2.1.3 Internet Protocol Voice Service [C.2.2.1]

MetTel IPVS
Foundation for Communication

- [redacted]
- Integrated in the MetTel MPLS core network with full redundancy at multiple geographically diverse secured locations
- [redacted]
- Multiple diverse connections to the PSTN

MetTel provides a fully compliant Internet Protocol Voice Service (IPVS) built on a MetTel-owned network of [redacted] Agencies leverage all the functionality of a large enterprise phone system while saving time and money with the network-based IPVS. IPVS provides an effective migration path from premise based systems and traditional PSTN interfaces such as PBXs to a full IPVS or an integrated solution that uses both traditional telephone systems and IPVS. We combine simplified calling plans with advanced IP features to enhance Agency call quality and productivity. Our IPVS provides full functionality and connectivity using the MPLS core network, high-speed connections to major PSTN providers and wireless networks.

[redacted] We coordinate project planning and implementation with the Agency to ensure timelines are met and the IPVS implementation is seamless and integrated into the telecommunications infrastructure without interruption to operations.

[redacted] Our MetTel EIS Portal is based on our commercial portal, Bruin, which was recently awarded the **2016 Internet Telephone Product of the Year**. TMCnet recognized and awarded MetTel for having developed exceptional VoIP and IP Communications products and services. Using our Portal, Agencies have total access to the self-provisioning option, inventory, implementation planning and schedules, performance reporting, trouble ticket management, and billing.

2.1.3.1 Compliance with Evaluation Criteria [L.29.2.1, M.2.1]

The MetTel IPVS solution meets the mandatory requirements in SOW paragraph C.2.1.1. This section presents a technical description of our offering, demonstrating our capabilities in Standards, Connectivity, Technical Capabilities, Features, Performance Metrics, and Security. **Exhibit 2.1.3-1** highlights some key strengths and benefits of our IPVS solution in relation to RFP Section M.2.1 evaluation criteria.

Exhibit 2.1.3-1. Features and Benefits of MetTel's Approach to IPVS

Evaluation Criteria	Features and Benefits of MetTel's Approach
Understanding (M.2.1(1))	[redacted] • MetTel's secure and dedicated SIP trunks to major PSTN and wireless providers • MetTel EIS Portal for Agency control and management of telecommunications expenses • MetTel IPVS is simple to configure and maintain. No hidden costs with the deployment and management of hosted users • Fully managed migration from CSVS to IPVS to move Agencies into the converged networking environment • Professional installation and management with Managed LAN Service
Quality of Services (M.2.1(2))	• Careful monitoring and management of technology scaling issues to ensure IPVS [redacted] • Built-in resiliency with dynamic rerouting of calls in the network • 24x7 live customer support and service monitoring • Timely access to secure MetTel EIS Portal for self-provisioning option, inventory management, performance management, quality management with real-time and historic data displays, and drill down to circuit, site, or phone number.
Service Coverage (M.2.1(3))	• IPVS that rides on nationally distributed MetTel network, with integrated strategically dispersed communications switches, switching centers, and dedicated network links to eliminate latency issues and service interruptions [redacted] • Full-support E911/911 service with the location of the originating device routed to the appropriate Public Safety Answering Point (PSAP)
Security (M.2.1(4))	• Compatible with Agency firewalls and security layers with minimal port and service exposure for IPVS • Regularly updated and audited security practices and policies [redacted]

2.1.3.1.1 Service and Functional Description [L.29.2.1, C.2.2.1.1, C.2.2.1.1.1]

MetTel IPVS
Global Reach

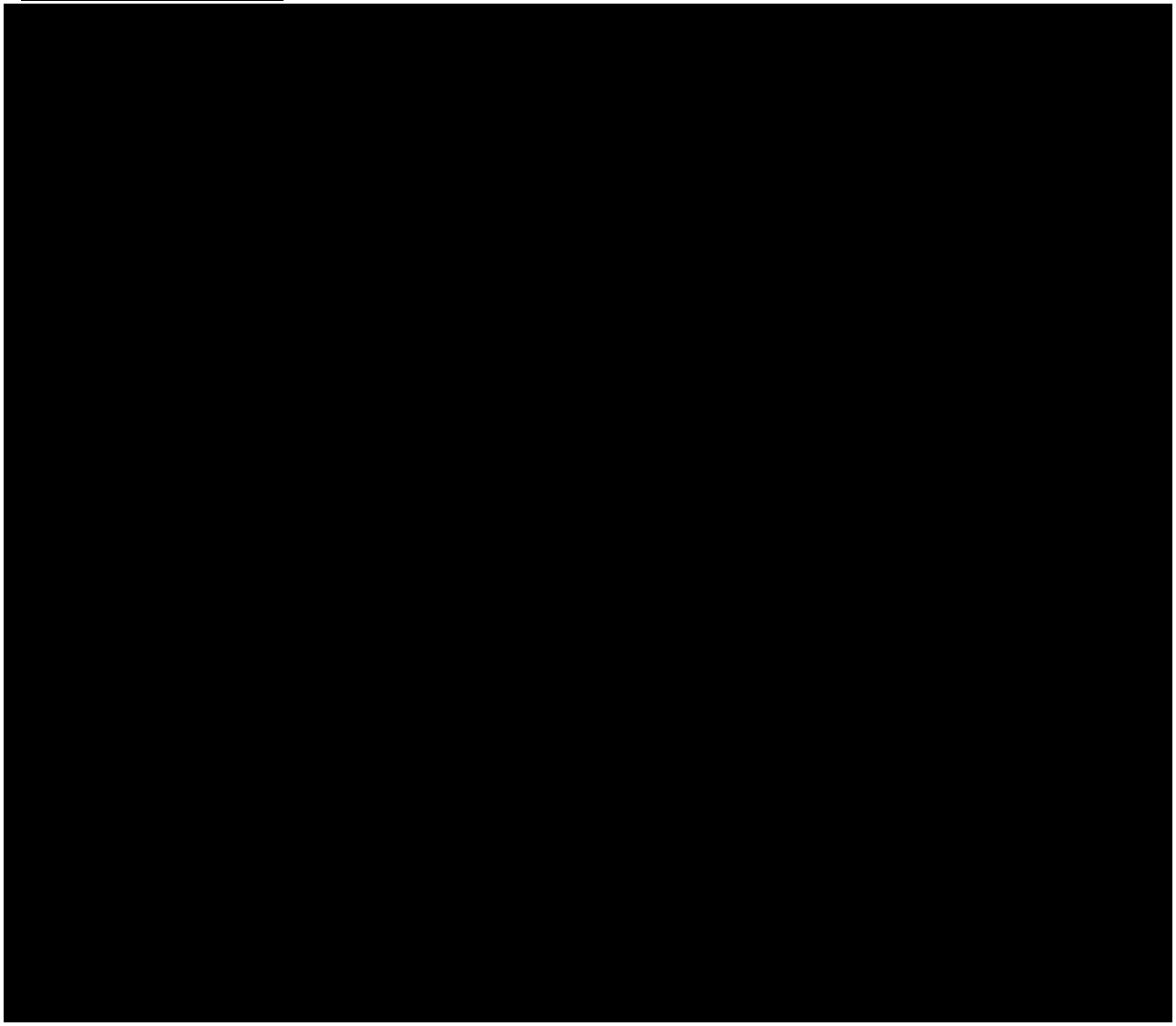
- Cost Savings
- Simplified Agency Moves, Adds, and Changes with Agency option to self-provision through the MetTel EIS Portal
- Customizable extension dialing plans
- Many options for devices, VoIP, and Analog
- Increased flexibility and scalability
- Easy web-based management through MetTel EIS Portal
- Improved Business Continuity and Disaster Recovery (DR)
- Many included features

MetTel's IPVS provides support for voice calls initiated from on-net or off-net locations to be connected to all on-net and off-net locations by direct dialing. MetTel IPVS has global termination through its strong partnership with the major national and international PSTN access providers. IPVS provides a network-based solution implemented in the MetTel MPLS core network. IPVS also provides premises-based telephone service over the MetTel IP network. Support for IPVS includes Managed LAN Service for implementation and management of the Agency premise environment to connect IP devices and analog devices to IPVS. Session Initiation Protocol (SIP) trunk service is provided to interoperate with any Private Branch Exchange (PBX) system that supports SIP-based IP trunk interfaces.

[redacted]

MetTelt provides user services, administrative features, and media-based functionality from a standards-based service delivery platform that operates on a modular architecture that uses common protocols (such as SIP), open interfaces, and scalable, industry-standard hardware. [redacted]

[redacted]



[redacted]

MetTel IPVS satisfies all the requirements of EIS RFP Section C.2.2.1. IPVS is embedded in our MPLS core network and extended through direct connections to all the major PSTN access providers. We manage the converged MPLS IP core network to provide service in compliance with all KPIs. **Exhibit 2.1.3-3** shows MetTel IPVS phones and analog telephone adapters connecting over the QoS enabled MetTel network,

which connects calls on-net, off-net, and over the PSTN.

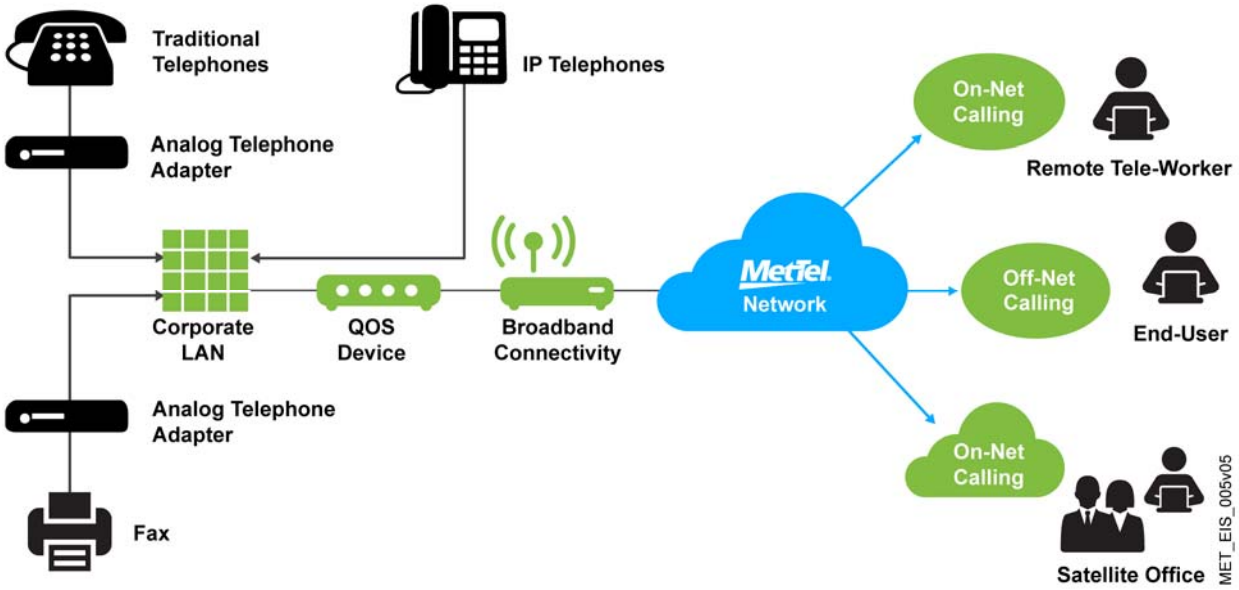


Exhibit 2.1.3-3. MetTel Converged IPVS

MetTel IPVS has global termination reach through strong partnerships with the major national and international PSTN providers. High-speed SIP trunks to these providers enable us to reach any number in CONUS or OCONUS. As shown in **Exhibit 2.1.3-4**, our core network is extended to providers with connectivity worldwide.

[redacted]

Exhibit 2.1.3-4. Global Reach for IP Voice Services

2.1.3.1.2 Standards [L.29.2.1, C.2.2.1.1.2]

MetTel IPVS interoperates with the PSTN, wireless, and international networks and complies with ITU-T G.711, ITU-T H323, H.350 codecs, Real-time Transport Protocol (RTP) IETF RFC 3550, and SIP IETF RFC 326. [redacted]

2.1.3.1.3 Connectivity [L.29.2.1, C.2.2.1.1.3]

MetTel was founded as a CLEC and migrated to a facilities-based telecommunications integrator. MetTel takes specific steps to ensure traffic is given the appropriate priority to traverse the network to stringent QoS standards [redacted]

MetTel IPVS connects and interoperates with the PSTN (wireline and wireless networks) CONUS and OCONUS and is built on our MPLS core network with embedded [redacted] The network extends to the major PSTN providers to enable telephone numbers and traffic to spread over multiple carriers. **Exhibit 2.1.3-5** shows how our core network interacts with multiple PSTN providers and wireless networks.

Our IPVS connects and interoperates with other EIS contractors' voice service networks and satellite-based voice networks in both domestic and non-domestic locations using the interconnections with the PSTN. MetTel IPVS supports voice calls from anywhere to anywhere whether initiated from on-net locations, off-net locations, wireline or wireless, or satellite by the most direct route through the MetTel network. MetTel IPVS is standards-based and complies with required standards in RFP Section C.2.2.1.1.2.

Exhibit 2.1.3-5. MetTel Voice Architecture

2.1.3.1.4 Technical Capabilities [L.29.2.1, C.2.2.1.1.4]

The MetTel IPVS is fully compliant with the technical capabilities defined in C.2.2.1.1.4, as shown in **Exhibit 2.1.3-6**. The IPVS includes unlimited on-net to on-net and on-net to CONUS off-net calling. The IPVS supports off-net calling to CONUS, OCONUS, and the Non-Domestic locations shown in RFP J.1.2.

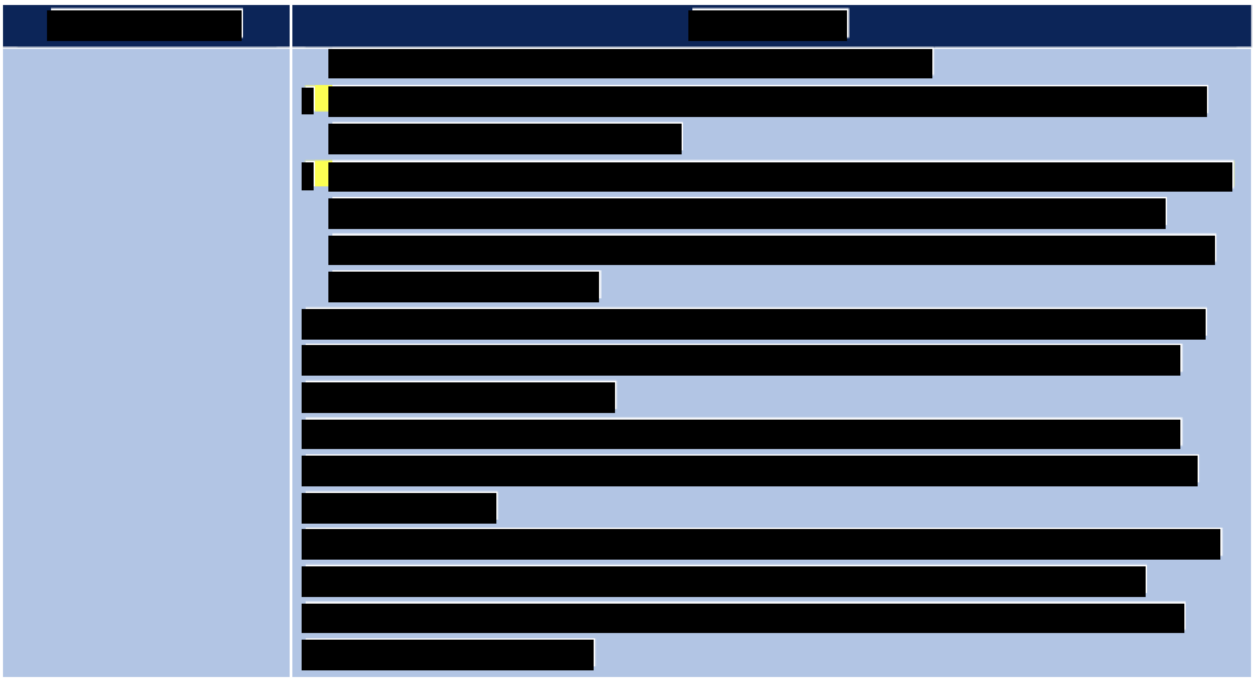
Exhibit 2.1.3-6. MetTel IPVS Technical Capabilities

Technical Capability	Implementation
Remote Access	The Remote Office Access service enables users to access and use their IPVS from any end point, on-net or off-net (e.g., home office, mobile phone). This service is especially useful for telecommuters and mobile workers as it enables them to use all of their web features while working remotely (e.g., extension dialing, transfers, conference calls, Outlook integration, directories, etc.).
(1) Real-time Transport	MetTel's IPVS provides transport for voice, Fax, TTY communications and data.
(2) Real-time Delivery of Caller ID (ANI)	An incoming call with an associated caller ID (ANI) is displayed on the subscriber device, based on the capability of the device.

Technical Capability	Implementation
(3) Interoperate – Public	MetTel's IPVS interoperates with public network dial plans (North America Numbering Plan), Direct Inward Dialing (DID) service through one of multiple PSTN providers and ITU-T E.164 that defines a numbering plan for world-wide PSTN and other data networks.
(4) Interoperate – Private	MetTel's IPVS supports private and customizable network dial plans and direct dialing.
(5) Interoperate – Non-Commercial (Optional)	[redacted]
(6) Public Directory and Operator Assistance	MetTel's IPVS provides access to public directory by dialing 411. Operator assistance is available for the public directory by dialing 411 and dialing 0 or the number specified in the auto attendant.
(7) Unique Directory Numbers	MetTel provides unique directory numbers for all on-net Government locations, including support for existing Government numbers.
(8) Automatic Callback	MetTel Call Return enables a user to call back the last party that called by dialing the call recall star code. Users can also execute call recall via the portal.
(9) Support Three-way Calling	IPVS supports a three-way call with two other parties using device features or portal features.
Gateways for Interoperability	IPVS provides two types of gateways between the IP network and the PSTN or Agency UNIs. 1. MetTel provides the Subscr ber Gateways for interoperability to non-proprietary telephone devices, analog stations, and ISDN BRI station interfaces. 2. PSTN Gateways provide transparent access and interwork with the domestic and non-domestic PSTN. MetTel has multiple agreements with PSTN providers and access to multiple gateways through secure SIP trunks.
Station Mobility	IPVS provides IP subscr bers the ability to move IP phones within the Agency's enterprise-wide network and access IP services. This station mobility has a major impact on the reduction of cost associated with Moves, Adds, or Changes within an Agency.
Traverse Agency Firewalls	IPVS allows for implementation with Agency firewalls [redacted] MetTel verifies with the Agency that the Agency firewall is compatible with IPVS.
Security Practices and Safeguards	MetTel provides SIP gateways and SIP firewalls to protect the network from external threat. This includes: [redacted] **Denial of Service** – Safeguards prevent hackers, worms, or viruses from denying legitimate users from receiving quality, reliable, and resilient IP Voice Services. [redacted] • **Intrusion** – Safeguards are provided to mitigate attempt to illegitimate use of IPVS. [redacted] • **Invasion of Privacy** – Safeguards are provided to ensure IPVS is private and unauthorized third parties cannot eavesdrop or intercept IPVS phone numbers, IP addresses, or URLs. [redacted]

Technical Capability	Implementation
Unauthorized Access	[redacted]
Emergency Service Requirement	IPVS provides emergency services requirements, including 911 and E911 service, and identifies the location of the originating station and routes them to the appropriate PSAP.
Local Number Portability	Routing policy supports the porting of users on to and out of IPVS. MetTel fully complies with the FCC Local Number Portability requirements.

[redacted]



2.1.3.1.5 Features [L.29.2.1, C.2.2.1.2]

MetTel's IPVS provides a rich set of features and services, including Voicemail, Auto Attendant, and Augmented 911/E911 Service.

Voice Messaging and Voicemail Boxes [C.2.2.1.2 (1)]

Voicemail supports voice messaging transmission, reception, and storage. Callers may review and/or change their message and hear a warning tone when reaching the maximum message length.

From the MetTel EIS Portal, users control whether voicemail messages are delivered as .WAV attachments in email and/or to the system repository for retrieval from a phone. The web interface also enables users to enter their password and give callers the option of connecting to an attendant by pressing 0.

Users can record their name and multiple greetings using the Voice Portal and can access the Portal from any phone to listen to, save, and delete messages and mark them as Urgent or Confidential. During message playback, users may skip forward, skip back, pause, reply to and forward messages. Users can pre-configure lists of users to whom messages are sent and compose and forward messages with an introductory message to one or more group members or an entire group.

A feature access code allows users to send incoming calls directly to their mailbox or the mailbox of any other user within their group. [redacted]

MetTel IPVS provides the following additional voicemail features:

- **Immediate Voicemail.** Provides an "always on" voice mailbox. With the user's "number of rings before greeting" parameter set to "0," a caller is immediately provided the no-answer greeting and the user's device is not alerted.
- **Voice Message Waiting Indication.** Provides a stutter tone via the user's telephone when new messages reside in their voice mailbox. A visual indicator on the phone is also provided, if applicable.
- **Voice Message Notification.** Enables a user to be informed of new voice messages. The notification is in the form of an email (or short message to a cell phone) or an indication on the user's station. The user controls the service via a web interface, which provides the ability to activate and deactivate email notification as well as the email notification address.

Auto Attendant [C.2.2.1.2 (2)]

MetTel's Auto Attendant serves as an automated receptionist that provides options for callers to connect to an operator, extension or dial-by-name, various attendant positions, external phone numbers, mailboxes, or nine configurable options (e.g., 1 for Information, 2 for Account Information, etc.).

A group can have multiple Auto Attendants configured either individually (e.g., customer service with separate business hours) or integrated into a multi-level Auto Attendant (e.g., enterprise's main Auto Attendant is configured to seamlessly route to the Auto Attendant of a particular department or location).

Augmented 911/E911 Service [C2.2.1.2 (3)]

We will populate a 911 Private Switch/Automatic Location Identification (PS/ALI) database with the Government's profile, which includes all user telephone numbers,

station locations, building location, building address, building floor, room number, and geocode during service implementation. We provide secure remote Government access via a web browser to allow the Government to maintain the profile (e.g., to account for moves, adds, deletions, or other changes). We ensure these profile updates are reflected in the PS/ALI database. Our nationwide augmented 911/E911 service is supported 24x7x365 and provides multiple address validation sources, has bulk upload capability, and is FCC/CRTC compliant.

Standard Features

Exhibit 2.1.3-8 defines the standard features of our basic service

and comply with the technical capabilities defined in C.2.2.1.2.

Exhibit 2.1.3-8. IPVS User and Administrator Capabilities

Capability	Feature Description		
(1) Calling Line ID Delivery	Displays a caller's identity to a user via the web interface and phone (if capable). Delivered information includes the caller's		

Capability	Feature Description	[redacted]	[redacted]
	phone number and name. The information is delivered to the web interface and phone (if capable) only if the information is available and not blocked by the caller.	[redacted]	[redacted]
(2) Conference Calling	Enables a user to make a three-way call with two parties.		
(3) Do Not Disturb	Allows a user to set their station as unavailable. All calls are treated as busy.		
(4) Call Forwarding – All	Enables a user to redirect all calls to another destination.		
(5) Call Park	Enables a user to hold a call and retrieve it from another station within the group. Can also be executed via the web interface.	[redacted]	[redacted]
(6) Hotline	A Series Completion service that can be assigned to a selected series of lines to forward calls on a busy condition. A form of "hunting" in which the next line in the group is tried in a prearranged order, without any limit on the number of sequential forwards		
(7) Call Forwarding – Busy	Enables a user to redirect calls to another destination when an incoming call encounters a busy condition.		
(8) Call Pickup	Enables a user to answer any ringing line within their pick-up group, which is a group administrator-defined set of users to which the call pickup feature applies.		[redacted]
(9) Hunt Groups	Allows users within a group to be included in a specified sub-group to handle incoming calls received by an assigned Hunt Group phone number.	[redacted]	[redacted]
(10) Call	Enables a user to redirect calls to another		

Capability	Feature Description	[redacted]	[redacted]
Forward – No answer	destination when an incoming call is not answered within a specified number of rings.		
(11) Class of Service Restriction (CoSR)	Defines the restrictions that apply when a user places or receives a call. Allows or denies user access to some system features.		
(12) Multi-Line Appearance	Allows a line that is an address-of-record to place and receive calls on multiple end points.		
(13) Call Hold	Allows a user to place a call in hold status by pressing the appropriate button on the phone. Music on hold feature is also available.	[redacted]	[redacted]
(14) Distinctive Alert/Ring	Provides a different call waiting tone (i.e., alert) or a different ringing cadence for intra-group calls versus calls received from outside the group.	[redacted]	[redacted]
(15) Directory Assistance	Enables users to view and print a directory listing of all the Agency group members and their respective contact information (e.g., extension, phone number, email address).		
(16) Call Transfer	Enables a user to consult with the add-on party before transferring the caller	[redacted]	[redacted]
(17) Call Waiting	Enables a user to answer a call while already engaged in another call.		
(18) Speed Dial	Enables users to dial single digit codes to call up to eight numbers, such as frequently dialed numbers or long strings of digits that are difficult to remember.	[redacted]	[redacted]
(19) Call Number Suppression	Enables users to block their outgoing caller ID on a per call basis by dialing a star code before making the call		
(20) Specific Call Rejection	Enables a user to define criteria that causes certain incoming calls to be blocked. If an incoming call meets user-specified criteria, the call is blocked and the caller is informed that the user is not accepting calls.	[redacted]	[redacted]

Capability	Feature Description	[redacted]	[redacted]
(21) Last Number Dialed	Enables users to redial the last number they called by clicking the "Redial" button on their web interface or by dialing a feature code (e.g., *66).		
(22) IP Telephone Manager (Administrator)	A portal that allows Agency administrators to control and modify options such as automated attendant, music, on hold, etc.		
(23) IP Telephone Manager (Subscriber)	A portal that offers the IPVS user the ability to control and personalize their service. Voicemail delivery options, call forwarding, do not disturb, simultaneous ring, etc. are some of the options that can be configured.		

2.1.3.1.6 Interfaces [L.29.2.1, C.2.2.1.3]

The SRE catalogue lists multiple SREs to provide scalable solutions for routers and switches. All UNIs at the SDP support IEEE 802.3 with RJ-45 ports up to 100Mbps. [redacted]. All signaling is SIP (IETF RFC 3261, H.323, MGCP or SCCP).

All devices in the SRE catalogue are labeled for the interface they support. The devices that support IPVS all have in the Notes column, IPVS-1 to indicate they support UNI-1 as defined in EIS RFP Section C.2.2.1.3.

2.1.3.1.7 Performance Metrics [L.29.2.1, C.2.2.1.4]

MetTel has embedded performance management and reporting capability in the MPLS core network. For IPVS, we report latency, packet loss, availability, jitter, Mean Opinion Score (MOS) and Round Trip delay Time (RTT). [redacted]

We meet or exceed the performance levels and AQL of KPIs for IPVS as shown in C.2.2.1.4. Using the imbedded network performance tools, we collect and report current and historic information for latency, packet loss, availability, jitter, and voice quality. The Trouble Ticket system maintains and reports time-to-restore through the MetTel EIS Portal. **Exhibit 2.1.3-9** is a sample of MOS and RTT performance displayed for IPVS through the MetTel EIS Portal.

Exhibit 2.1.3-9. MOS and RTT Performance Display

2.1.3.1.8 Managed LAN Service [C.2.2.1.5]

MetTel Managed LAN service is based on the MetTel Total Care service offering and provides all the requirements to install, manage, and maintain LAN networking and hardware components and required IPVS licensing to extend the MetTel IPVS from the SDP to the terminating subscriber device (i.e., handset). MetTel Managed LAN service manages the router that terminates the access arrangement and circuit whether the solution is premise-based or network-based. All equipment provided supports Power over Ethernet (PoE) to supply the necessary power to IP phone sets or other PoE devices.

- **Survey.** A technician performs a site visit to gather information and run tests on the network interface to guarantee the best connection possible and ensure the

new circuits for IPVS are fully configured. The technician also builds a template for the Auto Attendant system if needed and identifies information such as current extension numbers, user names, and which phones need features.

- **Cabling.** If needed, cabling technicians run data cables to any locations that may not have the correct type or quantity of cable. We ensure the hardware/software solution interoperates with the Agency-provided VoIP ready cabling infrastructure which may include category 5, 5E, 6, 6A, 7, single mode, and multimode fiber. We confirm that the hardware has the proper physical interfaces to support the Managed LAN Service. All work is performed by a licensed installer. We identify any cabling limitations to the proposed solution. Any additional cabling is identified in the Task Order and performed under C.2.11 Cable and Wiring.
- **Installation.** All equipment is delivered preprogrammed for rapid implementation. Technicians install the equipment to connect the phones to our network or integrate to the existing network. They also install the phones at each desk, train users with live demonstrations, and answer any questions. [redacted]
- **Maintenance and Upgrades.** MetTel is responsible for on-going maintenance and upgrades of MetTel-owned equipment for MetTel Managed LAN service. The Agency will not incur any additional cost for device software changes or device reprogramming to meet EIS service performance levels.

[redacted]

[redacted]

- **LAN Management.** We use the MetTel EIS Portal to provide the interface and information required to support the MetTel Managed LAN service. The following are major functions provided by MetTel Managed LAN Service:
  - **Configuration Management.** MetTel provides configuration management for the life of the contracted service. The MetTel EIS Portal supports configuration management and provides real-time billing, inventory, service delivery, and repair information. We use this inventory to ensure configuration is managed to maintain hardware, software, and firmware to current tested manufacture levels.
  - **Moves, Adds, Changes, Disconnects (MACDs).** MACD requests requiring support are initiated by a Trouble Ticket through the MetTel EIS Portal. [redacted] Only authorized devices determined by the ordering Agencies operate on the Managed LAN Service.
  - **Service/Alarm Monitoring and Fault Management.** MetTel monitors, manages, and restores devices 24x7x365. We proactively notify Agency Points of Contact (PoC) within 15 minutes of an issue. The Agency staff creates a Trouble Ticket through the MetTel EIS Portal if necessary. We resolve the Trouble Ticket through standard repair procedures including trouble isolation and resolution.

- **Escalation Path for Trouble Tickets.** We work with the customer during the on-boarding process to define a Responsible, Accountable, Consult, or Inform (RACI) matrix with the Agency to ensure no issues occur during problem resolution. A RACI matrix defines roles and responsibilities of MetTel, Agency and other responsible organizations in supporting the service. Each role is identified as Responsible, Accountable, Consult, or Inform to define the type of interaction between the Agency and MetTel. The RACI document defines the escalation path for all levels of problem severity and identifies key personnel for each level of escalation as well as guidelines and timing for next steps and notifications.

Managed LAN Service does not include any wireless devices or other services (i.e., data, video, etc.) unless explicitly requested and approved by the OCO.

2.1.3.1.9 Session Initiation Protocol Trunk Service [C.2.2.1.6]

The MetTel SIP trunk service provides SIP-based network services to interconnect Customer Premises Equipment (CPE) such as PBX, SIP-enabled PBX, Key Telephone Systems (KTS), and other systems that support SIP-based IP trunk interfaces. Each business trunk represents a concurrent call or voice channel for premises equipment.

MetTel SIP Trunk service is local access neutral and can be delivered through multiple types of access, including T1/E1, DSL, and Ethernet. [redacted]

Exhibit 2.1.3-10. MetTel SIP Trunk Solutions

2.1.3.1.9.1 SIP Technical Capabilities [C.2.2.1.6.1]

MetTel SIP Trunk service provides a platform for personal and group enhanced services that can overlay features available to Hosted IPVS on the existing feature-functionality of a customer's premises equipment. SIP trunk service enables SIP users to establish and receive calls between both on-net locations and the PSTN.

[redacted] SIP Trunks also support off-net calling to CONUS, OCONUS and non-domestic locations and are enabled to establish and receive calls between both on-net locations and the PSTN. With multiple interconnections and geographically diverse facilities, we ensure minimal network disruptions.

2.1.3.1.9.2 SIP Features [C.2.2.1.6.2]

Our SIP trunk service provides the following required features: automatic call routing, bandwidth QoS management, trunk bursting, and phone number blocks (DID).

Automatic Call Distribution (ACD) – Provides automatic call routing by quickly routing callers to the appropriate number or agent with the correct skills and in the right priority, using a flexible set of routing policies. ACD supports functions for Call Center Services and Unified Communication Services.

Bandwidth QoS Management – Provided by MetTel at the network level to manage bandwidth and QoS allocation for voice traffic. QoS management provides effective management of IPVS services and helps allocate appropriate bandwidth to IPVS rather than require over-allocation of bandwidth.

Trunk Bursting – Allows for more trunk channels than provisioned to permit bursts of traffic, increasing the call completion rate. This enhancement is especially valuable for businesses that experience temporary surges in call activity, such as a seasonal activity or mandatory submittal date that increases calls (i.e., IRS).

Telephone Number blocks (DID) – MetTel's IPVS supports DID number blocks. [redacted]

Exhibit 2.1.3-11. MetTel SIP Trunk Architecture