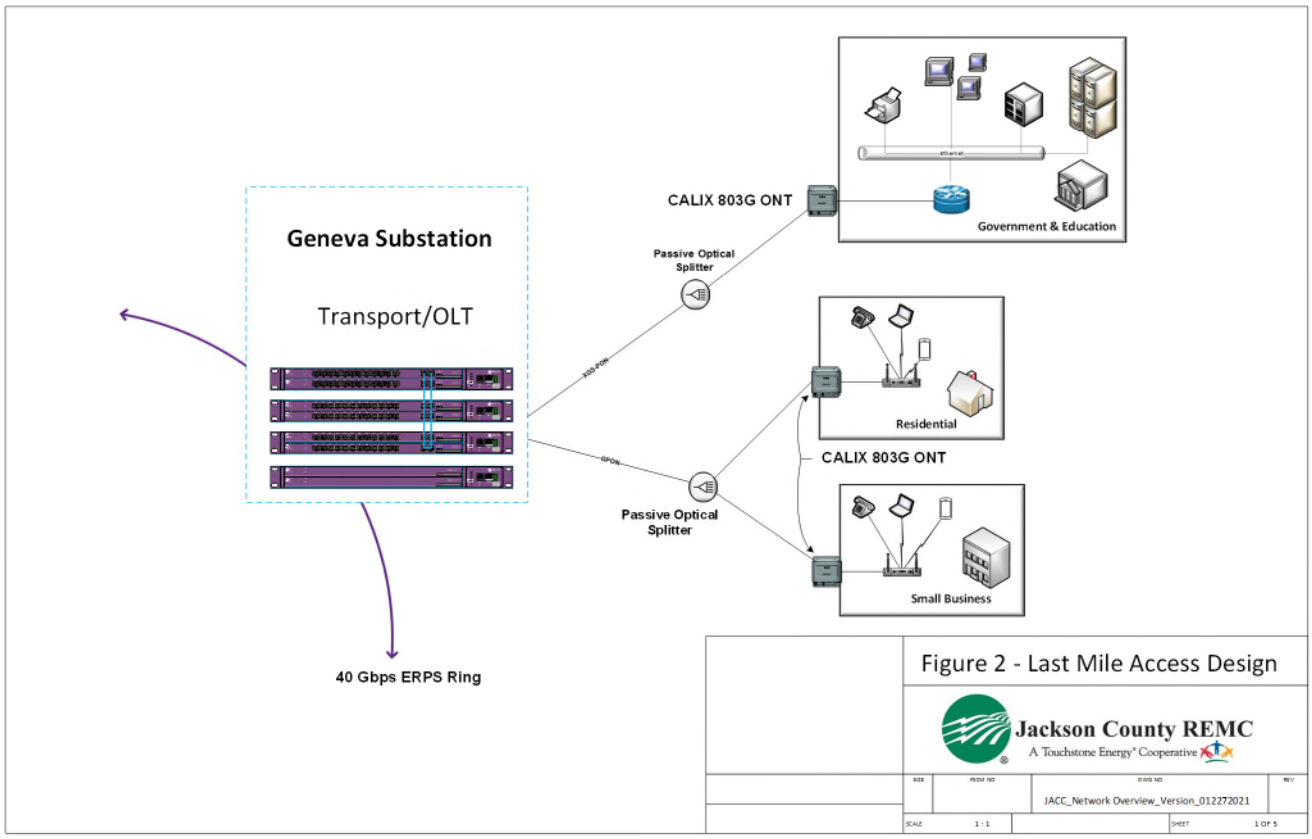



*Figure 2 – Typical Last Mile Architecture*

Applicant's FTTP Last Mile Architecture will utilize the CALIX E7-2 Platform providing Multi-Service Access and Aggregation as reflected in Figure 2 – Typical Last Mile Architecture. The E7-2 platform supports a variety of access and line modules including Fiber-to-the-Home (FTTH), Carrier Ethernet Services (CES), and Ethernet Aggregation and Transport. The E7-2 is a small form factor, environmentally hardened access solution capable of supporting both centralized and decentralized network architectures from the headend, to the remote cabinet, providing all-ethernet access supporting voice, video and data services across multiple technologies including GPON, XGS-PON and Active Ethernet.

The E7-2 platform will run on AXOS (Access eXtensible Operating System), a Linux-based software platform purpose built for the access network. AXOS is a Software Defined Access (SDA) solution that abstracts the functions, features and capabilities required to deliver a high-quality subscriber experience from the hardware to ensure portability and programmability. AXOS allows software functions to be developed and run without depending on the underlying hardware and silicon chipsets. This hardware independence is gained from the hardware abstraction layer (HAL) within the AXOS architecture and enables functions to be individually lifted and hosted on different systems or on x86 white box servers ensuring the service provider has an easy transition to network functions virtualization (NFV).

Gigabit Performance Tier Broadband services will be provided via CALIX E7-2 AXOS GPON-8 r2 OLTs. The E7-2 AXOS GPON-8 r2 card is built on a core Layer 2 and Layer 3 switch capable of full-duplex, line rate forwarding at

all frame sizes and traffic types across all interfaces. Each GPON OLT port has a dedicated 2.5Gbps switch interface. Industry standard pluggable modules are used for all interfaces, including ITU G.984 compliant GPON, GE and 2.5GE optical SFP, 10GE XFP, and 10GE SFP+. The Calix E7-2 AXOS GPON-8 r2 cards supports a flexible set of standards-based network topology protocols for use in aggregation, ring-based transport, and uplink.

- ITU G.8032 Ethernet Ring Protection Switching (ERPS)
- ITU G.8032v2 Ethernet Ring Protection Switching (ERPS)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.3ad/802.1AX Link Aggregation
- ITU G.983.5 – Type B Protection and enhanced survivability for GPON OLTs

Though the OLT will support up to 128 subscribers per port, the applicant's network design limits the subscribers to 32 per port to assure Peak Performance Service Levels Agreements for the Gigabit Performance Tier are met. More detail on the oversubscription ratios and Performance Levels are outlined in the Peak Performance SLA's section further in this document.

The E7-2 AXOS GPON-8 r2 card supports several CALIX Optical Network Termination Units (ONT), including 800G GigaFamily of products. Applicant will initially deploy the CALIX 803G GigaPoint® ONT for Performance Tier Broadband Services. The Calix 803G GigaPoint® is an indoor, 2.5 Gbps GPON small form factor service delivery terminal that provides broadband connectivity to the subscriber. The 803G GigaPoint is a network-managed, intelligent access solution providing performance tier Gigabit data services and carrier grade VoIP. Management via CMS and Calix Support Cloud (CSC) enables applicant to configure, activate and upgrade the 803G GigaPoint ONT's using in-band management, allowing extensive troubleshooting capabilities, remote software downloads, and easy-to-use service activation.

## 1.2 Middle Mile / Transport Architecture:

Applicant's Middle Mile architecture provides scalable transport that meets the ever-increasing demand for bandwidth. Access Points are strategically located in substations, secondary offices, and/or the main office location, as these are favorably located geographically and are owned real property of the cooperative. The hubs are outdoor, hardened telecom equipment cabinets that house the transport switching equipment, the electric system network equipment, as well as the FTTP GPON equipment.

Figure 3 Removed- Proprietary Information

As reflected in Figure 3, applicant's Middle Mile / Transport Architecture is based on Two (2) 40 Gigabit Ethernet Ring Protected Switched (ERPS) rings utilizing a High Availability (HA) design, using diverse fiber routes whenever possible for redundant paths.

The CALIX E7-2 Platform will provide Middle-Mile backhaul and transport via the E7-2 AXOS 10GE-12 Switch Modules to power the two proposed 40Gbps Ethernet transport rings. The E7-2 AXOS 10GE-12 is a Metro Ethernet Forum (MEF) certified Layer 2 and Layer 3 switch capable of full-duplex, line rate forwarding at all frame sizes and traffic types across all interfaces to assure non-blocking switching for the E7-2 AXOS GPON-8 r2 Last Mile Optical Line Termination (OLT) modules. This capacity makes the E7-2 ideal for aggregation and transport of IP/Ethernet services across the access network.

The AXOS 10GE-12 Switch supports ITU G.8032v2 Ethernet Ring Protection Switching (ERPS) across the twelve (12) 10Gbps Network Interfaces which allows seamless expansion of the Ethernet transport fabric as demand continues to grow. Ethernet Ring Protection Switching (ERPS) is a standardized approach to network design. It enables large amounts of Ethernet traffic to flow to multiple connection points with high-level redundancy. ERPS specifies protection switching mechanisms and a protocol for Ethernet layer network (ETH) rings. Ethernet Rings can provide wide-area multipoint connectivity more economically due to their reduced number of links. The mechanisms and protocol defined in ITU G.8032v2 achieve highly reliable and stable protection;

and never form loops, which would fatally affect network operation and service availability. The E7-2 AXOS 10GE-12 brings high density aggregation and transport flexibility to support Performance Tier Gigabit business and residential services. Each AXOS 10GE-12 provides twelve (12) SFP+ ports that can be used to provide point-to- point Ethernet business services and provide additional transport capacity. The AXOS 10GE-12 will be configured with multiple 10G Links aggregated to 40Gbps ERPS rings using IEEE 802.3ad/802.1AX Link Aggregation protocol.

The E7-2 AXOS 10GE-12 will also be used to deliver Metro Ethernet Forum (MEF) certified business services and can be configured for E-LINE and E-LAN business services supporting up to 4,092 Ethernet Virtual Connections (EVCs). The AXOS 10GE-12 can also deliver a full spectrum of ONT-based IP services over Point-to-Point Ethernet, including IPTV, High-Speed Internet (HSI) access, Voice (SIP/VoIP and TDM Gateway support), and T1 services (asynchronous clear channel).

All Calix E7-2 cards support a flexible set of standards-based network topology protocols for use in aggregation, ring-based transport and uplink applications.

- ITU G.8032 Ethernet Ring Protection Switching (ERPS)
- ITU G.8032v2 Ethernet Ring Protection Switching (ERPS)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.3ad/802.1AX Link Aggregation

The E7-2 platform provides per-subscriber and per-service hierarchical QoS to deliver uncompromised Performance Tier services via classification, policing, queuing and scheduling algorithms allowing per-subscriber and per-service traffic flows to maintain priority/delay/loss differentiation within the E7-2 network.

## 1.3 Services Edge Architecture:

Applicant's services edge architecture consists of a head end facility which serves as the service provider insertion point. The Head-End facility will maintain diversely routed interconnections to the optimal Carrier Interconnect Points of Presence (POPs). *(Figure 4 - Services Edge Architecture)* Each interconnection circuit will use 10 Gigabit Ethernet and will use bandwidth rate shaping to set the available bandwidth to the site based on calculated or modeled bandwidth requirements. Additional bandwidth will be purchased and made available as network bandwidth growth requires it.

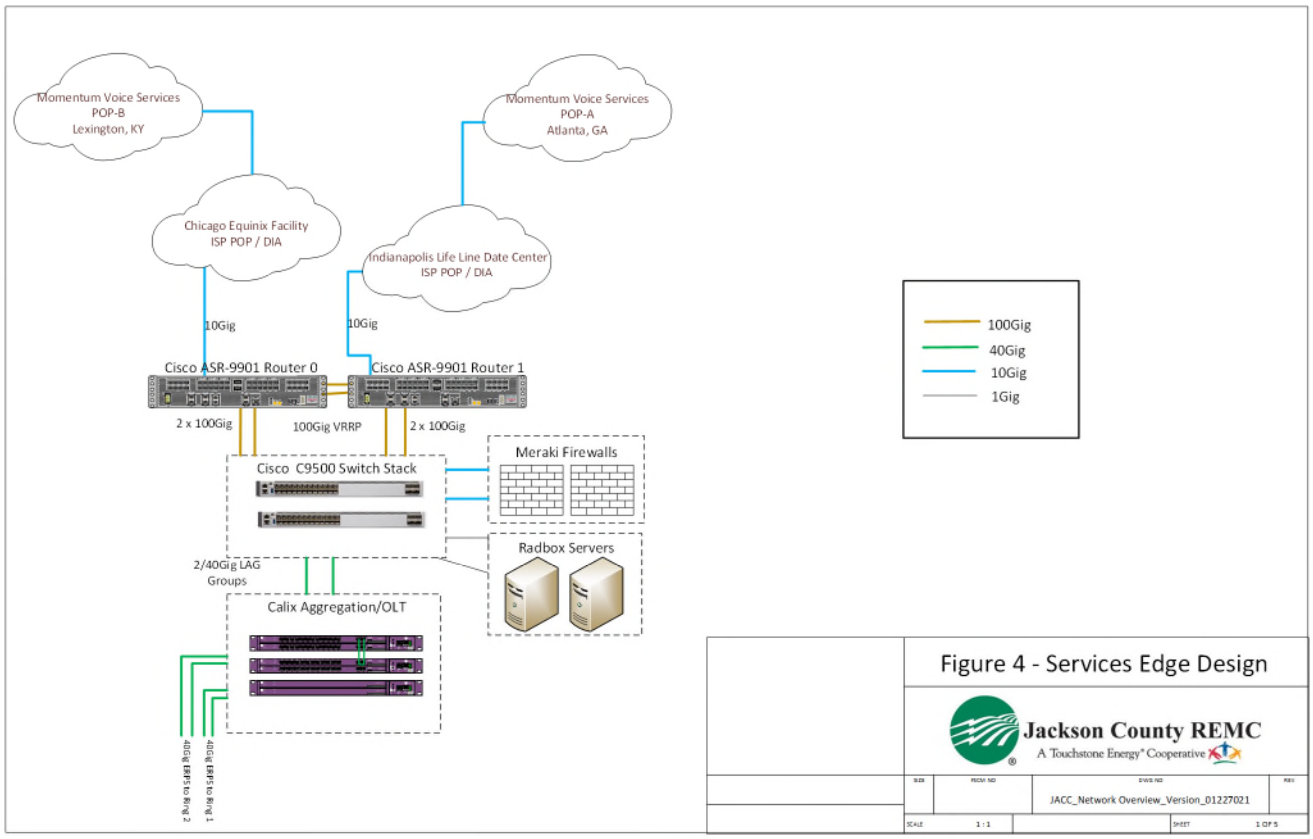



*Figure 4 - Services Edge Architecture*

The head end equipment is designed using High Availability (HA) architecture including redundant Cisco ARS9001 routers interconnected using Virtual Router Redundancy Protocol (VRRP) through 100 Gigabit (100G) fiber connections. Each router has a 100G connection to a Cisco Catalyst 9500 Layer 2/3 switch stack that provides aggregation for the local 40 Gigabit (40G) ERPS circuits and interconnection to servers and devices for ancillary services, such as DHCP/DNS, Network Management Systems and firewalls.

### 1.3.1 Layer 2 Aggregation Switches

As reflected in Figure 4 - Services Edge Architecture, a Cisco CATALYST 9500 switch stack aggregates traffic from the CALIX E7-2 AXOS 1GE-12 Ethernet transport switches using multiple 10GE connections using IEEE 802.3ad/802.1AX Link Aggregation protocol. The switch stack also provides access to network functions including DHCP Servers, Firewalls and Local Element Management Systems (EMS). The Cisco Catalyst 9500 Series are purpose-built 25, 40 and 100 Gigabit Ethernet switches delivering table scale (MAC/route/ACL) and buffering for service provider applications. The Cisco Catalyst 9500 Series includes nonblocking 40 and 100 Gigabit Ethernet Quad Small Form-Factor Pluggable (QSFP+, QSFP28) and 1, 10 and 25 Gigabit Ethernet Small Form-Factor Pluggable Plus (SFP/SFP+/SFP28) switches with granular port densities that fit stringent service provider requirements. The switches support advanced routing and infrastructure services (such as Multiprotocol Label Switching [MPLS] Layer 2 and Layer 3 VPNs, Multicast VPN [MVPN],

and Network Address Translation [NAT]); Cisco Software-Defined Access capabilities (such as a host tracking database, cross-domain connectivity, and VPN Routing and Forwarding [VRF]-aware Locator/ID Separation Protocol [LISP]); and network system virtualization with Cisco StackWise® virtual technology that are critical for their placement in the campus core. The Cisco Catalyst 9500 Series also supports foundational high-availability capabilities such as patching, Nonstop Forwarding with Stateful Switchover (NSF/SSO), redundant platinum-rated power supplies, and fans.

Cisco IOS-XE provides open standards-based APIs such as NETCONF, RESTCONF, gNMI to simplify provisioning and configuration, allowing network administrators to save time when provisioning new network devices and prevent the human errors that often are a byproduct of manual configurations. The ability to collect real-time statistics through model driven telemetry through gRPC and gNMI allows integration to many health monitoring tools to optimize their environments and to troubleshoot and provide alerts about any potential problems. QoS on the Cisco Catalyst 9500 consists of classification and marking, policing and markdown, scheduling, shaping, and queuing functions. A modular QoS command-line framework provides consistent platform-independent and flexible configuration behavior.

### 1.3.2 Core Routers

The Cisco ASR 9000 Series platform, specifically the ASR 9901, Figure 4 - Services Edge Architecture, will be deployed for the Services Edge Routers. The Cisco ASR 9000 Series Aggregation Services Routers provide 10 Gigabit Ethernet and 100 Gigabit Ethernet with scale and density. The Cisco ASR 9000 including the ASR 9900 Series Routers provide an in-place upgrade roadmap to a higher density of 10 Gigabit Ethernet and 100 Gigabit Ethernet ports without the need for a chassis replacement.

The Cisco ASR 9901 is a compact high-capacity Provider Edge (PE) router that delivers 456 Gbps of nonblocking, full-duplex fabric capacity in a Two-Rack-Unit (2RU) form factor delivering ultra-high port density and throughput while consuming just 0.9 W/Gb. It addresses the emerging edge and Metro Ethernet networking needs by delivering 400 Gbps of throughput in support of high-density 100GbE, 40GbE, and discrete and breakout 10GbE and 1GbE interfaces—all in a single rack unit.

The Cisco ASR 9901 Router has an Integrated Route Switch Processor (RSP) and 42 integrated ports that support a combination of 1/10/100GE speeds. In addition to switching, routing, and security features, the ASR9901 supports highly scalable and reliable hardware-based timing that meets the strictest LTE requirements, including Synchronous Ethernet for frequency and the Precision Time Protocol (PTP) for frequency and phase synchronization. Synchronous Ethernet and PTP can be combined in a “hybrid” mode to achieve the highest level of frequency (10 ppb) and phase (< 1.5 uS) accuracy required for LTE-Advanced, eliminating the need for external clocks. The ASR 9901 also features a fully integrated timing infrastructure, allowing the router to take in timing inputs (for example, SynchE, Building Integrated Timing Supply [BITS], and DOCSIS® Timing Interface [DTI]) and distribute them over the backplane to each slot. This capability allows extensive support for transparent mobile convergence, mobile Radio Access Network (RAN) backhaul, and Time-Division Multiplexing (TDM) circuit emulation, without sacrificing performance or scale. This is critical when deploying Private LTE and 5G networks.

The ASR 9901 uses the Cisco IOS XR 64-bit operating system, made famous by the highly successful Cisco CRS (Carrier Routing System) platform in Tier 1 Service Provider core deployments. With its innovative self-healing, distributed operating system designed for always-on operation, it is built for distributed systems such as the Cisco ASR 9000 Series, the Cisco IOS XR operating system uses a microkernel architecture to achieve true modularity. This modularity provides the path to nonstop operations during software image upgrades or module changes, without affecting normal platform operations.

Carrier Ethernet applications supported by the ASR 9901 running IOS XR 64 include business services such as Layer 2 and Layer 3 VPN (L2VPN and L3VPN, mobile backhaul transport networks, and Broadband Network Gateway (BNG). Features supported include Ethernet Services; L2VPN; IPv4, IPv6, and L3VPN; Layer 2 and Layer 3 multicast; Synchronous Ethernet (SyncE), Ethernet Operations, Administration, and Maintenance (EOAM) and MPLS OAM, Layer 2 and Layer 3 Access Control Lists (ACLs), Hierarchical Quality of Service (HQoS), MPLS Traffic Engineering Fast Reroute (MPLS TE-FRR), Multichassis Link Aggregation (MC-LAG), Integrated Routing and Bridging (IRB) and Cisco Nonstop Forwarding (NSF) and Nonstop Routing (NSR). The System also supports the advanced features including Segment Routing, EVPN, Programmability and Telemetry and other enhancements in the IOS-XR 64 Bit Operating System

### 1.3.3 Internet Services:

Internet Services will be provided by a Tier I service provider and as shown in Figure 4 - Services Edge Architecture, is proposed to have geographically diverse routed Direct Internet Access (DIA) connections to separate ISP Points of Presence (POPs). Meet points for both POPs are in Brownstown. Comcast has a meet point in the existing Head End location. Windstream meet point will be at a handhole located in Brownstown. Each of these connections will use 10 Gigabit Circuits and will utilize rate shaping to set the available bandwidth based on modeled bandwidth requirements.

## 1.4 Voice Services:

Voice Services is proposed to be provided by Momentum Telecom, a Managed Voice Service Provider providing a white label cloud-based platform for VoIP and unified communications services with extensive experience helping rural broadband providers launch and scale residential and business phone services. Their proven platform is based on carrier grade architecture and components that are modern, scalable, and cloud-native – designed exclusively to meet stringent reliability demands, and requirements for growth and innovation.

Momentum uses a hosted platform to create a virtualized (NFV) system of service delivery in which each end user (seat) can be customized to fit the specific needs of that customer based on available resources from the Momentum hosted feature set. The core network architecture for voice switching is a BroadSoft Feature Server providing customer-side features and switching, a MetaSwitch for PSTN switching and an Oracle/Acme Packet 6300 Session Border Controller for authentication and security. This redundant infrastructure is physically located in 5 data centers in Lexington, Kentucky; Atlanta, Georgia; Phoenix, Arizona; Philadelphia, PA and St. Louis Missouri. Each site is both privately and publicly connected to each other site with fail over points on-site. Public-switched data is encrypted via SS7 128+bit PPTP. With five geo-redundant points of fail over interconnecting with

each site a total network failure would only occur should two of the three sites have all three devices fail and all 6 redundant pathways fail. Calculable odds of this are less than .0001%.
Momentum Telecom has both the MetaSx and BroadSoft Feature server network elements. Signaling System 7 (SS7) and trunk interface protocols of ISDN PRI are inherent within the system. LIDB functionality is supported via the SS7 protocol application in the MetaSx and its signaling partners. Physical trunk interfaces are managed via DS1, DS3 and SIP Ethernet interfaces.

As reflected in Figure 4 - Services Edge Architecture, the Voice Services will be delivered to the Services Edge infrastructure via geographically redundant Ethernet circuits from the core routers to the Momentum Points of Presence (POPs) in Lexington, KY and Atlanta, GA with GRE tunnels enabled to separate and manage the voice traffic.

## 1.5 Network Scalability:

### 1.5.1 Subscriber Growth:

The network has been designed to support 100% of the residences and businesses within the Census Block Groups (CBGs) reflected in Table 1 - Census Block Groups Addressed. PON is a shared bandwidth technology with maximum throughput depending on the number of subscribers per PON Port and the combined network load from those subscribers. The maximum number of subscribers on a PON Port is limited by the optical split ratio employed in the network design. The GPON protocol supports up to 128 ONTs per PON and XGS-PON supports up to 256 ONTs per PON. However, Applicant has designed the network to support no more than 32 ONTs per PON Port allowing for subscriber growth. The GPON equipment will be acquired and activated as needed based upon the actual subscription rate. As the subscription rate grows, additional capacity will be activated to support the additional customers.

### 1.5.2 Network Data Usage:

The maximum oversubscription ratio that can be used to reliably deliver the service Gigabit Service tier is a function of the service rate, network load, network capacity and the number of subscribers that share a given link in the network. Network load over the full support period is expected to grow, and recent trends suggest this growth rate is in the range of 20-30% compound annual growth rate (CAGR). However, since it is impossible to predict the future, our network design provides several avenues to reinforce the capacity at the different potential congestion points in the network including the OLT back-haul or middle mile network and the PON segment. The middle mile, or back-haul network has been designed with 40Gbps interfaces with the capability of increasing capacity to 80Gbps or 100 Gbps as needed. GPON operates at rates of 2.488 Gbps downstream and 1.244 Gbps upstream including overhead. XGS-PON which is supported on the same platform operates at 9.950 Gbps providing over 4 times the capacity of GPON.

### 1.5.3 Latency:

GPON networks are layer 2 networks and on uncongested networks there is negligible latency contribution on the order of a few milliseconds. Layer 3 routing such as interior routers and border routers will use high performance Juniper MX series that are sized to produce minimal latency within the network as well as with

the connections to upstream providers. Almost all of the latency will come from the Internet itself. Voice traffic will be separated within the network to allow implementation of appropriate priority policies. This allows voice traffic at a low latency, and a low jitter path between the home to the softswitch.

## 1.6 Network Reliability:

Applicant's Network has been carefully designed to ensure it is highly available and survivable. Our High Availability (HA) architecture focuses on 3 key aspects:

### 1.6.1 Network Diversity:

Applicant has made every effort to ensure alternative paths are available for network traffic in the event of a failure.

- Carrier Diversity has been achieved to geographically diverse Points of Presence (POPs) via different providers providing paths to at least two hubs from the service provider supporting separate circuit transmission paths. As reflected in Figure 4 - Services Edge Architecture, Path A is proposed to utilize Intelligent Fiber Networks to the Lifeline Data Center facility located on 733 Henry Street in Indianapolis with Path B proposed to be served by Intelligent Fiber Networks providing access to the Equinix Data Center located on 350 Cermak Street in Chicago, IL.
- Transport diversity has been achieved at the proposed Remote Terminal Locations and the Head End facility using geographically diverse G.8032 ERPS (Ethernet Ring Protected Switched) or collapsed G.8032 ERPS for the. As reflected in Figure 4 - Services Edge Architecture, two 40 Gbps Ethernet Ring Protected Switching Rings have been proposed providing diverse routing to each of the remote terminal locations as well as the Head-End facility.
- Geographic Diversity has been achieved on all 9 or the remote terminal locations as reflected in Figure 4 - Services Edge Architecture. Geographic Diversity has also been achieved to the Carrier Points of Presence (POPs) utilizing the transport vendors outlined above.

### 1.6.2 Protection Switching & Routing

Applicant's Transport Network has been designed with protection switching and routing providing the capability to switch to a redundant path when one path fails. As shown in Figure 4 - Services Edge Architecture above, applicant proposes to build two (2) Ethernet Rings deploying ITU-T G.8032 Ethernet Ring Protection Switching (ERPS). ERPS implements protection switching mechanisms for Ethernet layer ring topologies. This feature uses the G.8032 Ethernet Ring Protection (ERP) protocol, defined in ITU-T G.8032, to provide protection for Ethernet traffic in a ring topology, while ensuring that no loops are within the ring at the Ethernet layer. Loops are prevented by blocking traffic on either a predetermined link or a failed link. Nodes on the ring use control messages called Ring Automatic Protection Switching (R-APS) messages to coordinate the activities of switching the ring protection link (RPL) on and off. Any failure along the ring triggers a R-APS Signal Failure (R-APS SF) message in both directions of the nodes adjacent to the failed link, after the nodes have blocked the port facing the failed link. On obtaining this message, the RPL owner unblocks the RPL port.

Applicant's Core Network Infrastructure has been designed using Cisco's hierarchical design model, which uses a layered approach to network design. In a hierarchical design, the capacity, features, and functionality of a specific device are optimized for its position in the network and the role that it plays.

This promotes scalability and stability. Our hierarchical network model consists of two actively forwarding core nodes, with sufficient bandwidth and capacity to service the entire network in the event of a failure of one of the nodes. This model also requires a redundant distribution pair supporting each distribution building block. Similarly to the core, the distribution layer is engineered with sufficient bandwidth and capacity so that the complete failure of one of the distribution nodes does not impact the performance of the network from a bandwidth or switching capacity perspective.

High availability in the distribution layer is provided through dual paths from the distribution layer to the core and from the access layer to the distribution layer, this results in fast, deterministic convergence in the event of a link or node failure. When redundant paths are present, failover depends primarily on hardware link failure detection instead of timer-based software failure detection. Convergence based on these functions, which are implemented in hardware, is the most deterministic. In addition, APPLICANT's Catalyst 9500 Switch Stack will be deployed using Cisco StackWise Virtual. StackWise Virtual in the distribution layer of the network interacts with the access and core layer switches as if it were a single logical switch. An access/core switch connects to both switches of the StackWise Virtual switch using one logical port channel called a Multichassis Ether Channel (MEC). The MEC enables the StackWise Virtual switches to provide redundancy and load balancing on the port channel. This capability enables a loop-free Layer 2 network topology, since the StackWise Virtual switches are treated as one logical switch for both access and core switches. The StackWise Virtual switch also simplifies the Layer 3 network topology by presenting itself as one logical switch, thus reducing the number of routing peers in the network.

In a hierarchical model, the individual building blocks are interconnected using the core layer. The core serves as the backbone for the network, as shown in Figure 4 - Services Edge Architecture. The core needs to be fast and extremely resilient because every building block depends on it for connectivity. In the hierarchical model, the core and distribution nodes are connected by point-to-point L3 routed fiber optic links. This means that the primary method of convergence for core or distribution node failure is loss of link. If a supervisor fails on a non-redundant node, the links fail and the network converges around the outage through the second core or distribution node. This allows the network to converge in 60–200 milliseconds for EIGRP and OSPF.

Layer 3 equal-cost loading will be deployed allowing both uplinks from the core to the distribution layer to be utilized. The distribution layer provides default gateway redundancy using the Gateway Load Balancing Protocol (GLBP), Hot Standby Router Protocol (HSRP), or Virtual Router Redundancy Protocol (VRRP). This allows for the failure or removal of one of the distribution nodes without affecting end point connectivity to the default gateway.
You can achieve load balancing on the uplinks from the access layer to the distribution layer is achieved using GLBP. GLBP provides HSRP-like redundancy and failure protection and allows for round robin distribution of default gateways to access layer devices, so the end points can send traffic to one of the two distribution nodes.

### 1.6.3 Equipment redundancy

- Head End

The Cisco Catalyst 9500 switches have been designed using Cisco design guidelines for redundancy and reliability that include:

- Redundant power supplies
- Redundant host modules

All of the common components, route switch processors (RSPs), switching fabric, fans, and power supplies, are redundant in the Cisco ASR 9000 Series Routers.

- Fabric redundancy
- Feed redundancy
- Power-supply redundancy
- Route processor redundancy
- Software redundancy

- Access Network

The Access Network has been designed using CALIX's high availability architecture for the Calix E7-2 that include:

- Redundant Power Supplies
- Redundant Switch Modules
- Redundant Fans

## 1.7 Ownership:

Applicant will own all the proposed assets associated with the delivery of broadband services. This includes all cabling, electronics equipment and poles. Applicant will not utilize any existing broadband infrastructure, all assets in this project are proposed. Interconnection circuits to the ISP and Voice Services providers will be leased from the Service Provider.

## 1.8 Rules of Thumb and Engineering Assumptions:

When performing the broadband network design the following guidelines and objectives were considered:

- GPON no more than 1:32 Split
- Oversubscription should support current Busy Hour Overload (BHOL) with a 20% Compound Annual Growth Rate (CAGR)
- Oversubscription should support current average monthly demand with a CAGR of 20%
- Remote Terminal equipment should be sized to serve all locations in the serving area, both eligible and ineligible with full Gigabit Performance Tier service
- Assumed Take Rate of 70%
- Assumed Tiered Service Offerings of:
  - 1 Gbps supporting >2Tb monthly usage
  - 250 Mbps supporting >2Tb monthly usage
  - 100 Mbps supporting >2Tb monthly usage

To meet these objectives and to support the exponential growth in demand for bandwidth the network has been designed using the oversubscription ratios reflected in Figure 5 – Oversubscription Ratios below as additional guidelines.

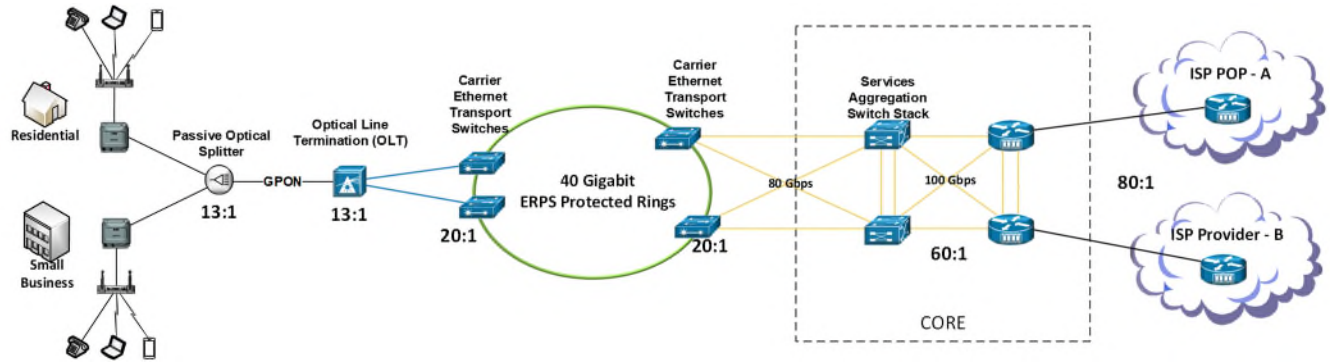



*Figure 5 – Oversubscription Ratios*

The oversubscription ratios have been calculated for each network segment using the following oversubscription formula:

Oversubscription Ratio = (N x S)/C

N = The number of subscribers served by the network equipment

S = Service Rate (All calculated at 1Gbps)

C = Net Capacity of Network Element

In addition to the oversubscription ratios, we have also designed the network to support up to 3Tb of monthly data usage per household while assuring the latency targets of < 100ms were met using the following engineering guidelines in the design:

1. < 100 miles of optical fiber cable: 10ms
2. >100 miles and <300 miles of optical fiber cable: 30ms
3. Network switches and routers will add 1ms each direction, or 2ms Round Trip Time

## 1.9 Peak Performance SLAs:

The Average consumer is using more bandwidth than ever before with services like Netflix and YouTube offering 4K HD streaming video and every household having multiple smart phones and tablets. To assure the network can meet this growing demand we have designed the network using an approach that uses the Monthly Average per Household data and busy hour load information (BHOL).

We began with the historical national Monthly Average Per Household data reflected in grey in Table 2 - Average Monthly Data Usage per household below and developed a forecast to the year 2030 at a CAGR based on the applications.

*Table 2 - Average Monthly Data Usage per household*

| Per household (Gbytes per month) based on Cisco/ITU-ICT with weighting | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **By Sub-Segment** | **2017** | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** | **2025** | **2026** | **2027** | **2028** | **2029** | **2030** | **CAGR** |
| **Web, email, data** | 28 | 33 | 37 | 40 | 38 | 33 | 35 | 36 | 37 | 39 | 40 | 42 | 43 | 45 | 3.8% |
| **File sharing** | 16 | 19 | 23 | 26 | 27 | 25 | 28 | 31 | 34 | 37 | 41 | 45 | 50 | 55 | 10.2% |
| **Gaming** | 8 | 13 | 22 | 35 | 52 | 79 | 99 | 123 | 154 | 192 | 240 | 301 | 376 | 470 | 25.0% |
| **Internet video** | 204 | 263 | 335 | 415 | 491 | 586 | 703 | 843 | 1,012 | 1,215 | 1,457 | 1,749 | 2,099 | 2,518 | 20.0% |
| **totals** | **255** | **328** | **416** | **515** | **608** | **723** | **864** | **1,037** | **1,244** | **1,493** | **1,791** | **2,149** | **2,579** | **3,095** | 20.0% |
| **Year-over-year growth** | | 28.80% | 26.80% | 23.70% | | | | | | | | | | | |

The information from Table 3 - Per Household 24 Hour Average in (Kbps) was then converted to a per household average Kbps as shown in Table 3 - Per Household 24 Hour Average in (Kbps) below.

*Table 3 - Per Household 24 Hour Average in (Kbps)*

| Per household 24-hour average (kbps) derived from Cisco/ITU-ICT | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **2017** | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** | **2025** | **2026** | **2027** | **2028** | **2029** | **2030** |
| **Web, email, data** | 85 | 100 | 113 | 122 | 117 | 103 | 107 | 111 | 115 | 120 | 124 | 129 | 134 | 139 |
| **File sharing** | 48 | 60 | 71 | 79 | 82 | 78 | 86 | 94 | 104 | 115 | 126 | 139 | 154 | 169 |
| **Gaming** | 24 | 41 | 67 | 107 | 161 | 243 | 304 | 380 | 475 | 594 | 742 | 928 | 1,160 | 1,450 |
| **Internet video** | 629 | 812 | 1,032 | 1,281 | 1,516 | 1,808 | 2,169 | 2,603 | 3,124 | 3,748 | 4,498 | 5,398 | 6,477 | 7,773 |
| **Totals** | **786** | **1,013** | **1,284** | **1,589** | **1,876** | **2,232** | **2,666** | **3,189** | **3,818** | **4,577** | **5,491** | **6,594** | **7,924** | **9,531** |

Using a per-application Peak Hour Ratio and Up/Down ratio the data is then converted to Busy Hour Load (BHOL) in Upstream and downstream. Upstream tends to be much less due to the downstream only nature of streaming video traffic. Table 4 - Per Household Peak Period Traffic reflects the converted data.

*Table 4 - Per Household Peak Period Traffic*

| Per Household Downstream peak period traffic (BHOL kbps) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **2,017** | **2,018** | **2,019** | **2,020** | **2,021** | **2,022** | **2,023** | **2,024** | **2,025** | **2,026** | **2,027** | **2,028** | **2,029** | **2,030** |
| **Web, email, data** | 154 | 189 | 222 | 251 | 228 | 201 | 209 | 217 | 225 | 233 | 242 | 251 | 261 | 271 |
| **File sharing** | 86 | 112 | 139 | 163 | 159 | 152 | 167 | 184 | 203 | 224 | 246 | 272 | 299 | 330 |
| **Gaming** | 43 | 77 | 132 | 220 | 314 | 474 | 593 | 741 | 926 | 1,158 | 1,447 | 1,809 | 2,261 | 2,827 |
| **Internet video down** | 1,132 | 1,527 | 2,024 | 2,638 | 2,956 | 3,525 | 4,230 | 5,076 | 6,091 | 7,310 | 8,771 | 10,526 | 12,631 | 15,157 |
| **Internet video up** | 14 | 19 | 27 | 36 | 47 | 60 | 81 | 109 | 147 | 197 | 266 | 358 | 482 | 650 |
| **Totals** | **1,429** | **1,923** | **2,544** | **3,309** | **3,704** | **4,412** | **5,279** | **6,327** | **7,592** | **9,122** | **10,973** | **13,216** | **15,935** | **19,234** |
| **Ratio to 24 h avg.** | **1.8** | **1.88** | **1.96** | **2.06** | **1.95** | **1.95** | **1.95** | **1.95** | **1.95** | **1.95** | **1.95** | **1.95** | **1.95** | **1.95** |

| Per Household Upstream peak period traffic (BHOL kbps) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **2017** | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** | **2025** | **2026** | **2027** | **2028** | **2029** | **2030** |
| **Web, email, data** | 13 | 15 | 17 | 19 | 18 | 16 | 16 | 17 | 18 | 18 | 19 | 20 | 20 | 21 |
| **File sharing** | 29 | 36 | 43 | 47 | 49 | 46 | 51 | 56 | 62 | 69 | 76 | 83 | 92 | 101 |
| **Gaming** | 9 | 15 | 24 | 37 | 55 | 80 | 123 | 190 | 294 | 454 | 701 | 1,083 | 1,671 | 2,581 |
| **Internet video down** | 30 | 41 | 55 | 71 | 88 | 110 | 142 | 184 | 238 | 309 | 399 | 517 | 669 | 865 |
| **Internet video up** | 14 | 19 | 27 | 36 | 47 | 60 | 81 | 109 | 147 | 197 | 266 | 358 | 482 | 650 |
| **Totals** | **81** | **107** | **139** | **175** | **210** | **252** | **414** | **519** | **651** | **817** | **1,024** | **1,284** | **1,610** | **2,019** |

Once that data was compiled, we calculated the Per Household 24-hour average and the BHOL Peak Period traffic across each network segment using the total number of subscribers served by the network segment at a 70% take rate:

- Per PON Port
- Per OLT
- Per Carrier Ethernet Switch
- Core Aggregation Switches and Routers
- Internet Circuit Bandwidth

Using this methodology we met the objectives on both Rings 1 & 2 with the 40 Gbps ERPS rings being forecast to exhaust in 2029. Addition capacity can then be augmented by simply adding and additional circuit to the LAG group. The Core Network Elements including the Aggregation Switches and Routers are forecast to exhaust in 2029 and can also be augmented by adding additional circuits to the LAG group. The internet bandwidth at 2 X

20Gbps is scheduled to exhaust by calculation in 2023. This assumes the 70% take rate has been fully met at all locations. This network segment can also be augmented by adding circuits to the LAG group.}

While projections are good for network design and planning, active monitoring of traffic loads is the most important element of efficient network capacity management. Network performance problems are frequently related to capacity issues. Applicant will collect a variety of statistics from the optical network, Core Routers, Customer Premise Equipment (CPE), and Internet Circuits at regular intervals to perform capacity and performance management to assure the network is performing as designed. Network polling will be used to collect utilization statistics on links between network devices, such as Core Switch Stack to Core Router and Core Switch Stack to Middle-Mile Transport/OLT. Statistics gathered will be used to examine peak period bandwidth spikes and average bandwidth utilization. Monthly link utilization reports, based on average and peak usage, will be reviewed to determine if action should be taken to increase specific link bandwidth capacity.

The bandwidth utilization will be categorized as follows for action:

- The basic parameters follow the 70/30 rule. Additional bandwidth is required to avoid contention-based delays, where average utilization exceeds 30%, and peak utilization hits 70% or more, consistently.
- Average Bandwidth Guidelines:
    - 20% bandwidth utilization – monitor monthly trending
    - 25% bandwidth utilization – initiate project to increase link bandwidth capacity or other action, such as load balancing, within 6 months' timeframe
    - 30% bandwidth utilization – initiate project to increase link bandwidth capacity or other action, such as load balancing within 3 months' timeframe
- Peak Bandwidth Guidelines:
    - 50% bandwidth utilization – monitor monthly trending
    - 65% bandwidth utilization – initiate project to increase link bandwidth capacity or other action, such as load balancing, within 6 months' timeframe
    - 70% bandwidth utilization – initiate project to increase link bandwidth capacity or other action, such as load balancing within 3 months' timeframe

**Exhibit B**

1) Company History

# About Us

Momentum Telecom empowers human connections through developing, streamlining and integrating cloud voice and cloud-based applications in order to enable others to thrive. An industry leader in customer experience, Momentum Telecom uses superior technology, a geo-redundant network and a nationwide network of more than 500 white label and channel partners to empower businesses to communicate better, faster and more efficiently. Headquartered in Atlanta, GA, Momentum Telecom has offices across the United States.

# History

Momentum was founded in 2001 as a business phone and internet service provider named Momentum Business Solutions. Momentum Business Solutions began working with small broadband providers in the Cable space to provide voice and support and allow them to compete with their local Incumbent Local Exchange Carriers (ILEC's). Momentum has remained an advocate of the small to mid sized operators throughout its lifespan, evolving from a Cable focused business to include all modes of service delivery and a wide range of Customers. Momentum works with nearly 400 small providers throughout the world to deliver its world class services.

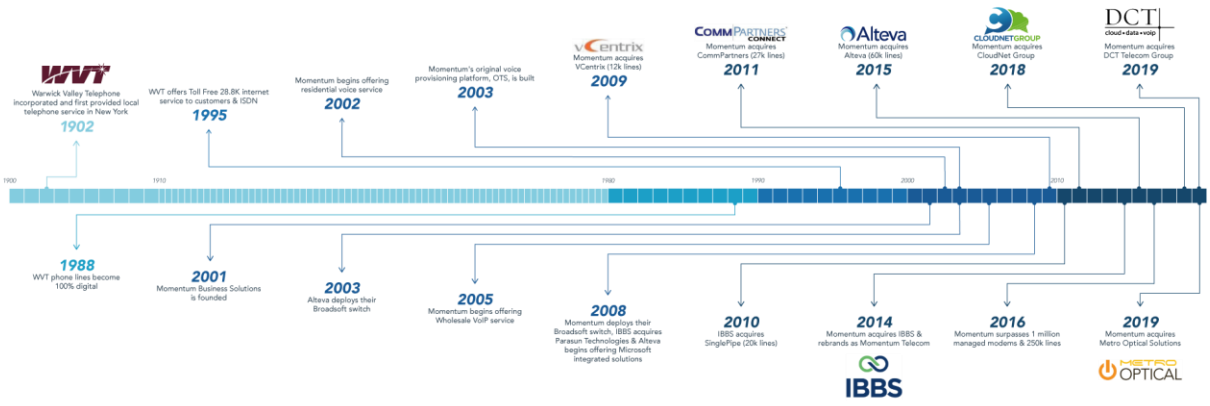
In 2005, Momentum began offering wholesale cloud voice solutions and telephone systems for businesses. This move ultimately led to the joining of Momentum and the other top provider of fully integrated data and voice services to broadband providers, Integrated Broadband Services (IBBS) in 2014. As the two companies merged, they became Momentum Telecom.

Momentum continued to expand its unified communications offerings and network in 2015 by completing a merger with award-winning and top unified communications provider, Alteva.

The company furthered its growth, offerings and technology, specifically in the area of network, by merging with three-time Inc. 5000 honoree CloudNet Group in 2018 and Metro Optical and DCT Telecom in 2019.

Momentum’s continued growth and success can be credited to its unmatched customer experience, trusted geo-redundant network, expert workforce and transformationally powerful technology.

Momentum Timeline:




2) Management Team and key support bios

# Todd Zittrouer | Chief Executive Officer

Todd Zittrouer is a champion of the Momentum Difference and enabling Momentum’s customers to thrive. Utilizing his sales acumen, leadership style and deep knowledge of IP-enabled communications services, Todd works daily to engage and equip Momentum’s partners and customers. His industry expertise and customer-first style has been the driving force behind partners and operators enhancing their offerings and, as a result, boosting their own competitiveness in the marketplace. Todd has almost 20 years of experience in the field of telecommunications and holds a Bachelor of Science degree in business management from State University of West Georgia.

## Robert Hagan **| Chief Financial Officer**

Bob Hagan joined Momentum Telecom as Chief Financial Officer in 2018 and is responsible for strategic planning and financial operations. Bob's experience includes CFO and senior financial positions at several high-growth public and private companies in the telecom, corporate aviation and process engineering sectors. Prior to Momentum, Bob gained 16 years of prior experience in the telecom sector including as the CFO with Hudson Fiber Network seeing it through its successful sale to ExteNet Systems in 2018, and as the CFO and SVP of Finance of KMC Telecom, a large competitive local exchange carrier sold to Centurylink and Telcove. Earlier in his career, Bob was an audit manager at Ernst & Young. Bob has BS degrees in business management and accounting from Fairleigh Dickinson University and is a Certified Public Accountant.

## Mark Marquez **| Executive Vice President of Technology**

Mark Marquez leads all of Momentum's internal and external platform development, selection and implementation of customer technology and management of core network technology operations. As a highly regarded voice within the hosted VoIP and unified communications industry and an expert of emerging technologies, Mark was an integral part of designing and building Momentum's highly efficient, redundant and scalable technology infrastructure, and has extensive experience designing managing and implementing complex network and telecommunications infrastructures for small, medium and enterprise companies.

## Chuck Piazza **| Executive Vice President of Sales**

Chuck Piazza has more than 20 years of experience in the telecommunications industry, first-hand expertise of building a successful sales organization from the ground up and a proven track record of cultivating sales channels. Before joining Momentum, Chuck gained extensive executive experience including vice president roles at West IP Communications and Smoothstone IP Communications. As Momentum's Executive Vice President of Sales, Chuck oversees the development and execution of strategies for accelerating sales growth in established and emerging markets.

## Ande Hornig | Executive Vice President of Network Services

Ande Hornig has more than 20 years of experience in the telecommunications industry including building a successful network business from the ground up. Before joining Momentum, Ande was CEO of Metro Optical Solutions, a New York based network aggregator which was acquired by Momentum in early 2019. As Executive Vice President of Network Services, Ande oversees the development and execution of network solution strategies for Momentum.

## Phillip Roland **| Senior Vice President of Development**

Phillip Roland oversees the operations and development of many of Momentum's key platforms, including Momentum's Broadband Explorer (BBX). He works tirelessly with the software development team to design, create and implement new functionality, features and enhancements that can then be used by Momentum's customers to increase operational efficiencies and deliver higher quality service. Phillip holds a Bachelor of Science degree in Information Systems from Georgia Southern University and an MBA from Kennesaw State University.

## Scott Helms **| Senior Vice President of Advanced Solutions & CISO**

Scott Helms is a recognized thought leader and influencer in the broadband management industry and has established his voice over more than two decades of experience working as an architect for broadband systems (DOCSIS, xDSL, wireless, FTTx, etc.) and designing broadband software. As Momentum's Senior Vice President of Advanced Solutions & CISO, Scott is spearheading the creation of Momentum's center for excellence for broadband providers and is helping Momentum to reach new markets.

## Jennifer Jacobs **| Senior Vice President of Customer Experience**

Jennifer Jacobs started at Momentum in 2002 and has been instrumental to Momentum's success over the years. She has been key to the company's early success in residential voice and was key to quality assurance over that product. Jennifer was also critical to our transition to a VoIP company in 2004 and managing the successful transition. Jennifer is responsible for our Retail customer experience from service delivery through to customer support and account management. Her background in operations, customer service, automation, and scalability will be crucial to our success in continuing to build and support Momentum's Retail business. Jennifer received her Bachelor of Science degree in Consumer/Industrial Marketing from the University of Alabama in Tuscaloosa, AL.

## Tara Kelley **| Senior Vice President of White Label**

Tara Kelley directs and curates Momentum's white label experience by managing the company's white label technology and customer base. Having developed an unparalleled commitment to customer satisfaction and a passion for technology services over her notable tenure in the technology sector, Tara is a vital part of leading the company in developing strong customer relationships, delivering projects on time and enabling operations to thrive.

## Colin Scott **| Vice President of Wholesale Sales**

Colin Scott runs the strategic and sales efforts in the wholesale and service providers pace for Momentum. With expertise in a wide range of telephony products and services as well as years of experience in creating go-to-market strategies, Colin provides guidance to Momentum's Customers before and during their time as service providers. Prior to joining Momentum, Colin was the Director of Sales for Cbeyond and worked throughout the US. Colin holds a Bachelor of Science in Psychology from Georgia Southwestern University.

# Heather Dromgoole | Vice President of Human Resources

Heather Dromgoole leads Momentum's human resources initiatives, including recruitment, employee and labor relations, benefits, compensation, and performance management. She previously served in executive HR roles at Alteva, Inc. and Access Group, Inc., a financial services company specializing in student lending. Heather holds a bachelor's degree in English from Ursinus College and a master's degree in Human Resource Development from Villanova University, as well as the SHRM-SCP and SPHR designations. She is also Past President of the Greater Valley Forge Human Resources SHRM Chapter and remains involved as a Programs Chair for the Chapter's annual conference.

3) Voice and line features

| Residential Line Features | |
|---|---|
| Anonymous Call Rejection | • |
| Call Block | • |
| Call Forward Always | • |
| Call Forward Busy Line | • |
| Call Forward Don't Answer | • |
| Call Forward Not Reachable | • |
| Call Forward Selective | • |
| Call Logs | • |
| Call Return | • |
| Call Waiting | • |
| Caller ID | • |
| Caller ID Delivery Blocking | • |
| Do Not Disturb | • |
| Find-Me/Follow-Me | • |
| Speed Dial | • |
| 3 Way Calling | • |
| Voicemail | • |
| Voicemail to Email | • |
| Voicemail to Text | Add-on |

| Hosted PBX and Business Line Features | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Standard Business Line | | Executive Hosted PBX | | | | | |
| | Included | Add-On | Included | Add-On | Smart Number | Auto Attendant | User Add-Ons | Group Add-ons |
| Account/Authorization Codes | | | • | | | | | • |
| Anonymous Call Rejection | • | • | • | • | • | • | | |
| Anywhere | • | • | • | • | • | | | |
| Anywhere Feature Control | • | • | • | • | • | | | • |
| Audio Conferencing | • | • | • | • | • | | | • |
| Auto Attendant | • | • | • | • | • | • | | |
| Barge In Exempt (Barge In) | • | • | | • | • | | • | |
| Business Communicator | • | • | | • | • | | • | |
| Busy Lamp | • | • | • | • | • | | | |
| Call Block | • | • | • | • | • | • | | |
| Call Forward Always | • | | • | • | | | | |
| Call Control Toolbar | • | | | • | | | • | |
| Call Forward Busy Line | • | | • | • | | | | |
| Call Forward Don't Answer | • | | • | • | | | | |
| Call Forward Not Reachable | • | | • | • | | | | |
| Call Forward Selective | | | • | • | | | | |
| Call Hold | • | | • | • | | | | |
| Call Logs | • | • | • | • | • | • | | |
| Call Notify | • | • | • | • | • | | | |
| Call Park/ Pickup | • | • | • | • | • | | | • |
| Call Return | • | • | • | • | | | | |
| Call Transfer | • | • | • | • | | | | |
| Call Waiting | • | • | • | • | • | | | |
| Caller ID | • | • | • | • | • | | | |
| Caller ID Delivery Blocking | • | • | • | • | • | | | |
| Client Call Control | • | • | • | • | • | | | |
| Dial-In Feature Control | • | • | • | • | • | | | • |
| Directed Call Pick-up | • | • | • | • | | | | |
| Directed Call Pick-up w/ Barge In | • | • | | • | | | • | |
| Do Not Disturb | • | | • | • | • | | | |
| Find-Me/Follow-Me | | | • | • | • | | | |
| Hoteling Guest and Host | | | • | • | • | | | |
| Hunt Groups | | | • | • | • | | | • |
| Instant Conference | | | • | • | • | | | • |
| Last Number Redial | • | • | • | • | | | | |
| Message Waiting Indicator | • | | • | • | | | | |
| Music on Hold | | | • | • | | | | • |
| Multiple Call Arrangement | | | • | • | | | | |
| N-way Calling | | | • | • | | | | |
| Priority Alert | • | | • | • | | | | |
| Privacy | • | • | • | • | • | | | |
| Push-to-Talk | | | • | • | | | | |
| Receptionist Dashboard | | | | • | | | • | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Selective Call Acceptance | • | • | • | • | • | | | |
| Series Completion | • | • | • | • | • | | | • |

| | Standard Business Line | | Executive Hosted PBX | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Included | Add-On | Included | Add-On | Smart Number | Auto Attendant | User Add-Ons | Included |
| Shared Call Appearance | • | • | • | • | • | | | |
| Speed Dial | | | • | • | | | | |
| 3 Way Calling | • | • | • | • | | | | |
| Voicemail | • | • | • | • | • | • | | |
| Voicemail to Email | • | • | • | • | • | • | | |
| Voicemail to Text | • | | • | | • | | | |

| Additional Services |
|---|
| Directory Assistance (411) |
| Operator Assistance |
| International Directory Assistance |
| Toll Free Number |
| Virtual Number |
| Series Completion |
| Voicemail Only |
| Auto Attendant |
| Audio Conferencing |
| Hunt Group |
| Hunt Group Extension |
| Instant Conference |
| Business Communicator |
| Receptionist Dashboard |
| Call Control Toolbar |
| Reserved Telephone Number/DID |
| Account/Authorization Codes |
| Anywhere Feature Control |
| Call Park/Pickup |
| Dial In Feature Control |
| Music On Hold |
| DID |
| Advanced DID Feature Pack |
| Call Path Minute of Use |
| Virtual Fax 500pg |
| Virtual Fax 2,500pg |
| Virtual Fax 5,000pg |

| |
|---|
| Virtual Fax 10,000pg |
| Virtual Fax 15,000pg |
| Virtual Fax 20,000pg |
| Virtual Number |

| Contact Center |
|---|
| Basic Call Center Agent |
| Standard Call Center Agent |
| Premium Call Center Agent |
| Call Center Agent Client |
| Call Center Supervisor Client |
| Basic Call Center Queue |
| Standard Call Center Queue |
| Premium Call Center Queue |
| Contact Center DNIS Number |
| Call Recording Basic |
| Call Recording Plus |
| Call Recording Pro |
| Screen Capture |
| Evaluate |

4) Momentum's Training, Sales, Marketing, Installation, And Service Ordering Overview
    a. Training: **Momentum currently offers several training options according to size, needs and experience of staff. Momentum defaults to a 'train the trainer' method in which Momentum provides resources to ensure all elements of the products and services are trained, documented and understood by key personnel within each Customer. This process is typically repeated three to four times during project-launch/post-launch phase. Customers can request additional training according to needs or changes. There are also standing training for Momentum's portal for residential, complex and simple commercial End Users. These trainings occur every week on Tuesday, Wednesday and Thursday and are hosted by Momentum virtually.**

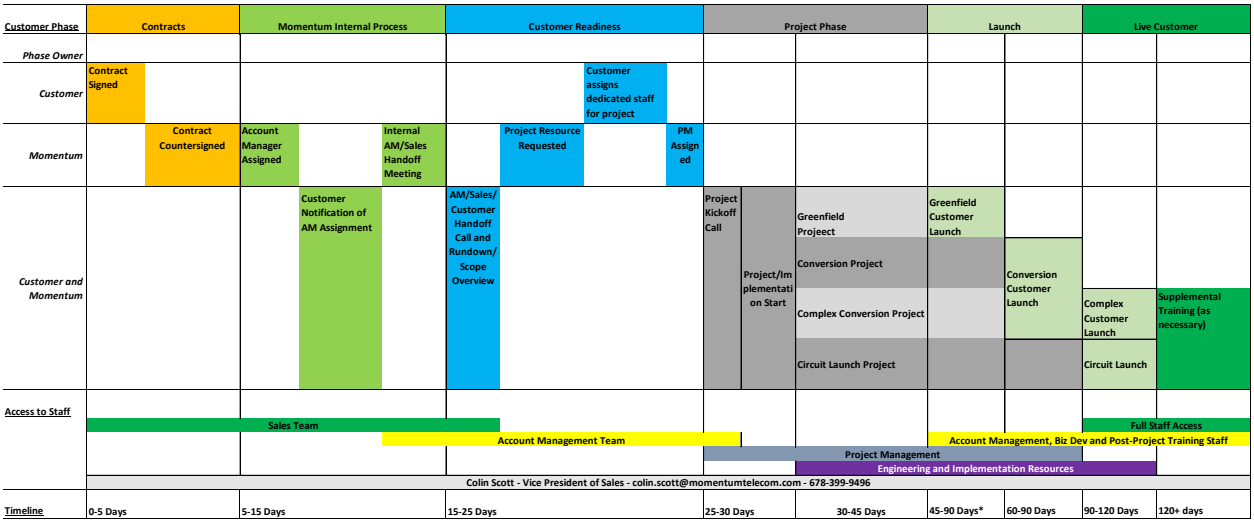
    **Momentum also offers supplemental trainings that may be performed on an ad-hoc basis according to need:**
        - **Developing an offering**
        - **Product-specific training**
        - **Supporting complex voice customers**
        - **Sales**

- Implementation/Installation
- Troubleshooting
- Device-specific training (when available)
- Other training as requested by Customer

b. Sales & Marketing: Momentum provides a structured sales and marketing support mechanism through our DRIVE UC platform in which Customers can find presentations, collateral, specifications, product guides, training and other resources designed to help launch and support customers, especially highly complex/Hosted voice customers. All materials are provided open, unlocked and in grayscale for CUSTOMERS to customize. All information in the documents is verified and matches the specifications of the products and services offered to CUSTOMERS, thus saving CUSTOMERS the steps of verifying or creating this information.

c. Installation, And Service Ordering Overview

Momentum Workflow:




## Project Management

The Momentum Telecom Project Management team is staffed with PMP certified project managers who utilize PMBOK standards for project management. The project managers have experience in the Cable & Telecom industry specializing in converting modems, emta/ata's and hosted VoIP devices to the Momentum provisioning platforms. As a combined team they have converted in excess of 500,000 voice lines including conversions from packet to SIP, Greenfield Launches and transition from provisioning platform to another. Their experience supporting a wide variety of Customers enable them to minimize customer impact by leveraging hard-won best-practices during voice conversions and stand-ups.

**Project Phase Roll Out - A project manager will be assigned to manage delivery of contracted services from beginning to end. The project will follow the following staged approach through the phases:**

**Phase I**

**Planning**:

**Kickoff Call: Identify resources and business drivers for target dates, review service activation and migration process and establish weekly status call dates/times.**

**Documentation: Provide sample billing files and voice service templates.**

**Discovery: Completion of tax documentation, Identify contacts for service escalations, and confirmation of NPA/NXX availability and equipment supportability**

**Phase I**

- **Planning:**
  - **Kickoff Call: Identify resources and business drivers for target dates, review service activation and migration process and establish weekly status call dates/times.**
  - **Documentation: Provide sample billing files and voice service templates.**
- **Discovery:**
  - **Completion of tax documentation**
  - **Identify contacts for service escalations, and confirmation of NPA/NXX availability and equipment supportability**
- **Deployment:**
  - **Build Service Provider in RPX**
  - **Setup of CDR delivery**
  - **Create Service Provider accounts in ticketing system**
  - **Brand user and subscriber guides**
  - **Training for Enterprise and Residential Services**
  - **Customer testing of voice services**
  - **Soft Launch to friends and family**
  - **Full launch to customer base**

**Phase II**

- **Identify LNP groupings**
- **Provide TNs with CSR data**
- **Schedule target porting dates**
- **Initiate LNP process (30 days prior to target port date)**
- **Complete bulk data templates**
- **Bulk upload data to RPX**
- **Complete ports based on groupings**

**Phase III (Same process as phase II)**

**Customer Implementation:**

### 1.1 Automation

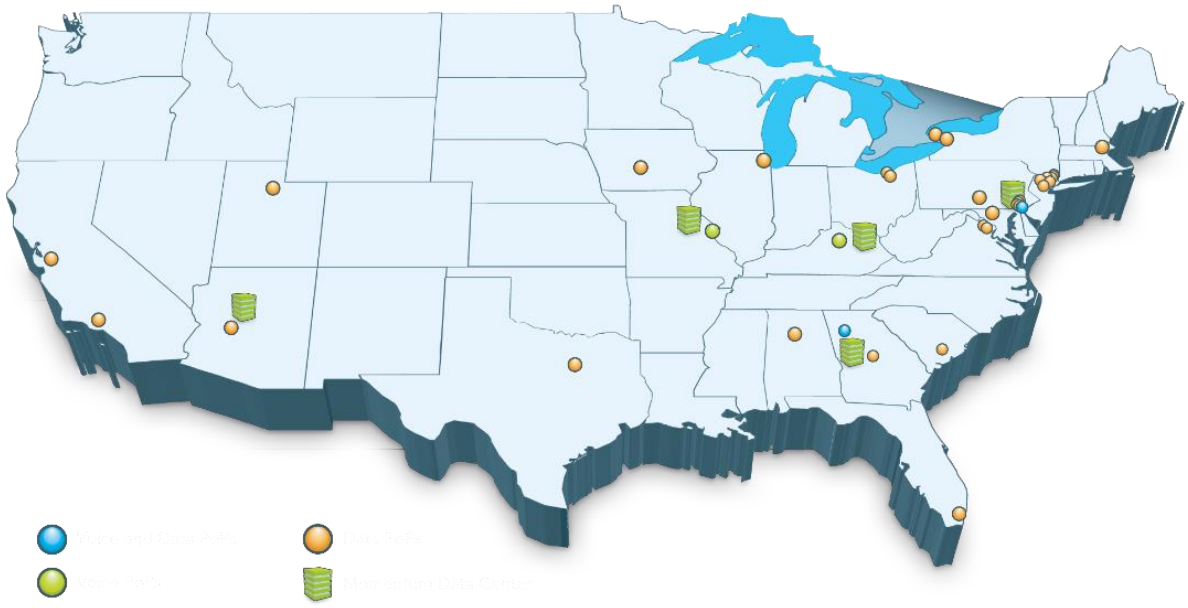
1.1.1 Please provide a description of APIs to interface to CUSTOMERS's BSS/OSS, specifically CSG and Salesforce, directly for customer life-cycle management. Describe a typical integration and timeline.

**M: RPX**

**Momentum's Realtime Provisioning Explorer (RPX) API is built to allow you to create a voice integration to provision and manage all of your Residential and Commercial voice subscribers. This integration will allow you to manage subscribers, end user accounts, provisioning devices, services, features and functions. Our SOAP API consists of a comprehensive list of calls that give you the ability to fully integrate all of your Voice Customer needs. Momentum offers two options for Voice Integrations**

5) Network Topology

Momentum Network Overview:



6) Service Delivery and network infrastructure

**Momentum uses a hosted platform to create a virtualized (NFV) system of service delivery in which each end user (seat) can be customized to fit the specific needs of that customer based on available resources from the Momentum hosted feature set. Telecom uses multiple sites and redundancies throughout the network. Our core network architecture for voice switching is a BroadSoft Feature Server to provide customer-side features and switching, a MetaSwitch for PSTN switching and an Oracle/Acme Packet 6300Session Border Controller for authentication and security.**

**This infrastructure is duplicated in Lexington, Kentucky; Atlanta, Georgia, Phoenix, Arizona, Philadelphia, PA and St. Louis Missouri. Each site is both privately and publicly connected to each other site with fail over points on-site. Public-switched data is encrypted via SS7 128+bit PPTP. With five geo-redundant points of fail over interconnecting with each site a total network failure would only occur should two of the three sites have all three devices fail and all 6 redundant pathways fail. Calculable odds of this are less than .0001%.**

**MOMENTUM TELECOM has both the MetaSx and BroadSoft Feature server network elements. Signaling System 7 (SS7) and trunk interface protocols of ISDN PRI are inherent within the system. LIDB functionality is supported via the SS7 protocol application in the MetaSx and its signaling partners. Physical trunk interfaces are managed via DS1, DS3 and SIP Ethernet interfaces.**

**MOMENTUM TELECOM provides traditional telecom services like operator-assistance, OA, and collect calls are a plug-in to the feature services. Simplified**

**Message Detail Indicator is available via the BroadSoft feature platform. Least Cost Routing is also implemented in the MOMENTUM TELECOM platform and provides alternative routing selections based upon highest quality routes.**

**Momentum leverages BroadSoft [BroadSoft is now part of Cisco] as our Class 5 feature server, MetaSwitch for PSTN switching and an Oracle/Acme Packet 6300Session Border Controller for authentication and security. Each BroadSoft cluster is architected in a geo-redundant dual AS/NS format. Physically located in 5 data centers in the US: Lexington, KY – Momentum Owned, Atlanta, GA - TelX, Phoenix, AZ - Windstream, Philadelphia, PA – 401 N. Broad, St. Louis, MO – Level 3. Each location contains two clusters and internal redundancy. Momentum's network is geographically redundant; geographically separated data facilities and platform design have been engineered to protect against server failure, regional networking failures. Real-time replication of data between paired BroadSoft sites. Architected designed capacity for calls and subscribers to be processed from a single cluster site during failover. CPE & devices configured to failover between sites via DNS SRV records. Momentum Telecom designs; architects and operates 10 clusters of paired BroadSoft switches located in five data centers across the country.**

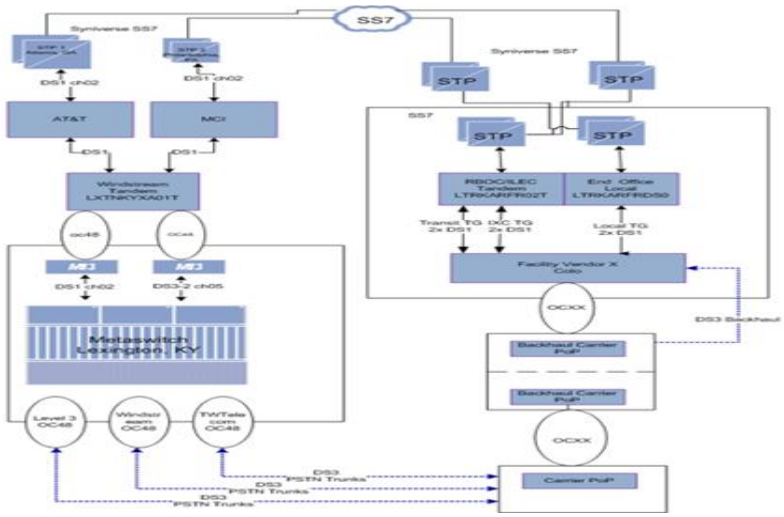
**MOMENTUM uses both IP-based and traditional circuit-based TDM circuits to establish interconnection with the incumbent RBOC/IOC/ILEC/RLEC Phone Company. Capabilities include: DS1, DS3 leased from established back haul facility-based carriers (i.e. Bandwidth, Level3, TWTC, etc.). Redundancy is achieved through multiple layers of fiber technology and fiber ring architecture. This diverse facilities-based infrastructure allows for more capability when entering new Rate Centers operated by ILECs not currently serviced by IP Service Providers.**

**Momentum moves the majority of its traffic via our IP Based Service Delivery partners and has interconnection with several ILEC/RBOC institutions nationwide. These include, but are not limited to: AT&T; Verizon; Frontier Communications; Windstream and CenturyLink.**

**Momentum moves approximately 70 million minutes of origination traffic and 75-80 million minutes of termination traffic each month.**

**MOMENTUM has several unique and custom interconnections with independent telephone companies, including many cooperative telephone companies (i.e. Innovative (USVI), South Central Rural, Foothills Rural, Highland Telephone, Brandenburg Tel etc.). ICAs typically vary in time from 90-540 days or longer.**

**Network Interconnection:**




**In addition to Momentum's own network, Momentum has numerous integrations with 3rd party providers to ensure rate center market coverage. Specific to Local Number Portability, Momentum has an API to Neustar SOA with initiatives to complete API to iConectiv as the industry change over in CY2018. Momentum's API connectivity allows the flow through of orders entered in the RPX OSS/BSS system [back-office provisioning system] to initiate API order flows through to 3rd party vendor, such as Neustar; Level 3 aka CenturyLink; Bandwidth for both on-net and offnet LNP orders.**
**Momentum's CLEC Provisioning team consists of a director with over 30 years' experience supported by 10 provisioning specialists with a combined 130 years' experience in telecom.**

Redundancy architecture.

**Momentum Telecom uses multiple sites and redundancies throughout the network. Our core network architecture for voice switching is a BroadSoft Feature Server to provide customer-side features and switching, a MetaSwitch for PSTN switching and an Oracle/Acme Packet Session Border Controller for authentication and security.**

**This infrastructure is duplicated in Lexington, Kentucky; Atlanta, Georgia, Phoenix, Arizona, Philadelphia, PA and St. Louis Missouri. Each site is both privately and publicly connected to each other site with fail over points on-site. Public-switched data is encrypted via SS7 128+bit PPTP. With five geo-redundant points of fail over interconnecting with each site a total network failure would only occur should two of the three sites have all three devices fail and all 6 redundant pathways fail. Calculable odds of this are less than .0001%.**
**Momentum has both the MetaSx and BroadSoft Feature server network elements. Signaling System 7 (SS7) and trunk interface protocols of ISDN PRI are inherent within the system. LIDB functionality is supported via the SS7 protocol application in the MetaSx and its signaling partners.**

## Softswitch Redundancy

Momentum owns and operates an industry standard and state of the art hosted BroadSoft soft switch environment. Each functional component is deployed in a geographically redundant primary and secondary cluster node or server computing farm. Many soft switch environments are deployed across five regional data centers and are designed to support millions of user subscribers. Feature redundancy is built into the platform and designed to withstand server, network, regional Internet, and a complete data center failure.

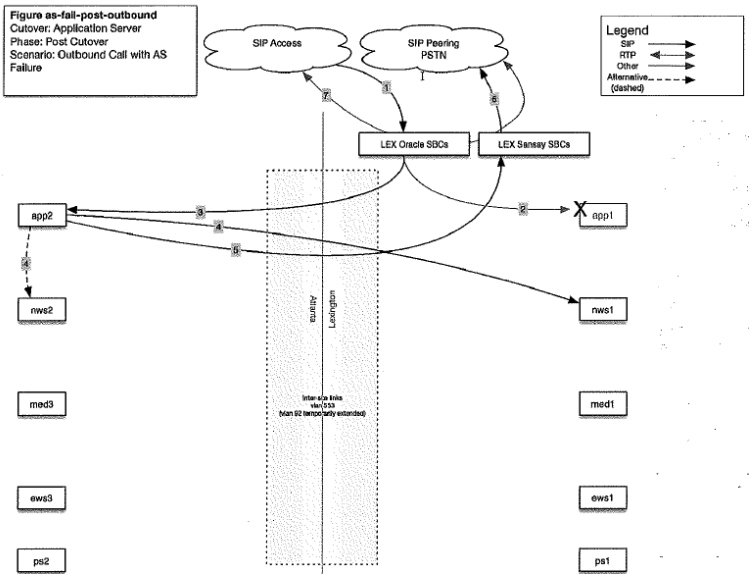
## Call Processing Redundancy

Customer implementations incorporate physical phones, softphones, and mobile applications that utilize DNS SRV records to control access to Momentum's call processing systems. By providing multiple geo-redundant data center targets and deploying devices capable of SIP Survivability/WAN Link Redundancy, customer equipment can process calls to multiple call processing data centers. This allows for seamless failover due to customer circuit outage, Internet routing issues, or Momentum data center degradation.

## Peering Redundancy

At the edge of Momentum's call processing networks, high-available and geo-redundant Session Border Controller platforms are deployed. Each Session Border Controller platform cluster is capable of supporting hundreds of thousands of endpoints and maintains active stateful call connections between primary and standby secondary nodes. Session Border Controllers manage access and security to the Momentum core soft switch networks Momentum originates and terminates PSTN and Off-net VoIP calls using multiple tier 1 domestic and international carriers through SIP Trunks maintained in each call processing data center. Carrier connections in all data centers are built and maintained with our high-available peering Session Border Controllers. Each data center maintains geo-redundant communication to and from our peering providers and maintains nationwide diversity from between 2 and 11 per provider connections per data center. PSTN and Off-net VoIP provider calls are designed to ingress and egress from multiple geographically redundant Momentum data centers.

## Diagram - redundancy




**Network Architecture Scalability:**

1. **Access Session Border Controllers – Momentum owns/operates multiple High Availability Oracle Acme packet model 6300 SBCs in each core data center. Each High Availability pair of SBCs is capable of up to 500,000 endpoints.**
2. **BroadSoft Application Servers – Momentum currently owns/operates 10 BroadSoft Application Server clusters. Our residential clusters are scaled to 100k – 110k subscribers per cluster and 65k-70k Enterprise subscribers per cluster. Pairs of Application Servers are added to geo-redundant data centers to add subscriber capacity.**
3. **Network, Media, Web Servers – Are shared resource servers and are deployed in farms. All servers in all data centers provider services to each Application Server Cluster.**
4. **Peering Session Border Controllers – Momentum owns/operates Sansay VSXi High Availability pairs in each data center. Each HA pair is capable of up to 1500 Calls Per Second and up to 50k total sessions. Additional HA clusters can be added to increase capacity if/when needed.**

## Security

**Momentum engineering maintains multiple data centers utilizing discrete internet connectivity in order to increase our service availability surface. We also maintain substantial capacity on our ingress/egress links so as to require a massive DDOS attack to flood the link. We maintain the ability to blackhole [BH] DDOS traffic at our edge for rapid response and the tools to identify malicious flows and work with our upstream service partners to blackhole them within their networks should upstream mitigation be necessary. Please refer to Diagram 1.3.2 for depiction of BH mitigation flows. Multiple detection methods for scanning and other abusive behaviors that are also routed through the automated blocking mechanisms.**

**Momentum employs a multi-layered hierarchy of fraud prevention measures from the Edge; Core; Systems/Application; Fraud Appliance and CDR mediation.**

**Edge Routing Security layer:**
**managed via routing firewall and Access Control List management is maintained by Momentum Core Engineering routinely to restrict access to core voice/data elements. IP flood monitoring and detection systems monitor real-time traffic which invoke a RTBH (remote trigger black hole)**

**Systems Security layer:**
**compromised of OSSEC HIDS [Host-Based intrusion detection system] comprehensive host based intrusion detection**

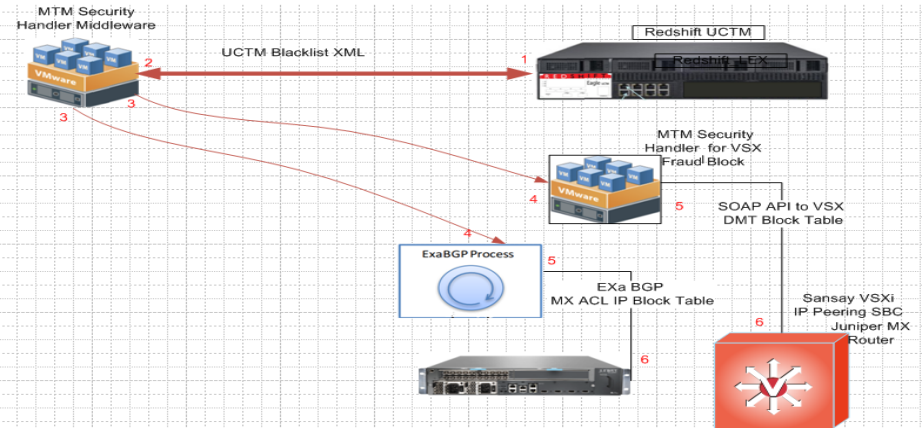
**Voice Application Server Security layer**
**This layer is multi-tiered with:**

- **BroadSoft Best practice security policies; Call Processing Policies to limit the number of calls that a single user account can generate;**
- **Device Authentication validate that requests are coming from correct Polycom user-agents + present the correct serial/MAC address**
- **BroadSoft Network Server fraud detection scripting to detect call category/call type and user/group call thresholds to match breach criteria**

**Appliance Layer:**
**Redshift Networks UCTM [Unified Communications Threat Management] is a carrier-class Application and Network Behavioral Learning Engine built for protection for VoIP & UC services. Enhances Toll Fraud attack prevention & Call-state monitoring; maintains a Blacklist update services for VOIP, Video, UC Application threats integrated with Momentum's proprietary Security Handler middleware to detect and automate threat prevention.**

**CDR mediation Layer:**
**Momentum uses proprietary billing mediation engines to prioritize international; offshore and domestic high fraud zones to more quickly analyze completed call records that match pre-defined thresholds and alert.**

**Diagram 6.3.2**




**Momentum designs our data center platforms and networks to limit DDoS exposure both pro-active and reactive.**

- **Multiple high capacity circuits with diverse tier 1 carriers in geo-redundant service providing data centers.**
- **Voice and data network subnet segregation**
- **Redshift Voice Fraud & DDoS platform. Integrates with network edge routers to provide proactive automated IP blackhole routing and TN destination blocking**
- **TransNexus LCR provides traffic pumping, theft of service, domestic fraud, and international fraud blocking.**
- **Oracle Palladion Fraud alerting platform.**
- **Logisense EngageIP fraud alerting platform.**
- **Custom Momentum CDR fraud analysis and alerting platform.**
- **BroadSoft automated fraud detection platform.**

7) All marketing slicks for voice services and features (most current product sheets)

# Exhibit B to Verified Petition

*(Amended as of April 1, 2021)*

**Jackson County REMC RDOF-Awarded Census Blocks (Proposed ETC Service Area)**

| |
|---|
| 180139749002000 |
| 180139749002001 |
| 180139749002003 |
| 180139749002008 |
| 180139749002017 |
| 180139749002018 |
| 180139749002021 |
| 180139749002023 |
| 180139749002024 |
| 180139749002025 |
| 180139749002026 |
| 180139749002027 |
| 180139749002029 |
| 180139749002032 |
| 180139749002034 |
| 180139749002035 |
| 180139749002036 |
| 180139749002037 |
| 180139749002038 |
| 180139749002043 |
| 180139749002044 |
| 180139749002046 |
| 180139749002047 |
| 180139749002048 |
| 180139749002050 |
| 180139749002052 |
| 180139749002053 |
| 180139749002054 |
| 180139749002056 |
| 180139749002057 |
| 180139749002058 |
| 180139749002059 |
| 180719675001002 |
| 180719675001003 |
| 180719675001005 |
| 180719675001006 |
| 180719675001008 |
| 180719675001009 |
| 180719675001013 |
| 180719675002001 |
| 180719675002021 |
| 180719675002074 |
| 180719675002122 |
| 180719675002136 |
| 180719675002137 |
| 180719675002139 |

| |
|---|
| 180719675003000 |
| 180719675003001 |
| 180719675003027 |
| 180719675003093 |
| 180719675003115 |
| 180719675003145 |
| 180719675003146 |
| 180719675004047 |
| 180719675004049 |
| 180719675004051 |
| 180719675004054 |
| 180719675004059 |
| 180719675004060 |
| 180719675004062 |
| 180719675004064 |
| 180719675004065 |
| 180719675004067 |
| 180719675004068 |
| 180719675004069 |
| 180719675004070 |
| 180719675004071 |
| 180719675004072 |
| 180719675004073 |
| 180719675004075 |
| 180719675004076 |
| 180719675004077 |
| 180719675004078 |
| 180719675004081 |
| 180719675004083 |
| 180719675004084 |
| 180719675004089 |
| 180719675004093 |
| 180719675004094 |
| 180719675004095 |
| 180719675004097 |
| 180719675004098 |
| 180719675004099 |
| 180719675004100 |
| 180719675004102 |
| 180719675004103 |
| 180719675004104 |
| 180719675004105 |
| 180719675004106 |
| 180719675004107 |
| 180719675004108 |
| 180719675004111 |
| 180719675004112 |

| |
|---|
| 180719675004113 |
| 180719675004114 |
| 180719675004115 |
| 180719675004117 |
| 180719675004119 |
| 180719675004120 |
| 180719675004121 |
| 180719675004122 |
| 180719675004123 |
| 180719675004124 |
| 180719675004126 |
| 180719680001009 |
| 180719680001011 |
| 180719680001012 |
| 180719680001013 |
| 180719680001015 |
| 180719680001017 |
| 180719680001018 |
| 180719680001019 |
| 180719680001020 |
| 180719680001021 |
| 180719680001022 |
| 180719680001023 |
| 180719680001024 |
| 180719680001025 |
| 180719680001026 |
| 180719680001027 |
| 180719680001028 |
| 180719680001031 |
| 180719680001032 |
| 180719680001033 |
| 180719680001034 |
| 180719680001035 |
| 180719680001036 |
| 180719680001037 |
| 180719680001038 |
| 180719680001039 |
| 180719680001041 |
| 180719680001042 |
| 180719680001043 |
| 180719680001045 |
| 180719680001046 |
| 180719680001048 |
| 180719680001049 |
| 180719680001051 |
| 180719680001052 |
| 180719680001053 |

| |
|---|
| 180719680001054 |
| 180719680001055 |
| 180719680001056 |
| 180719680001057 |
| 180719680001058 |
| 180719680001061 |
| 180719680001062 |
| 180719680001063 |
| 180719680001064 |
| 180719680001065 |
| 180719680001066 |
| 180719680001076 |
| 180719680001077 |
| 180719680001079 |
| 180719680001080 |
| 180719680001082 |
| 180719680001083 |
| 180719680001084 |
| 180719680001085 |
| 180719680001088 |
| 180719680001089 |
| 180719680001095 |
| 180719680001096 |
| 180719680001097 |
| 180719680001099 |
| 180719680001103 |
| 180719680001105 |
| 180719680001106 |
| 180719680001108 |
| 180719680001113 |
| 180719680001114 |
| 180719680001115 |
| 180719680001117 |
| 180719680001118 |
| 180719680001122 |
| 180719680001123 |
| 180719680001127 |
| 180719680001132 |
| 180719680002000 |
| 180719680002001 |
| 180719680002002 |
| 180719680002003 |
| 180719680002004 |
| 180719680002005 |
| 180719680002006 |
| 180719680002018 |
| 180719680002020 |

| |
|---|
| 180719680002021 |
| 180719680002022 |
| 180719680002023 |
| 180719680002025 |
| 180719680002026 |
| 180719680002028 |
| 180719680002031 |
| 180719680002033 |
| 180719680002035 |
| 180719680002036 |
| 180719680002037 |
| 180719680002038 |
| 180719680002039 |
| 180719680002040 |
| 180719680002042 |
| 180719680002043 |
| 180719680002044 |
| 180719680002047 |
| 180719680002050 |
| 180719680002051 |
| 180719680002052 |
| 180719680002053 |
| 180719680002054 |
| 180719680002056 |
| 180719680002064 |
| 180719680002065 |
| 180719680002068 |
| 180719680002071 |
| 180719680002086 |
| 180719680002089 |
| 180719680002094 |
| 180719680002097 |
| 180719680002099 |
| 180719680002100 |
| 180719680002101 |
| 180719680002102 |
| 180719680002104 |
| 180719680002109 |
| 180719680002110 |
| 180719680002112 |
| 180719680002114 |
| 180719680002117 |
| 180719680002120 |
| 180719680002121 |
| 180719680002122 |
| 180719680002138 |
| 180719680002140 |

| |
|---|
| 180719680002144 |
| 180719680002149 |
| 180719680002150 |
| 180719680002155 |
| 180719680003001 |
| 180719680003002 |
| 180719680003004 |
| 180719680003006 |
| 180719680003007 |
| 180719680003010 |
| 180719680003011 |
| 180719680003012 |
| 180719680003013 |
| 180719680003015 |
| 180719680003016 |
| 180719680003017 |
| 180719680003018 |
| 180719680003020 |
| 180719680003021 |
| 180719680003022 |
| 180719680003023 |
| 180719680003024 |
| 180719680003026 |
| 180719680003027 |
| 180719680003028 |
| 180719680003030 |
| 180719680003031 |
| 180719680003032 |
| 180719680003034 |
| 180719680003053 |
| 180719680003056 |
| 180719680003057 |
| 180719680003059 |
| 180719680003062 |
| 180719680003063 |
| 180719680003064 |
| 180719680003068 |
| 180719680003082 |
| 180719680003083 |
| 180719680003085 |
| 180719680003086 |
| 180719680003088 |
| 180719680003089 |
| 180719680003090 |
| 180719680003091 |
| 180719680003094 |
| 180719680003095 |

| |
|---|
| 180719680003096 |
| 180719680003098 |
| 180719680003100 |
| 180719680003101 |
| 180719680003102 |
| 180719680003103 |
| 180719680004000 |
| 180719680004004 |
| 180719680004006 |
| 180719680004008 |
| 180719680004009 |
| 180719680004011 |
| 180719680004013 |
| 180719680004016 |
| 180719680004018 |
| 180719680004022 |
| 180719680004024 |
| 180719680004025 |
| 180719680004026 |
| 180719680004027 |
| 180719680004029 |
| 180719680004030 |
| 180719680004033 |
| 180719680004034 |
| 180719680004035 |
| 180719680004036 |
| 180719680004037 |
| 180719680004038 |
| 180719680004040 |
| 180719680004041 |
| 180719680004043 |
| 180719680004044 |
| 180719680004046 |
| 180719680004048 |
| 180719680004049 |
| 180719680004051 |
| 180719680004052 |
| 180719680004053 |
| 180719680004055 |
| 180719680004057 |
| 180719680004059 |
| 180719680004061 |
| 180719680004062 |
| 180719680004064 |
| 180719680004065 |
| 180719680004066 |
| 180719680004067 |

| |
|---|
| 180719680004068 |
| 180719680004070 |
| 180719680004071 |
| 180719680004072 |
| 180719680004073 |
| 180719680004074 |
| 180719680004075 |
| 180719680004077 |
| 180719680004079 |
| 180719680004080 |
| 180719680004081 |
| 180719680004082 |
| 180719680004083 |
| 180719680004084 |
| 180719680004085 |
| 180719680004091 |
| 180719680004094 |
| 180719680004095 |
| 180719680004097 |
| 180719680004113 |
| 180719680004115 |
| 180719680004117 |
| 180719680004118 |
| 180719680004127 |
| 180719680004129 |
| 180719680004131 |
| 180719680004134 |
| 180719680004135 |
| 180719680004136 |
| 180719680004146 |
| 180719680004147 |
| 180719680004149 |
| 180719680004151 |
| 180719680004154 |
| 180719680004156 |
| 180719680004157 |
| 180719680004159 |
| 180719680004160 |
| 180719680004166 |
| 180719680004168 |
| 180719680004182 |
| 180719680004186 |
| 180719681001001 |
| 180719681001006 |
| 180719681001007 |
| 180719681001009 |
| 180719681001010 |

| |
|---|
| 180719681001017 |
| 180719681001019 |
| 180719681001020 |
| 180719681001024 |
| 180719681001025 |
| 180719681001027 |
| 180719681001028 |
| 180719681001029 |
| 180719681001030 |
| 180719681001032 |
| 180719681001036 |
| 180719681001049 |
| 180719681001050 |
| 180719681001059 |
| 180719681001158 |
| 180719682001001 |
| 180719682001002 |
| 180719682001003 |
| 180719682001004 |
| 180719682001005 |
| 180719682001008 |
| 180719682001009 |
| 180719682001010 |
| 180719682001011 |
| 180719682001012 |
| 180719682001013 |
| 180719682001015 |
| 180719682001016 |
| 180719682001017 |
| 180719682001018 |
| 180719682001020 |
| 180719682001021 |
| 180719682001022 |
| 180719682001023 |
| 180719682001024 |
| 180719682001025 |
| 180719682001026 |
| 180719682001027 |
| 180719682001030 |
| 180719682001031 |
| 180719682001033 |
| 180719682001034 |
| 180719682001035 |
| 180719682001036 |
| 180719682001037 |
| 180719682001039 |
| 180719682001040 |

| |
|---|
| 180719682001041 |
| 180719682001042 |
| 180719682001043 |
| 180719682001044 |
| 180719682001045 |
| 180719682001046 |
| 180719682001047 |
| 180719682001048 |
| 180719682001049 |
| 180719682001050 |
| 180719682001051 |
| 180719682001052 |
| 180719682001053 |
| 180719682001054 |
| 180719682001055 |
| 180719682001057 |
| 180719682001058 |
| 180719682001059 |
| 180719682001060 |
| 180719682001061 |
| 180719682001062 |
| 180719682001063 |
| 180719682001064 |
| 180719682001065 |
| 180719682001066 |
| 180719682001068 |
| 180719682001069 |
| 180719682001070 |
| 180719682001074 |
| 180719682001078 |
| 180719682001079 |
| 180719682001083 |
| 180719682001089 |
| 180719682001090 |
| 180719682001091 |
| 180719682001092 |
| 180719682001094 |
| 180719682001095 |
| 180719682001097 |
| 180719682001098 |
| 180719682001099 |
| 180719682001101 |
| 180719682001103 |
| 180719682001104 |
| 180719682001106 |
| 180719682001107 |
| 180719682001108 |

| |
|---|
| 180719682001109 |
| 180719682001113 |
| 180719682001114 |
| 180719682001115 |
| 180719682001118 |
| 180719682001119 |
| 180719682002002 |
| 180719682002030 |
| 180719682002033 |
| 180719682002039 |
| 180719682002040 |
| 180719682002045 |
| 180719682002046 |
| 180719682002047 |
| 180719682002049 |
| 180719682002059 |
| 180719682002063 |
| 180719682002065 |
| 180719682002075 |
| 180719682002080 |
| 180719682002087 |
| 180719682002088 |
| 180719682002089 |
| 180719682002090 |
| 180719682002091 |
| 180719682002093 |
| 180719682002094 |
| 180719682002095 |
| 180719682002096 |
| 180719682002097 |
| 180719682002099 |
| 180719682002100 |
| 180719682002116 |
| 180719682002117 |
| 180719682002119 |
| 180719682002121 |
| 180719682002122 |
| 180719682002123 |
| 180719682002127 |
| 180719682002128 |
| 180719682002129 |
| 180719682002132 |
| 180719682002134 |
| 180719682002135 |
| 180719682002137 |
| 180719682002138 |
| 180719682002139 |

| |
|---|
| 180719682002145 |
| 180719682002146 |
| 180719682002159 |
| 180719682002167 |
| 180719682003005 |
| 180719682003008 |
| 180719682003010 |
| 180719682003011 |
| 180719682003040 |
| 180719682003041 |
| 180719682003071 |
| 180719682003086 |
| 180719682003096 |
| 180719682004000 |
| 180719682004002 |
| 180719682004003 |
| 180719682004005 |
| 180719682004006 |
| 180719682004007 |
| 180719682004009 |
| 180719682004010 |
| 180719682004012 |
| 180719682004013 |
| 180719682004014 |
| 180719682004015 |
| 180719682004024 |
| 180719682004026 |
| 180719682004029 |
| 180719682004044 |
| 180719682004045 |
| 180719682004046 |
| 180719682004047 |
| 180719682004053 |
| 180719682004054 |
| 180719682004057 |
| 180719682004060 |
| 180719682004062 |
| 180719682004071 |
| 180719682004077 |
| 180719682004080 |
| 180719682004081 |
| 180719682004082 |
| 180719682004083 |
| 180719682004087 |
| 180719682004097 |
| 180719682004100 |
| 180719682004101 |

| |
|---|
| 180719682004103 |
| 180719682004109 |
| 180719682004110 |
| 180719682004111 |
| 180719682004115 |
| 180719682004116 |
| 180719682004118 |
| 180719682004125 |
| 180719683001001 |
| 180719683001004 |
| 180719683001014 |
| 180719683001016 |
| 180719683001017 |
| 180719683001022 |
| 180719683001025 |
| 180719683001027 |
| 180719683001028 |
| 180719683001030 |
| 180719683001033 |
| 180719683001034 |
| 180719683001038 |
| 180719683001039 |
| 180719683001042 |
| 180719683001043 |
| 180719683001046 |
| 180719683001047 |
| 180719683001049 |
| 180719683001050 |
| 180719683001051 |
| 180719683001052 |
| 180719683001053 |
| 180719683001054 |
| 180719683001058 |
| 180719683001059 |
| 180719683001063 |
| 180719683001064 |
| 180719683002000 |
| 180719683002002 |
| 180719683002003 |
| 180719683002008 |
| 180719683002010 |
| 180719683002011 |
| 180719683002020 |
| 180719683002022 |
| 180719683002023 |
| 180719683002025 |
| 180719683002030 |

| |
|---|
| 180719683002039 |
| 180719683002052 |
| 180719683002054 |
| 180719683002055 |
| 180719683002056 |
| 180719683002059 |
| 180719683002060 |
| 180719683002062 |
| 180719683002063 |
| 180719683002064 |
| 180719683002065 |
| 180719683002066 |
| 180719683002067 |
| 180719683002068 |
| 180719683002069 |
| 180719683002070 |
| 180719683002071 |
| 180799603012002 |
| 180799603012003 |
| 180799603012004 |
| 180799603012019 |
| 180799603012024 |
| 180799603012026 |
| 180799603012032 |
| 180799603012043 |
| 180799603012049 |
| 180799603012051 |
| 180799603012054 |
| 180799603012063 |
| 180799603012064 |
| 180799603012067 |
| 180799603012068 |
| 180799603012069 |
| 180799603012070 |
| 180799603012072 |
| 180799603012074 |
| 180799603012075 |
| 180799603012077 |
| 180799603012079 |
| 180799603012087 |
| 180799603012088 |
| 180799603012090 |
| 180799603012094 |
| 180799603012097 |
| 180799603012100 |
| 180799603012112 |
| 180799603012118 |

| |
|---|
| 180799603012119 |
| 180799603012122 |
| 180799603012124 |
| 180799603012126 |
| 180799603012127 |
| 180799603012128 |
| 180799603012130 |
| 180799603012131 |
| 180799603012132 |
| 180799603012133 |
| 180799603012139 |
| 180799603012141 |
| 180799603012143 |
| 180799603012145 |
| 180799603012146 |
| 180799603012147 |
| 180799603012149 |
| 180799603012152 |
| 180799603012154 |
| 180799603012156 |
| 180799603012157 |
| 180799603012159 |
| 180799603012160 |
| 180799603012161 |
| 180799603012162 |
| 180799604002001 |
| 180799604002002 |
| 180799604002003 |
| 180799604002006 |
| 180799604002007 |
| 180799604002008 |
| 180799604002010 |
| 180799604002011 |
| 180799604002015 |
| 180799604002017 |
| 180799604002018 |
| 180799604002019 |
| 180799604002020 |
| 180799604002022 |
| 180799604002024 |
| 180799604002025 |
| 180799604002026 |
| 180799604002027 |
| 180799604002028 |
| 180799604002029 |
| 180799604002031 |
| 180799604002036 |

| |
|---|
| 180799604002037 |
| 180799604002038 |
| 180799604002039 |
| 180799604002040 |
| 180799604002041 |
| 180799604002043 |
| 180799604002044 |
| 180799604002045 |
| 180799604002046 |
| 180799604002047 |
| 180799604002048 |
| 180799604002052 |
| 180799604002053 |
| 180799604002054 |
| 180799604002055 |
| 180799604002056 |
| 180799604002058 |
| 180799604002060 |
| 180799604002066 |
| 180799604002067 |
| 180799604002068 |
| 180799604002070 |
| 180799604002071 |
| 180799604002077 |
| 180799604002078 |
| 180799604002079 |
| 180799604002080 |
| 180799604002081 |
| 180799604002085 |
| 180799604004004 |
| 180799604004006 |
| 180799604004007 |
| 180799604004009 |
| 180799604004012 |
| 180799604004013 |
| 180799604004016 |
| 180799604004017 |
| 180799604004018 |
| 180799604004019 |
| 180799604004023 |
| 180799604004025 |
| 180799604004026 |
| 180799604004027 |
| 180799604004028 |
| 180799604004030 |
| 180799604004031 |
| 180799604004032 |

| |
|---|
| 180799604004037 |
| 180799604004039 |
| 180799604004043 |
| 180799604004056 |
| 180799604004057 |
| 180799604004060 |
| 180799604004062 |
| 180799604004063 |
| 180799604004066 |
| 180799604004072 |
| 180799604004078 |
| 180799606004000 |
| 180799606004002 |
| 180799606004013 |
| 180799606004021 |
| 180799606004059 |
| 180799606004060 |
| 180799606004062 |
| 180799606004063 |
| 180799606004072 |
| 180799606004074 |
| 180799606004076 |
| 180799606004082 |
| 180939504001013 |
| 180939504001014 |
| 180939504001027 |
| 180939504001037 |
| 180939504001039 |
| 180939504001041 |
| 180939504001048 |
| 180939504001054 |
| 180939504002015 |
| 180939504002026 |
| 180939504002034 |
| 180939504002040 |
| 180939504002042 |
| 180939504003009 |
| 180939504003014 |
| 180939504003015 |
| 180939504003017 |
| 180939504003034 |
| 180939504003077 |
| 180939504003078 |
| 180939505002001 |
| 180939505002010 |
| 180939505002011 |
| 180939505002016 |

| |
|---|
| 180939505002018 |
| 180939505002021 |
| 180939505002022 |
| 180939505002023 |
| 180939505002024 |
| 180939505002026 |
| 180939505002028 |
| 180939505002029 |
| 180939505002030 |
| 180939505002031 |
| 180939505002032 |
| 180939505002034 |
| 180939505002035 |
| 180939505002036 |
| 180939505002037 |
| 180939505002038 |
| 180939505002039 |
| 180939505002040 |
| 180939505002048 |
| 180939505002050 |
| 180939505002054 |
| 180939505002057 |
| 180939505002058 |
| 180939505002059 |
| 180939505002061 |
| 180939505002064 |
| 180939505002066 |
| 180939505003013 |
| 180939505003017 |
| 180939505003027 |
| 180939505003032 |
| 180939505003057 |
| 180939512001005 |
| 180939512001011 |
| 180939512001013 |
| 180939512001014 |
| 180939512001015 |
| 180939512001023 |
| 180939512001024 |
| 180939512001025 |
| 180939512001026 |
| 180939512001027 |
| 180939512001036 |
| 180939512001037 |
| 180939512001042 |
| 180939512001051 |
| 180939512001056 |

| |
|---|
| 180939512001057 |
| 180939512001059 |
| 180939512001062 |
| 180939512001064 |
| 181439667002021 |
| 181439667002024 |
| 181439667002026 |
| 181439667003001 |
| 181439667003002 |
| 181439667003003 |
| 181439667003004 |
| 181439667003011 |
| 181439667003012 |
| 181439667003016 |
| 181439667003018 |
| 181439667003019 |
| 181439667003020 |
| 181439667003021 |
| 181439667003023 |
| 181439667003024 |
| 181439669001031 |
| 181439669001032 |
| 181439669001052 |
| 181439669001062 |
| 181439669002013 |
| 181439669002024 |
| 181439669002028 |
| 181439669002029 |
| 181439669002030 |
| 181439669002037 |
| 181439669002039 |
| 181439669002041 |
| 181439669002042 |
| 181439669002046 |
| 181439669002047 |
| 181439669002048 |
| 181439669002050 |
| 181439669002052 |
| 181439669002053 |
| 181439669002057 |
| 181439669002061 |
| 181439669002062 |
| 181439669002064 |
| 181439669002066 |
| 181439669002067 |
| 181439669002068 |
| 181439669002070 |

| |
|---|
| 181439669002072 |
| 181439669002076 |
| 181439669002078 |
| 181439669002088 |
| 181759672001000 |
| 181759672001005 |
| 181759672001006 |
| 181759672001010 |
| 181759672001013 |
| 181759672001014 |
| 181759672001017 |
| 181759672001018 |
| 181759672001019 |
| 181759672001020 |
| 181759672001021 |
| 181759672001024 |
| 181759672001029 |
| 181759672001030 |
| 181759672001031 |
| 181759672001033 |
| 181759672001034 |
| 181759672001036 |
| 181759672001037 |
| 181759672001039 |
| 181759672001040 |
| 181759672001041 |
| 181759672001042 |
| 181759672001046 |
| 181759672001047 |
| 181759672001051 |
| 181759672001053 |
| 181759672001054 |
| 181759672001055 |
| 181759672001057 |
| 181759672001058 |
| 181759672001059 |
| 181759672001060 |
| 181759672001066 |
| 181759672001079 |
| 181759672001081 |
| 181759672001086 |
| 181759672001087 |
| 181759672001088 |
| 181759672001089 |
| 181759672001092 |
| 181759672001094 |
| 181759672001096 |

| |
|---|
| 181759672001100 |
| 181759672001101 |
| 181759672001102 |
| 181759672001106 |
| 181759672001110 |
| 181759672001114 |
| 181759672001116 |
| 181759672001117 |
| 181759672001120 |
| 181759672001121 |
| 181759672001126 |
| 181759672001127 |
| 181759672001129 |
| 181759672001130 |
| 181759672001133 |
| 181759672001134 |
| 181759672001135 |
| 181759672001136 |
| 181759672001137 |
| 181759672001138 |
| 181759672001139 |
| 181759672001140 |
| 181759672001141 |
| 181759672001142 |
| 181759672001143 |
| 181759672002000 |
| 181759672002001 |
| 181759672002002 |
| 181759672002004 |
| 181759672002008 |
| 181759672002011 |
| 181759672002012 |
| 181759672002013 |
| 181759672002014 |
| 181759672002015 |
| 181759672002017 |
| 181759672002022 |
| 181759672002025 |
| 181759672002027 |
| 181759672002028 |
| 181759672002038 |
| 181759672002076 |
| 181759672002105 |
| 181759673001001 |
| 181759673001002 |
| 181759673001005 |
| 181759673001012 |

| |
|---|
| 181759673001013 |
| 181759673001016 |
| 181759673001017 |
| 181759673001018 |
| 181759673001022 |
| 181759673001023 |
| 181759673001026 |
| 181759673001028 |
| 181759673001029 |
| 181759673001030 |
| 181759673001031 |
| 181759673001033 |
| 181759673001037 |
| 181759673001042 |
| 181759673001045 |
| 181759673001048 |
| 181759673001050 |
| 181759673001054 |
| 181759673001057 |
| 181759673001058 |
| 181759673004001 |
| 181759673004005 |
| 181759673004007 |
| 181759673004010 |
| 181759674001016 |
| 181759674001025 |
| 181759674001030 |
| 181759674001051 |
| 181759674001069 |
| 181759674001072 |
| 181759674002009 |
| 181759674002018 |
| 181759674002032 |
| 181759674002037 |
| 181759674002039 |
| 181759674002041 |
| 181759674002045 |
| 181759674002052 |
| 181759674002053 |
| 181759674002062 |
| 181759674002064 |
| 181759674002078 |
| 181759674002079 |
| 181759674002080 |
| 181759674002088 |
| 181759674002089 |
| 181759674002090 |

| |
|---|
| 181759674002091 |
| 181759674002093 |
| 181759674002096 |
| 181759674002097 |
| 181759674002099 |
| 181759674002101 |
| 181759674002107 |
| 181759674002113 |
| 181759674002128 |
| 181759674002134 |
| 181759674002140 |
| 181759674002141 |
| 181759674003008 |
| 181759674003014 |
| 181759674003038 |
| 181759674003060 |
| 181759674003074 |
| 181759674003080 |
| 181759674003081 |
| 181759674003083 |
| 181759674003084 |
| 181759674003093 |
| 181759674003095 |
| 181759676001002 |
| 181759676001003 |
| 181759676001004 |
| 181759676001005 |
| 181759676001009 |
| 181759676001010 |
| 181759676001013 |
| 181759676001014 |
| 181759676001015 |
| 181759676001016 |
| 181759676001022 |
| 181759676001023 |
| 181759676001025 |
| 181759676001030 |
| 181759676001032 |
| 181759676001033 |
| 181759676001037 |
| 181759676001049 |
| 181759676001052 |
| 181759676002001 |
| 181759677001006 |
| 181759677001007 |
| 181759677001008 |
| 181759677001014 |

| |
|---|
| 181759677001019 |
| 181759677001032 |
| 181759677003009 |
| 181759677003010 |
| 181759677003015 |
| 181759677003016 |
| 181759677003018 |
| 181759677003019 |
| 181759677003022 |
| 181759677003023 |
| 181759677003030 |
| 181759677003031 |
| 181759677003061 |
| 181759677003063 |
| 181759677003065 |
| 181759677003068 |
| 181759677003069 |
| 181759677003070 |
| 181759677003074 |
| 181759677003076 |
| 181759677003077 |
| 181759677003081 |
| 181759677003082 |
| 181759677003086 |
| 181759677003087 |