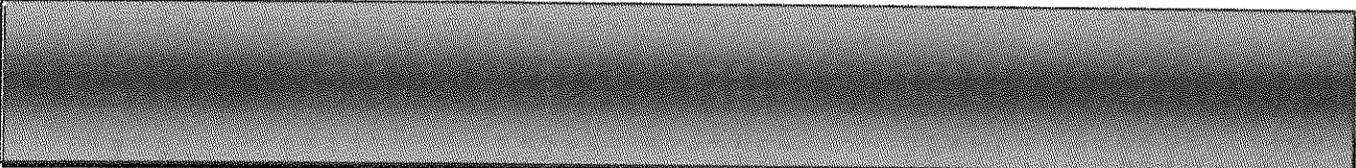




**CINCINNATI BELL TECHNOLOGY SOLUTIONS INC.**  
**for**  
**STATE OF OHIO**

**Service Attachment #5**

**Managed Voice over IP (VoIP) Service**



**CBTS for  
STATE OF OHIO Service Attachment #5  
Managed Voice over IP (VoIP) Service**

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## **Preamble**

**This Service Attachment** (the "Service Attachment"), is between Cincinnati Bell Technology Solutions Inc. ("Service Provider") having an office at 4600 Montgomery Rd. – Suite 400, Cincinnati, Ohio 45212-2600, and the State of Ohio, Department of Administrative Services, ("the State"), having its principal place of business at 40 E. Broad St., 40<sup>th</sup> Floor, Columbus, Ohio 43215 (jointly referred hereto as the "Parties"), and it is effective as of the date signed by the State. It amends that certain Master Services Agreement between the Parties dated January 18, 2012.

Purpose: The purpose of this Service Attachment (SA) 5 is to replace Service Attachment (SA) 1 and to replace Service Attachment (SA) 2 and insert the updated and amended language into Service Attachment (SA) 5.

WHEREAS, the State desires to consolidate contract documents for the purposes of readability and general order; and

WHEREAS, the above named parties desire to execute this Service Attachment to said MSA;

NOW THEREFORE, in accordance with the MSA, and in consideration of the conditions and covenants contained herein, the Parties mutually agree as follows:

1. As of the effective date of this Service Attachment (SA) 5, the following documents, which comprise Service Attachment 1, including all amendments in Service Attachment 1 (Amendments 1-5), will no longer be in effect:
  - Service Attachment (SA) 1 – Managed Voice over IP (VoIP) Service, 6/22/2012
  - SA 1 Amend 1 – Pricing – 8/30/2012
  - SA 1 Amend 2 – Address, Pricing Tables – 4/22/2013
  - SA 1 Amend 2 – Section 5 Rewrite – 5/20/2013
  - SA 1 Amend 3 – PRI ICB – 1/28/2013
  - SA 1 Amend 3 – Video Conferencing – 7/30/2014
  - SA 1 Amend 4 – NGTS Inbound Toll Free – 8/18/2014
  - SA 1 Amend 5 – Enhanced Contact Center – 5/15/2015
  
2. As of the effective date of this service attachment, the following document which comprise Service Attachment 2 will no longer be in effect:
  - Service Attachment (SA) 2 – NGTS Severity Zero, Life Safety – 1/16/2014
  
3. It is the intent of this document to consolidate the aforementioned documents and fully replace their force and effect into one wholly new document entitled Service Attachment (SA) 5 as follows:

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## **1 Service Overview**

Cincinnati Bell (CB) provides eligible entities a hosted Voice over IP (VoIP) telephony service at two levels, Basic or Enhanced.

The Basic monthly plan includes: core telephony functions, voice mail functions, audio conferencing (to include 500 moderators), auto attendant, an integration point to connect the state of Ohio Microsoft Lync Instant messaging and presence solution to the VoIP solution and E911 service.

The Enhanced Monthly plan includes: all of the features of the Basic plan, unified communications, video conferencing, and an emergency, mass broadcasting and paging service called, Singlewire InformaCast, by CB.

Both plans include an aggregate of 199 minutes (local and intra-state long distance) of use per month per subscriber (excluding on-net use).

In addition to the monthly service plans, Cincinnati Bell provides additional add-on features, including intra-state long-distance above agreed to aggregate, off-net inter-state long distance, international long distance, automatic call distributors, integrated voice response, site/location survivability options, phone purchase and leasing options, SIP trunking, and other services.

## **2 Eligibility to Purchase**

“Subscribing Entity(s)” is defined as State Agencies, Boards, Commissions, and Cooperative Purchasing Members. It can also apply to other entities or institutions that the State of Ohio deems as a government entity or authorizes as able to participate as a Subscribing Entity. “Customer” applies only to the Department of Administrative Services (DAS) on behalf of the state of Ohio. Outside of contractual terms, DAS may also be considered a “Subscribing Entity” for other matters such as purchasing services, implementation of same, etc.

## **3 Standard Features**

Before transition, Cincinnati Bell will provide URLs for this contract that will describe these features.

### Basic Telephony Service Plan

#### **1. Core Telephony Functions**

- Audio conferencing (to include 500 moderators)
- Call Barge
- Call Blocking by Caller ID

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Call Blocking / Class of Restriction  
Call Forwarding  
Call History  
Call Hold  
Call Mute  
Call Park/Pickup  
Call Pickup Group  
Call Timer  
Call Transfer Blind  
Call Transfer Consult  
Call Waiting  
Caller ID Conference  
Calling Conference  
Chaining Contact  
Lists  
Dial by Extension  
Dial by Name  
Distinctive Ringing  
Do Not Disturb  
Extension Mobility  
Extra Virtual Numbers  
HTTPS for Phone Services  
Hunt Groups  
If Busy Return Call  
Immediate Divert to Voicemail  
Last Number Redial  
Line Unavailable Forward  
Long Distance Access Code Support  
Malicious / Fraudulent-call ID and trace  
Message Waiting Indicator  
Minimum Thirty-Two-Party Meet-Me Conference  
Multiple Calls per Line Appearance  
Music and Tone on Hold  
Night Service Bell  
On-Hold Dialing  
PLAR (Private Line Automatic Ring down)  
Point-to-point video within the Next Generation Telephony Service Port Security  
Features  
Prime Line Select  
Privacy - Do Not Disturb  
Record on Demand  
Ringer Pitch Adjust

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- Ringer Volume Adjust
- Secondary Dial Tone
- Shared-line Appearances
- Silent and Feature Ring Options
- Single Reach (internal/external)
- Speakerphone
- Speed Dial – Corporate
- Speed Dial – Personal
- Telephony Application Programming Interface (TAPI) Support
- Text Label Support on IP Phones
- Time of Day, Day of Week and Date-based Call Blocking
- Voice Mail

2. Voice Mail Functions

- Access to voicemail from any phone anywhere
- Voicemail to email notification (e.g. .wav attachment or speech to text)
- Private message capability
- Urgent message tagging
- Shared mailboxes
- greeting mailboxes
- Delivery of receipt and read receipt confirmation
- Directory integration
- Distribution list
- Multiple greeting capabilities based on:
  - o Time of day
  - o Day of week
  - o Holiday
  - o Vacation
- Internal / External caller tagging
- Call routing capabilities (e.g. 0 out to operator)
- Cascading notification capabilities

3. Auto Attendant

- GUI management interface
- Dial by Name capabilities
- Dial by Extension capabilities
- Unlimited Auto Attendants
- Unlimited Call Tree depths
- Time of Day routing
- Day of Week routing
- Holiday routing
- Emergency message capability
- Automated backups
- On net and off net routing capabilities

4. Cisco Emergency Responder (E911)

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Ability to track people as they use extension mobility features and/or move phones to different locations and report this information to central authorities.

5. Use of the integration point for the state of Ohio Microsoft Lync IM and Presence solution

## **4 Enhanced Features**

Before transition, Cincinnati Bell will provide URLs for this contract that will describe these features.

1. All features of Basic Plan
2. Unified Communications
3. Video Conferencing

Provide multi party video conferencing

Multipoint Control Units (MCUs)

Record and store conference recordings in a repository that can be indexed and searched

Password protected end points

Supports third party video endpoints using the SIP protocol

Detailed reporting:

- o Date/time
- o Start/stop times, scheduled vs actual
- o Identify participants in conference
- o Duration
- o Bandwidth
- o Type – ad hoc, scheduled
- o End point or system usage reporting – daily, weekly, monthly
- o Network statistics/quality of conference

Video bridging services supports:

- o Multiple continuous presence layout
- o Cascading
- o Video transcoding and rate matching

4. Singlewire InformaCast

## **5 Pricing Tables**

### **5.1 VoIP Monthly Telephony Service Profiles**

A Profile refers to an individual identifier, Subscriber or setting that is directly associated with a specific device that represents a configuration of features. The different Subscriber profiles available are Basic, Enhanced, Miscellaneous and Analog. One SIP call Path also equals one Subscriber Profile. These different profiles make up the Profile Subscription Levels. There is a monthly flat rate fee, per profile, per month which is based on total number of profiles in use for the State of Ohio. As the number of profiles increases, the monthly flat rate fee decreases (Volume Discount).

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**5.1.1. Basic Features Plan**

The Basic Features Plan Profile includes the seven standard features below:

Key Term	Description
Meeting Place Audio Conferencing	Refers to the Basic Features Plan component that offers up to 500 Moderators (This refers to a designated bridge number for a conference call is a telephone call in which the calling party wishes to have more than one called party listen and participant, This is a secured primary number that allows participants to join a bridge using an access code and participant pass code.
Core Telephone Functions	Refers to a list of over 40+ features such as call forwarding, mute, wait, hold, transfer, etc. that are described briefly in Section 3 of Service Attachment 1.
Voice Mail Functions	Refers to a category in the Basic Features Plan for Voice Mail systems that support audio. Users can leave spoken messages for one another and listen to the messages by executing the appropriate command in the email system. This also includes a feature to send an alert notice to a user's email with a .wav file of the voicemail message attached.
Point-to-Point (PtP) Video Conference	Refers to a Basic Features Plan component to include phone to phone video conferencing conducted over the Internet Protocol (IP).
Auto Attendant	Refers to a Basic Features Plan component that includes an Automated Attendant which is a function of a business telephone system that automatically greets callers with a prerecorded message. The call is then routed to the proper extension based upon menu options that the caller selects by pressing the appropriate keys on their telephone or by speaking particular words.
Cisco Emergency Responder	911 Enable assures that Cisco Unified Communications Manager sends emergency calls to the appropriate Public Safety Answering Point (PSAP) for the caller's location, and that the PSAP can identify the caller's location and return the call if necessary. In addition, the system automatically tracks and updates equipment moves and changes. Deploying this capability helps ensure more effective compliance with legal or regulatory obligations, reducing the risk of liability related to emergency calls as a result.
Integration Point with Microsoft Lync Instant Message (IM) or	Microsoft Lync is an enterprise-ready unified communications platform. Lync connects people

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Key Term	Description
equivalent solution	everywhere, on Windows 8 and other devices, as part of their everyday productivity experience. It provides immediate access to instant messaging voice, and video. Lync 2013 users can also connect to anyone on Skype. This provides the user an integration point for connectivity.

### 5.1.2 Enhanced Features Plan

The Enhanced Features Plan consists of the seven standard features included in the Basic Features Plan and also includes Unified Communications, Multi-Point Video Conferencing and Informacast. These features are defined below.

Key Term	Description
Unified Communications (UC)	Cisco® Unified Communications Solutions unify voice, video, data, and mobile applications on multiple fixed and mobile devices, enabling easy collaboration from any workspace. This includes integration with the Microsoft Lync environment for remote call control.
Multi-Point Video Conferencing	<p>The Enhanced Profile includes a video multi-point bridge that accommodates up to 6 audio and 6 video endpoints. It provides the host with secure passcode access to invite other video and/or audio participants. The feature includes custom screen layouts and the ability to share content for Ad Hoc and scheduled conferences.</p> <p>Also, a call can be attended via audio by any endpoint whether on-net or off-net. The conference can be attended via video by:</p> <ul style="list-style-type: none"> <li>Any NGTS video capable endpoints</li> <li>SIP Trunk based video endpoints</li> </ul> <p>Note: Each Enhanced Profile has one (1) multi-point bridge included in the cost of the profile.</p>
InformaCast	InformaCast is the singlewire service that sends alerts to a pre-defined group of recipients of a non-audio (visual message) and an audio message broadcast. Supported InformaCast devices include IP phones, speakers (both analog and IP), desktops, etc. that have the ability to receive a text and/or audio message whenever a monitored call is dialed.

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**5.1.3 Volume Discount**

A Volume Discount offers the State discounted prices as the number of profiles increase. Volume discount prices apply to the total number of State Subscribers (Total State Subscribers) for Basic or Enhanced Features Plan. The "per profile", "per month" fee decreases as the number of Total State Subscribers increases. Refer to the table below.

**5.1.3.1 Volume Discount Costs for Basic and Enhanced Profiles**

Total State Subscribers	Basic Features Plan	Enhanced Features Plan
	Per Profile Per Month	Per Profile Per Month
1 - 20,000	\$13.00	\$19.40
20,001 - 30,000	\$12.86	\$19.26
30,001 - 40,000	\$12.73	\$19.13
40,001 - 50,000	\$12.61	\$19.02
50,001 - 60,000	\$12.47	\$18.90
60,001 - 70,000	\$12.42	\$18.84
70,001 - 80,000	\$12.36	\$18.74
80,001 - 90,000	\$12.33	\$18.66
90,001 - 100,000	\$12.28	\$18.58
100,001 - 110,000	\$12.21	\$18.53
110,001 - 120,000	\$12.13	\$18.47
120,001 - 130,000	\$12.07	\$18.42
130,001 - 140,000	\$11.97	\$18.34
140,001 - 150,000	\$11.89	\$18.29
150,001 - 160,000	\$11.81	\$18.26
160,001 - 170,000	\$11.77	\$18.21
170,001 - 180,000	\$11.70	\$18.15
180,001 - 190,000	\$11.65	\$18.12
190,001 - 200,000	\$11.57	\$18.07
Greater than 200,000	\$11.53	\$18.00

**5.1.4 Miscellaneous Profile**

A Miscellaneous Profile is a profile with minimal functions which does not have voice mail or conferencing capability. On Network and Off Network calls can be made to and from these numbers. The Off Network Local and Off Network Intrastate calls will count towards the Minutes of Use (MOU). Miscellaneous profiles are for devices that need minimal functionality and are normally located in common areas, such as a hallway, break rooms, etc. Below is the pricing table which is based on the total number of profiles in use for the contracted Service.

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**5.1.4.1 Miscellaneous Profile Pricing Table**

Miscellaneous Profiles	Flat Rate Per Profile / Per Month
1 - 1,000	\$9.78
1,001 and above	\$9.31

**5.1.5 Analog Profile**

Analog profile refers to the use of a phone handset-to-Ethernet adapter that allows traditional (analog) telephone devices to be used with Voice over IP (VoIP) services and equipment. The adapters are roughly the same size as a home Internet router or small desktop device and contain one or more traditional phone jack ports. The analog device plugs into the adapter, which then communicates with an Internet router via an Ethernet connection. The supporting Analog Telephone Adaptor (ATA), a device that converts analog telephone signals into another format (such as digital Internet protocol), is provided by the Service Provider at no charge to the customer. One use for an Analog Profiles is a fax machine. There is no Volume Discount related to these types of profiles. Below is the Analog Profile cost.

**5.1.5.1 Analog Profile Cost**

Analog Profile	Flat Rate Per Month
Analog Port	\$7.27

**5.1.6 Shadow Line Appearance or Secondary Line Profile**

The Shadow Line Appearance (also referred to as a phantom line) is a secondary line (similar to a Centrex direct line) that displays on an individual profile primary phone. Example: The user may dial out on a secondary line and still receive calls on a primary number. This is also referred to as a direct private line.

**5.1.6.1 Secondary Line Profile Cost**

Secondary Line Profile	Flat Rate Per Month
Secondary Line Profile	\$7.27

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**5.1.7 Room Based Profile**

Customers with the need to accommodate larger numbers of participants would have a need for larger video endpoints. For this reason, Service Provider offers a Room Based Profile that is designed to support use of room based video endpoints such the Cisco SX20 and the Polycom Group 500 that are not used as desktop or personal devices.

Key Term	Description
Room Based Profile	<p>The Room-Based Profile requires additional licensing for audio plus video, and is classified as a separate profile. The profile supports by SIP and H.323 based endpoints, and enables the users to share content.</p> <p>As an example, this includes video endpoints such as the Cisco SX20 and the Polycom Group 500 that are not desktop/personal endpoints. The Room Based Video Profile supports endpoints that may be used for larger conferencing environments, conference rooms, or specialized video sessions. Quite often, it is used for:</p> <ul style="list-style-type: none"> <li>• Medium to Large Group (up to 25 participants total per session)</li> <li>• Operational meetings at multiple locations</li> <li>• Web Training conducted for larger groups</li> <li>• Specialized video sessions, such as health examinations, that require High Definition video.</li> <li>•</li> </ul> <p><i>Note: Each Room Based Profile has one (1) Multi-Point Bridge included in the cost of the profile.</i></p>
Room Based Multi-Point Conferencing Bridge	<p>The Room Based Multi-Point Conferencing Bridge accommodates up to 25 audio and video endpoints. This provides the host with an access code that they can include on meeting invitations to invite other video and/or audio endpoints. The meeting has a passcode to secure and also provides for custom screen layouts and the ability to share content.</p> <p>It also provides for Ad Hoc and scheduled conferences.</p> <p>The conference can be attended via audio by any endpoint whether on-net or off-net. The conference can be attended via video by:</p> <ul style="list-style-type: none"> <li>• Any NGTS video capable endpoints</li> <li>• SIP Trunk based video endpoints</li> </ul> <p><i>Note: Each Room Based Profile has one (1) Room-Based Multi-Point Conferencing Bridge included in the cost of the profile.</i></p>
Room Based Endpoint Installation Fee (optional)	<p>This refers to the optional service of setup and initial configuration of a room based unit (s). This includes un-boxing, assembly and cabling as well as call manager configuration and registration.</p> <p><i>Note: This does NOT include any wall mounting, in-wall or above-ceiling cabling, nor installation of accessories such as ceiling mounted microphone and speaker kits, or wall mounted shelving.</i></p>

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**5.1.7.1 Video Conferencing Costs**

<b>Item</b>	<b>Monthly Recurring Charge (MRC)</b>	<b>Non-Recurring Charge (NRC)</b>
Room Based Profile (1-100 Profiles)	\$29.00	-0-
Room Based Profile (101-500 Profiles)	\$27.00	-0-
Room Based Profile (501+ Profiles)	\$25.00	-0-
Room Based Endpoint Installation Fee (optional)	-0-	\$399.00 per Room

*Note: The Enhanced Profile MRC is based on the 5.1.3.1 Volume Discount Costs for Basic and Enhanced Profiles.*

**5.2 Profile Subscription Levels**

Service Provider, in partnership with the State of Ohio, has agreed to a minimum profile subscription level once the State of Ohio has sent written confirmation of acceptance of the Service. Profiles that will be included within the minimum subscription level are Basic, Enhanced, Miscellaneous, Analog and SIP Call Path. Below defines the minimum profile subscription levels. Service Provider will bill the appropriate Subscribing Entity.

1. The Service Provider invoices for a minimum of 30,000 profiles.

The State will be responsible for payment of shortages if the thresholds stated above are not met within the specified time frames.

**INSERT 5.3 Consumption Audits (SA1/Amend 5 – ECC)**

**5.3 Consumption Audits**

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**5.3.1 Quarterly Telephony Profile Audit**

Service Provider will perform quarterly audits regarding the State's total telephony profile counts and adjusts pricing per profile accordingly. Audit reports will be submitted to the State for their review.

**5.3.2 Monthly Contact Center Audit**

Service Provider will perform monthly audits regarding the State's Contact Center usage and provide the State with reports of any usage in excess of ordered items based on usage measurements defined in sections 5.3.2.1 and 5.3.2.2 of this document.

In the event that a Subscribing Entity is reported to be using items in excess of items that have been ordered by that Subscribing Entity, the Subscribing Entity will place an order for the excess capacity used prior to the close of the billing period subsequent the report of the excess usage. Orders placed in response to excess usage reports will be applied to the tenant's account retroactive to the first day of the month in which the excess use occurred.

**5.3.2.1 Basic Contact Center Audit Data Points**

Service Provider will capture and audit the following data points related to Basic Contact Center service usage

<b>Basic Contact Center Data Point</b>	<b>Description</b>
Concurrent IVR Port Usage per Subscribing Entity	The sum of active calls to all Interactive Voice Response Applications belonging to a given Subscribing Entity at any moment in time. Interactive Voice Response Application refers to scripted call treatment implemented within the Contact Center platform for the purpose of queuing prior to call delivery to agent, or other automated self-service functions.

**5.3.3.1 Enhanced Contact Center Audit Data Points**

Service Provider will capture and audit the following data points related to Enhanced Contact Center service usage.

<b>Enhanced Contact Center Data Point</b>	<b>Description</b>
Concurrent IVR Port Usage per Subscribing Entity	The sum of active calls to all Interactive Voice Response Applications belonging to a given Subscribing Entity at any moment in time. Interactive Voice Response Application refers to scripted call treatment implemented within the Contact Center platform for the purpose of queuing prior to call delivery to agent, or other automated self-service functions.

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Concurrent Agent Logins per Subscribing Entity	The sum of all agent and supervisors belonging to the a given tenant which are logged into desktop or web-based applications capable of controlling agent availability for distribution of contacts routed by the Contact Center platform, at any moment in time.
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## 5.4. Call Categories

### 5.4.1 On Network Calls

On Network calls refer to calls placed from Next Generation Telephony Service (NGTS) Service devices, not participating in Enhanced Contact Center services, to NGTS Service devices or SIP Call Paths on the NGTS Service Network. Calls from NGTS Service devices participating in Enhanced Contact Center services to other NGTS Service devices will be considered On Network. On Network calls within the NGTS network are VoIP calls and are placed via SIP to another VoIP Subscriber and has unlimited usage.

### 5.4.2 Off Network Intrastate and Local Call / Minutes of Use (MOU)

An Off Network call is a call that is made to a number that is not on the CBTS network. An Off Network Intrastate call is a call that is placed within the State of Ohio while an Off Network Local call is identified as a call that is placed within the same area code. Both of these types of calls are counted towards the MOU as part of the pricing schedule for MOUs. The Flat Rate Per Profile cost is determined by averaging the total number of minutes used by the total number of State profiles to produce an *Average MOU Per Profile*. Refer to table below

Average MOU Per Profile	Flat Rate Per Profile
Up to 199	Included
200-399	\$2.96 per month
400-499	\$3.29 per month
500-749	\$3.92 per month
750 and Over	\$4.60 per month

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**5.4.3 Off Network Interstate, International Long Distance Call, and Dedicated Inbound Only Toll Free**

An Off Network Interstate long distance call is identified as a call made within the United States borders but outside the Ohio state lines. An Off Network International long distance call refers to a world-wide call made to any country that is outside the United States borders. These types of Off Network calls do not count towards the MOU.

The Dedicated Toll Free Inbound Only Add-On allows connection to the PSTN and offers existing profile, SIP and Contact Call Center users (Subscribers) a viable alternative to traditional PSTN connectivity. This also allows a Subscribing Entity to supplement a service to the existing NGTS service as an Add On item that is invoiced as a line item on the same bill.

Type of Call	Flat Rate
Interstate Long Distance	\$.012 per minute
International Long Distance	Refer to Exhibit F of Service Attachment 1 for Rates
Dedicated Toll Free Inbound	\$.0135 per minute
Any Inbound call to the Enterprise Contact Center	\$.0135 per minute

**5.5. SIP Service and Setup**

Session Initiation Protocol (SIP) is an application-layer control protocol; a signaling protocol for Internet Telephony. SIP can establish sessions for features such as audio/video conferencing and call forwarding to be deployed over IP networks, that enables Service Provider to integrate basic IP telephony services with Web, e-mail, and instant message services.

Also, Video SIP Trunk service is available to organizations that already have significant investment in video endpoints and infrastructure. A trunk can be built from the NGTS platform to the customer's platform.

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Key Term	Description
Call Path	A call path is a concurrent call, or the number of users on an off-net call and at any one time. This mechanism serves as the unit/service that SIP Trunk customers purchase for monthly service. A SIP Call Path equals one Subscriber Profile.
SIP Trunk Service Fee	This is a charge call path use based on frequency and number of users (concurrent call paths). Service includes investigating alarms, applying patches or break-fix and incident repair, in the event of service disruption.
SIP Trunk Setup Fee	Refers to an initial one-time installation and configuration charge.
SIP Trunk DID Fee	Refers to the per DID (direct-inward-dial) charges on SIP Trunks services
Video SIP Trunk Service	<p>This service allows for transmission of video, voice and data simultaneously through SIP.</p> <p>The Video SIP Trunk service is available to organizations that already have significant investment in video endpoints, infrastructure, and support.</p> <p>A trunk can be built from the NGTS platform to the customer's video platform. This enables calls to and from the customer platform to and from NGTS phones and resources to allow for point-to-point as well as point-to-multipoint video calls.</p>
Video SIP Trunk Service Fee	This is a charge call path use based on frequency and number of users (concurrent call paths). Service includes investigating alarms, applying patches or break-fix and incident repair, in the event of service disruption.
Video SIP Trunk Set-Up	This refers to an initial one-time installation and configuration non-recurring charge (NRC). This is a one-time charge for new equipment and/or installation setup fee per Subscribing Entity.
Video SIP Trunk DID Fee	<b><i>There is NO DID fee in the Video SIP Trunk Service.</i></b>

The Service Provider Equipment and the SIP Service Fee is based on a 60-month commitment.

NGTS recommendations for IP Phone Hardware Catalog for options those are available for purchase or lease. The State may purchase hardware from another vendor and supported equipment requirements are detailed in the Hardware Catalog.

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**5.5.1 SIP Service Fee and Equipment Setup Cost**

1 SIP Call Path = 1 Subscriber Profile

SIP Trunk Service for Total Number of Users	SIP Service Fee Rate Per Month	One Time SIP Equipment Setup Fee
SIP Port and Access	N/A	N/A
SIP Call Path for 0-500 Users	\$23	\$600.00
SIP Call Path for 501-1000 Users	\$21	\$600.00
SIP Call Path for 1001-2000 Users	\$19	\$600.00
SIP Call Path for 2001-3000 Users	\$17	\$600.00

1. Price is based on one (1) Concurrent Call Path for 6000 MOU maximum per month.
2. There is a one-time charge for equipment and Setup Fee per Subscribing Entity.
3. There is a Call Path monthly charge of \$.008 per minute for each minute over the 6000 total maximum.
4. There is a monthly ported DIDs charge of \$.50 per DID.

**5.5.2 Video SIP Trunk Service Costs**

VC SIP Trunk Service by User Group Number of Users	VC SIP Service Fee Monthly Recurring Charge (MRC)	VC SIP Set-Up One-Time Setup Fee*
Video SIP Trunk Users 1-100	\$46	\$600.00
Video SIP Trunk Users 101-500	\$44	\$600.00
Video SIP Trunk Users 501+	\$42	\$600.00

\*There is a one-time charge for equipment and Setup Fee per Subscribing Entity.

**5.5.2.1 Video Technical Prerequisites**

There are video technical prerequisites that require the Subscriber to:

1. Maintain video grade bandwidth to OARnet or Ohio.Gov.
2. Own a SIP compatible backend infrastructure of either Polycom or Cisco
3. Migrate endpoints to NGTS e.164 Dial Plan (An 11-digit number is assigned to each endpoint)
4. Support direct inward dialing (DID).
5. Support Network Optimization for IP addressing.

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### **5.5.3. Reporting**

VeraSmart provides online access and global reporting for all services including; invoice data, detailed usage, inventory, bill analysis, and cost detail, as well as SIP and video trunk analysis, etc.

Call detail information is available through the Service Provider VeraSmart website at:  
<http://172.22.128.19/VeraSMART/enu/Login.aspx?autoLogin=false>.

### **5.5.4 Business-to-Business Video (B2B)**

#### **5.5.4.1 Business-to-Business Video Definition of Service**

Business-to-Business Video enables consumers of the NGTS platform to dial via SIP URI to other Internet based services and organizations that can receive SIP URI based calls either directly or via a gateway. It also enables NGTS customers to allow non-NGTS, video-enabled customers to dial via SIP URI to the NGTS video enabled endpoints or the platform's video MCU. The platform also enables off-net legacy endpoints to dial via IP to the platform's video MCU. The unit of measure for B2B is the concurrent call. A subscribing entity reserves a number of concurrent calls for their organization to use.

#### **5.5.4.2 Concurrent Calls**

A single business-to-business concurrent call can be used for multiple call patterns:

1. From an NGTS video enabled endpoint to a non-NGTS video enabled endpoint. For example, calling from a room-based video unit on NGTS to a room-based video unit at Cisco Systems would count as a single concurrent B2B call.
2. From a non-NGTS video enabled endpoint to an NGTS video enabled endpoint. For example, a call from Polycom's video room to an NGTS video enabled room would count as a single concurrent B2B call.
3. A call from an NGTS video enabled endpoint to an Internet cloud MCU service, such as a Polycom VMR (Virtual Meeting Room) or a Cisco Webex CMR (Collaboration Meeting Room) would count as a single concurrent B2B call.
4. A call from a non-NGTS video enabled endpoint to an NGTS video bridge.
5. A call from a legacy non-NGTS video endpoint via IP to the NGTS video bridge.

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**5.5.4.2.1 Business-to-Business Services Description**

Below is the service definition and description of the Business-to-Business feature set

<b>Business-to-Business B2B Call</b>	<b>Description</b>
Concurrent B2B Inbound or Outbound Video Call	An inbound or outbound call reserved for an agency for B2B video calling via SIP. The NGTS endpoint could be a video enabled hard-phone, video endpoint, iOS or Android device, or soft-client. The outside party could be a video endpoint or MCU. The service also includes a 3 <sup>rd</sup> party calling into the customer's NGTS Video Bridge.

**5.5.4.3 Business-to-Business Video Pricing**

The tables below describe the pricing of the Business-to-Business features set. Option 1 enables the customer to pay an upfront fee with lower monthly costs. Option 2 requires no upfront fee. The subscribing entity may choose which payment plan is preferred.

**5.5.4.3.1 Option 1 / With Setup Fee**

<b>Feature</b>	<b>1 Year Commit</b>	<b>3 Year Commit</b>	<b>5 Year Commit</b>
<b>Business-to-Business</b>			
Setup Fee / One-Time	\$500	\$500	\$500
Per Concurrent Call / Monthly	\$31	\$27	\$25.50

**5.5.4.3.1 Option 2 / No Setup Fee**

<b>Feature</b>	<b>1 Year Commit</b>	<b>3 Year Commit</b>	<b>5 Year Commit</b>
<b>Business-to-Business</b>			
Per Concurrent Call / Monthly	\$77	\$45	\$43

In the event that a Subscribing Entity is reported to be using items in excess of items that have been ordered by that Subscribing Entity, the Subscribing Entity will place an order for the excess capacity used prior to the close of the billing period subsequent the report of the excess usage. Orders placed in response to excess usage reports will be applied to the tenant's account retroactive to the first day of the month in which the excess use occurred.

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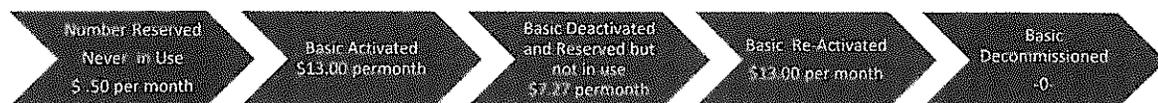
### 5.6 DID Number Profile Types

The rates listed below are for DIDs (designated ten-digit number) whether they are for Basic, Enhanced or Miscellaneous profile.

Types of DID Numbers	Description	Rate Based on 100 Total Subscribers Per Month/Per DID
Reserve/Not in Use	A reserved number refers to a DID that is generated and stored for future use, but has not been activated. Subscribing Entity can reserve a specific number or a range of numbers. No profiles are associated with these DIDs.	\$ .50
Activated	Once the DID number has been activated it is now ready for use by the Subscribing Entity. An activated account is associated with a specific profile type.	See Table 5.1.3.1 & Section 5.2 for Analog
Deactivated	When a DID number is no longer needed but the Subscribing Entity wishes to keep the DID number, it can be placed in a Deactivated status instead of being Decommissioned. The DID number will no longer be active, allowing Subscribing Entity to be kept the number for later use. There is a monthly administrative cost associated with this Deactivated number as long as it remains in the Deactivated status.	\$7.27
Decommissioned	A decommissioned number is a DID that had a profile associated with it but has been terminated by the Subscribing Entity.	\$0

Once a DID number is Activated, there is license and maintenance fee associated with the VoIP product. The fee for each profile takes into account the cost of the Service.

#### 5.6.1 DID Life Cycle



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**5.7 Meeting Place Video Conferencing**

Meeting Place is an integral component of the Cisco Unified Communications solution, Cisco Unified Meeting Place that incorporates multiparty discussions and application sharing into a broad range of communication scenarios.

Meeting Place is centrally delivered and accommodates up to 500 Moderator codes and 2000 concurrent lines for participants. The Moderator codes are used by a host (Coordinator) user of the bridge and are assigned by the State. Meeting Place offers unlimited minutes.

*Example:*

- If one Coordinator hosts a conference call with 2000 participants, this is the maximum access to that host bridge number within the same time period.
- If multiple Coordinators host conference calls totaling 1500 participants, then there are 500 participant lines remaining for that host bridge number for the other Coordinators use within the same time period.

**5.7.1 Meeting Place Fees**

Meeting Place Moderator Codes	Rate Per Code/Per Month
Per Coordinator	\$6.61

**5.8 Site /Location Survivability Options**

The survivable site options are based on the total number of State users that are managed by a State purchased device such as a router. There is a per-month per-device service fee for monitoring and management.

Key Term	Description
Management Service Fee	The monitor service includes path analysis and a diagnostic application that traces connectivity between two specified points on a network. It analyzes both physical and logical paths (Layer 2 and Layer 3) taken by packets flowing between those points. Service also may include investigating alarms, applying approved upgrades, patches or break-fix and incident repair, in the event of service disruption due to hardware or software events. Refer to Section 9.4.2 <i>Incident Repair – CBTS Provided Maintenance</i> in the SA1.
Equipment Service Plan	Refers to an equipment maintenance agreement that is based on 60 months of coverage included in the price of the Hardware.
Setup Fee	This is the initial design fee that is a one-time configuration charge that is applied to Service Provider equipment or State Owned

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	equipment.
Survivability (SRST) and/or Survivable Site	Site Remote Site Telephony (SRST) is a Cisco term that refers to an Enhanced feature to ensure business continuity and customer satisfaction by providing reliable communications to branch offices, teleworkers, and cloud telephony deployments. Specifically, SRST* provides automatic failover to local SRST gateway in case of WAN failure. (Automatic failover is continued service without manual intervention.)
Enterprise Site 1500+ Users	An Enterprise Site refers to a business organization. In the computer industry, the term is often used to describe any large organization that utilizes computers. An Intranet, for example, is a good example of an enterprise computing system. In this example over fifteen hundred users access the same network.

**5.8.1 Site Survivability Costs by Size and Equipment Ownership**

<b>Survivable Site Size Based on Total Users</b>	<b>Service Provider Equipment by Site Size</b>	<b>One Time Configuration Setup Fee</b>	<b>State of Ohio Equipment. Monthly Management Service Fee / Device</b>
Small Survivable Site (1 – 50 users)	\$210.00	\$631.00	\$90.00
Medium Survivable Site (51 – 250 users)	\$375.00	\$927.00	\$90.00
Large Survivable Site (251 – 1350 users)	\$720.00	\$1,518.00	\$90.00
Enterprise Site (1351 + users)	\$945.00	\$2,462.00	\$90.00

Service Provider can provide Monthly Management Services for the purchased equipment for an additional cost of \$90 per month per device.

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**5.9 Session Border Controller**

The Session Border Controller is a device that refers to the provision of critical command functions to deliver trusted, first-class interactive communications – voice, video, multi-media sessions – across IP network borders.

**5.9.1 SBC Purchase and Monthly Monitor Fees**

Line	Qty	Part Number	Description	Unit Purchase Price	Extended Price	Per Month Monitor Fee
1	1	NNSD4500-4K-R-BUNDLE	Net-Net 4500 SD, up to 4000 sessions – base protocol (1 pair)	\$ 308,846.42 <i>This is a one-time cost.</i>	\$ 308,846.42	
2			SIP base protocol	Included	\$ 0.00	
3			AC power options (300W)	Included	\$ 0.00	
4			Secure services module – high speed (one per system max.)	Included	\$ 0.00	
5			Routing licenses – 4000 session system	Included	\$ 0.00	
6			Load balancing license – 4000 session system	Included	\$ 0.00	
8			CPU2 option for NN4500 HA Systems	Included	\$ 0.00	
8			Acme Packet Gold Warranty – 5 Year	Included	\$ 0.00	
9	2		Monitor Fee for Session Border Controllers (\$15,050 per HA Pair)			\$30,100.00
				Subtotal	\$ 308,846.42	\$30,100.00

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				Freight	TBD at Invoice	
				<b>Grand Total</b>	\$ 308,846.42	\$30,100.00

The Acme Packet Net-Net 4500 satisfies all of the functionality, scalability, availability and manageability requirements for the Service Provider and the State. The SBC technical description above provides a specific overview to insure the setup and monitoring of High Availability (HA) systems. The HA pairs are 2 ACME Packet 4500s at each data center location.

**5.9.2 Primary Rate Interface (PRI) Services**

PRI is a type of Integrated Services Digital Network (ISDN) designed for larger organizations. If requested by an agency, CBTS can provide a quote for PRI Service on an Individual Case Basis (ICB). The quote will contain a Monthly Reoccurring Cost (MRC) for the Service and if necessary, can include a cost for equipment necessary to provider Service. Refer to Section 5.11, *Equipment Purchase Options* for authorized devices.

**5.10 Contact Centers**

These features are frequently associated with functionality used in most Contact Call Centers. These are treated as special projects in the VoIP Agency Migration Process and are defined below.

Key Term	Description
Automatic Call Distribution (ACD)	Refers to a feature that route calls based upon caller identification, dialed number, time of day, and custom defined parameters established in an IVR (Interactive Voice Response) program script. As stated elsewhere in this Amendment, this requires a basic or enhanced profile and is available after a minimum of 200 profiles are established.

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ACD Agent	Refers to an employee of a Contact Call Center. Due to the unique features associated with this function, this is also referred to as an <i>agent profile</i> .
Contact Call Center	Refers to a telecommunications workgroup or organization that provides customer service over the telephone. A contact center (also referred to as a <i>customer interaction center</i> or <i>e-contact center</i> ) is a central point in an enterprise from which all customer contacts are managed. The contact center typically includes one or more online call centers but may include other types of customer contact as well, including e-mail newsletters, etc. Example: A helpdesk.  <i>Note: These are treated as professional service engagements and/or projects that include a separate TSR and Statement of Work (SOW) and quoted as an Individual Case Basis (ICB).</i>
Interactive Voice Response (IVR)	IVR is a telephony technology in which someone uses a touch-tone telephone to interact with a database to acquire information from or enter data into the database. (As defined in Webopedia.com)
Outbound Dialer per Port (ODP)	Also known as Predictive Dialer refers to an automatic dialing service to establish a connection. It automatically calls a list of telephone numbers in sequence, screening out no-answers, busy signals, answering
Quality Monitoring Per Agent	Refers to a service to enable the evaluation of all business conversations regarding criteria of quality determined by the company in a standardized and comparable way. This may include selective recording of calls (voice and screen) according to a variety of user-defined or project-specific parameters

### 5.10.1 Basic Contact Center Costs

The features below are based on a minimum of 200 Profiles located in a contact call center. The *IVR per Port*

and *Outbound Dialer per Port* rate is based on a minimum of 200 Agent Profiles.

Feature	Rate Per Month
<b>Contact Call Center Features</b>	
ACD per Named Agent	\$31.20
IVR Port	2 ports per named agent included
Outbound Dialer per Port	1 port per named agent included
Quality Monitoring per Named Agent	\$9.41

### 5.10.2 Enhanced Contact Center Costs

The features below are based on a minimum of 600 Profiles located in a contact call center. IVR port inclusion per agent profile refers to the State's aggregate monthly profile count, not individual tenants of the platform.

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**5.10.2.1 Monthly Costs**

Feature	Rate Per Month
<b>Contact Call Center Features</b>	
ACD per Concurrent Agent	\$67.76
IVR Port	2 ports included with first 600 Agent profiles (these need activated prior to 6/30/2015)
	1 port included with each Agent profile beyond 600.
	\$78.76 per port beyond Agent inclusion
Quality Monitoring per Named Agent	\$9.41

**5.10.2.2 Per-use Costs**

Feature	Per-Use Cost
<b>Contact Call Center Features</b>	
90 day per ACD Agent concurrency burst	\$1140.00
90 day per IVR Port concurrency burst	\$1285.00

**5.11 Equipment Purchase Options**

Equipment may be purchased through the Hardware Catalog available online at:

[http://www.cbts.net/assets/PDFs/Customer%20Documents/NGTS\\_Hardware\\_Catalog.PDF](http://www.cbts.net/assets/PDFs/Customer%20Documents/NGTS_Hardware_Catalog.PDF)

The hardware elements and the purchase prices in the Catalog will be accurate and reflect exact cost to the purchaser at the time of TSR submission. Changes to the Catalog for both elements and price will be governed, monitored, and approved by the State of Ohio DAS/OIT designee. Subscribers are not required to purchase from the Catalog. Purchases by Subscribers through the Catalog may be subject to Controlling Board approval depending on total cost.

**Definitions**

Subscriber	The term "NGTS Subscriber" is used throughout the NGTS platform to indicate a consumer of the NGTS service. The term "Subscriber" could reference a VOIP phone user, a call center agent, a fax line or any similar component of any NGTS service.
Subscribing Entity	The term "Subscribing Entity" is used in reference to Agencies, Boards, Commissions, Universities, Schools and other such entities who are entitled by the Ohio Cooperative Purchasing Program to consume NGTS services under the State of Ohio Master Services Agreement. Subscribing Entities contain Subscribers.

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**5.12 Project Special Service Request**

Consistent with ITIL V3 aligned Change Management and Service Request Management process, the Service Provider accepts a Service Request for additional service or functionality related to the VoIP SA5 offering. A Change Request or Service Request is submitted from the State which identifies and provides a description or scope of work regarding project objectives. The Service Provider will develop Project level deliverables, create a Statement of Work (SOW) and submit a proposal to the State for review and approval.

Exhibit G of SA5 provides a standard Rate Card regarding labor and cost.

The sample in 5.8.1 shows a limited scope of work and level, based on a special project request.

These VoIP Special Projects will include a TSR and SOW, with cost and deliverables identified. Hardware costs for projects and special service requests associated with SA5 Managed Services are referenced in Exhibit G.

Projects for VoIP related services include, but are not limited to, the following examples:

- Contact Call Center design and build
- LAN/WAN design and build (SIP and Survivability)
- Hardware installation
- Security design build and implementation
- Site remediation services
- Any additional work related to NGTS Site service delivery.
- Phone installation fee is \$25.00 per phone

**5.12.1 Sample Statement of Work**

Scope of Work	ID No. / Level	Professional Labor Skill Set Title	Exhibit G Rate Card (Per Hour)	Total Project Hours	Total Cost
ACD/IVR Outbound Dialer Programming	C126-4	Network Specialist (Master)	\$135.85	120	\$16,302.00
Onsite System Voice Engineer	C138-1	Voice/Data Comm. Engineer Entry Level	\$73.93	1800	\$133,074.00
Network Services for end-user location	C138-1	Voice/Data Comm. Engineer Entry Level	\$73.93	1000	\$73,930.00
Configuration and install (LAN/WAN/QoS/ Voice Data Readiness	C126-3	Senior Network Specialist	\$104.39	400	\$41,756.00

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Assessments					
Network services to connect to customer solution to the State of Ohio network that are not included in monthly service packet rates	C136-2	Test Engineer-Journeyman	\$76.26	80	\$6,100.80
<b>GRAND TOTAL</b>				3400	\$271,162.8

### 5.13 Training Options

Different training options are available and are listed below. All training materials are provided in softcopy, including the Quick Start User Guides. Printed training materials are provided upon request at an additional cost.

Course Curriculum	Description
Self-Paced Guides	Easy to read step/action instructions with print screens. The <i>Self-Paced Quick Start Guides</i> are provided in PDF softcopy.
Technical Solutions (TS) Training and Demo Center (self-paced)	This is a free website that provides video and audio training tutorials on the various IP phone models. It is located at:  <a href="http://supportandtraining.com/stateofohio">http://supportandtraining.com/stateofohio</a> .  Self-Paced Quick Start Guides for easy reference and instruction are provided for each IP phone type.
Web Ex Conference (Instructor lead)	Instructor is off-site to deliver training content through an existing video conferencing capability. This is conducted as a real-time session.
Computer Based Training or Classroom with instructor	This is conducted as a hands-on computer session that is led by an instructor (15-20 per group). Each trainee has a workstation but can use his/her own laptop or any other workstation device. Devices are connected to simulate the work environment. Instructor demonstrates new features. Exercises include hands-on activities to perform tasks.
Train-the-Trainer (T3)	Content is delivered by an instructor to include tips for troubleshooting in addition to phone set-up and demonstrating feature content.

#### 5.13.1 Curriculum Costs

In addition to providing a selection of courses, the course curriculum is customized for specific users. Training cost is charged on a per user per course basis.

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<b>Curriculum (Core)</b>	<b>Lab/ Classroom</b>	<b>TS Train-the-Trainer (T3)</b>	<b>Web Ex Conference</b>	<b>Self Placed Tutorial-URL Access*</b>	<b>PDF Quick Start Guides</b>
Telecom Administrator	\$151.20	\$134.40	\$100.00	Not available	Cisco.com
Help Desk	\$151.20	\$134.40	\$100.00	Not available	Cisco.com
End-User	\$151.20	\$134.40	\$100.00	Provided - No Charge	Cisco.com
Specialized User	\$151.20	\$134.40	\$100.00	Not available	Cisco.com

### 5.14 OARnet SIP Transport Fee

The OARnet SIP transport fee is a fee that has been included within the cost of each profile. The total cost of the fee is twenty-five cents (\$0.25) per profile per month. OARnet will receive twenty cents (\$0.20) per profile per month and the Service Provider will keep five cents (\$0.05) to cover administrative processing fees.

#### 5.14.1 OARnet SIP Transport Fee

<b>Profile Type</b>	<b>Flat Rate Per Month</b>	<b>CBTS Process Fee</b>	<b>OARnet User Transport Fee</b>
Basic	\$0.25	\$0.05	\$0.20
Enhanced	\$0.25	\$0.05	\$0.20
Misc.	\$0.25	\$0.05	\$0.20

### 5.15 Universal Service Fund

The 1996 Universal Service Fund (USF) Act states that all providers of telecommunications services should contribute to federal universal service in some equitable and nondiscriminatory manner. Universal Service Administration Company (USAC) is responsible for processing applications for support, confirming eligibility, and reimbursing telecommunications companies and Internet access providers for discounted services delivered to eligible schools and libraries.

Service Administrative Company (USAC) collects universal service contributions from telecommunications carriers and administers universal support mechanisms (programs) designed to help communities across

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the country secure access to affordable telecommunications services, including eligible schools and libraries. As authorized under the FCC's rules, Cincinnati Bell will include a separate line item charge on monthly bills for its USF contribution attributable to Services provided to the State of Ohio under the Master Services Agreement.

Cincinnati Bell agrees to forward reporting items and contributions to State of Ohio eligible entities that use USAC as referenced in the Master Service Agreement.

### **5.16 E-Rate Eligibility**

E-Rate is the commonly used name for the Schools and Libraries Program of the Universal Service Fund, which is administered by the Universal Service Administrative Company (USAC) under the direction of the Federal Communications Commission (FCC).

Cincinnati Bell agrees to forward reporting items and contributions to State of Ohio eligible entities that use USAC as referenced in the Master Service Agreement.

Cincinnati Bell Any Distance, Inc., Cincinnati Bell Technology Solutions, Inc., and its affiliates provide E-rate eligible services referenced in the Master Service Agreement under SPIN numbers registered for eligible categories based on USAC Criteria.

Contact CBTS at [AskNGTS@CBTS.Net](mailto:AskNGTS@CBTS.Net) to request assistance for information regarding specific SPIN numbers for the USAC ERate process and Customer responsibilities.

### **5.17 Hosted Dedicated Cluster**

NGTS provides a Hosted Dedicated NGTS Cluster option to Entities or Cooperatives who have technical or business operations requirements or needs outside of the shared NGTS State of Ohio Platform. NGTS will provide a fully contractually compliant and service aligned Hosted Dedicated Cluster for the Entity or Cooperative aligned and integrated with the NGTS State of Ohio Platform for a required five (5) year term of agreements and a non-recurring capital expense based on size and consumption on an Individual Case Basis (ICB) agreed in the form of a Statement of Work (SoW) prior to the commencement of the Build phase

#### Sample SoW:

This document shall serve as a contract ("Contract") between *Entity*, as a current member of the State of Ohio Cooperative Purchasing Program in good standing with the Department of Administration Services and Cincinnati Bell Technology Solutions ("CBTS") for NGTS a *Voice-over Internet Protocol (VoIP) Telecommunications System*. The term of the Contract is five (5) years, effective on the Service Commencement Date.

The "Proposal" to *Entity* is governed by the CBTS Master Services Agreement and Service Attachments through the Ohio Department of Administration Services. Terms & conditions shall apply and become part of the Contract. CBTS will provide all standard services and support to *Entity* and any other approved *Sub-Entity* Subscriber to leverage the *Entity's* Hosted Dedicated Cluster as well as:

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1. 1 Hosted Dedicated Platform with a non-recurring cost as agreed ICB to *Entity*
  - a. Telephony: Call Manager, Presence, Unity Connection, Contact Center,
  - b. Services: E911, Informacast
  - c. Video/Mobile: Expressway
2. Higher Education Leapfrog Technology
  - a. Current profile rate as afforded in overarching tiered pricing model – currently \$12.86 per profile
  - b. BYOD Option For Supported Mobile Phones, Tablets and Computing Hardware
  - c. Multi-Device support of up to 10/Profile
  - d. Mobile Remote Access
3. HD Cluster Availability
  - a. *Entity* Onboard to NGTS 2.0 with Hosted Dedicated (HD) Cluster
  - b. Ability to Onboard any *Sub Entity* or Institution onto the *Entity's* HD Cluster
4. Additional Clusters at Hosted Dedicated Pricing as Desired

This is the entire agreement between the parties. Terms and conditions and the State of Ohio's Master Service Agreement apply and can be referenced at the following link: \_

<http://das.ohio.gov/Divisions/InformationTechnology/TelecommunicationsServices.aspx#4217177-cbts>

All consumed subscriber service cost discounts as defined in Section 5 of the Service Attachment will be applied to the *Entity* as volume discounts are achieved as defined in presiding contractual documents

ICB Pricing Guideline

<b>Hosted Dedicate Cluster Indicative Monthly Recurring Cost</b>		
<b>Model</b>	<b>Supported Profiles</b>	<b>Not to Exceed Cost</b>
Small	Less than 5,000 Profile	\$7,000
Medium	Less than 10,000 Profile	\$10,000
Large	Less than 20,000 Profile	\$20,000

<b>Hosted Dedicate Cluster Indicative Non Recurring (5 year) Cost</b>		
<b>Model</b>	<b>Supported Profiles</b>	<b>Not to Exceed Cost</b>
Small	Less than 5,000 Profile	\$385,088
Medium	Less than 10,000 Profile	\$548,697
Large	Less than 20,000 Profile	\$1,091,847

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## **5.18 Severity Zero**

### **5.18.1 Service Overview**

In addition to the eligible services provided under Service Attachment 1, Voice over Internet Protocol (VoIP) Managed Services, the Service Provider is offering *Severity Zero - Life Safety Add-On* to State of Ohio eligible Subscribing Entities.

This Service provides Low Use Phones for areas where phone service is only required in extreme emergency situations and may not be needed for long periods of time. This provision provides for a zero monthly recurring cost for a miscellaneous profile. A monthly fee is only associated with a device for months phone was used. The High Touch Engagement Process addresses emergency scenarios, necessary system changes that immediately by-pass typical Service Level Agreement process for moves, adds, and changes. The High Touch Engagement Process responds immediately to a *Severity Zero* event.

A Severity Zero is a term used for *life safety* issues that require immediate attention from the State of Ohio CBTS team.

A *Severity Zero* incident includes, but is not limited to, any of the following catastrophic events:

- Biological, nuclear, intent to physically, emotionally, and psychologically cause harm through aggressive, hostage, riot or terroristic acts.
- Natural disasters, inclement weather due to tornado, hurricane, tsunamis, volcano, asteroid impact, etc.

### **5.18.2 Standard Service Feature**

#### ***Low Use Phone***

The Low Use Phone is a phone placed in an area with the potential for only being used in extreme emergency situations. The phone uses a miscellaneous profile but is only charged the miscellaneous fee for the months when the device is actually in use. The phone is always activated and ready to make calls. Low Use Phone can be placed in areas such as prison tunnels where the phone is only used in riot situations. Neither voicemail nor a user is assigned to the phone. A Low Use Phone requires a one-time license and setup fee of \$100.00 per phone.

If a phone is used within any month, the Subscribing Entity will incur a fee for that month. An audit will be performed for each Subscribing Entity every six (6) months on Low Use Phones which will be conducted using the VeraSmart Call Detail Reporting (CDR) tool to determine if any of the Low Use Phones were used. The report and the usage charges will be added to Subscribing Entity's invoice as a line item following the month of the bi-annual audit.

#### ***Order Service***

An Order will need to be placed through the State's Ordering System by the Subscribing Entity to request Service and must be placed a minimum of fifty-one (51) calendars days prior to implementation

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of the Customer Request Date (CRD). The Subscribing Entity will need to complete a *Technical Assessment Workbook (TAW)* and email the TAW to [AskNGTS@cbts.net](mailto:AskNGTS@cbts.net).

**Limitation**

Analog Ports are excluded for the Low Use Phone category due to additional hardware required to support their operation in the NGTS environment.

**5.18.3 Optional Service Features**

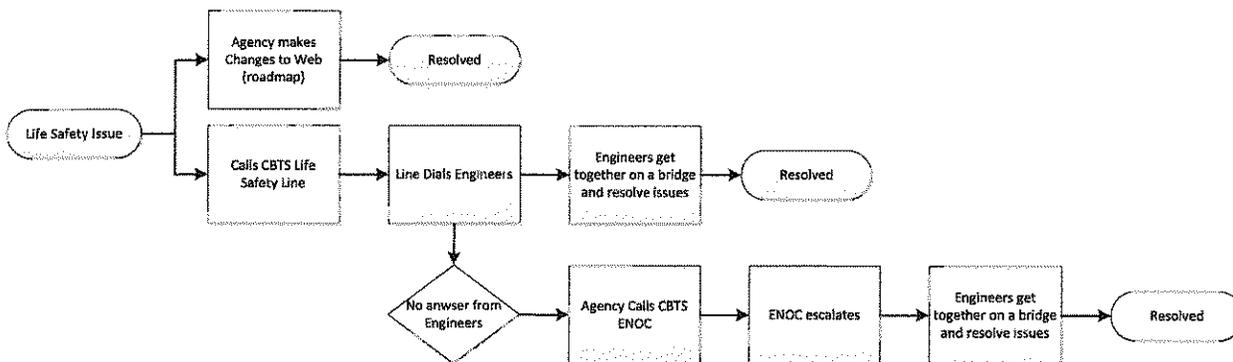
**High-Touch Engagement Process**

The *High-Touch Engagement* process is a specific set of aggressive responsive protocols provided to the Subscribing Entity's CIOs / Directors that are only engaged under break-glass / life safety / severe emergency events. *Break glass* (which draws its name from breaking the glass to pull a fire alarm) refers to a quick means for a person who does not have access privileges to certain information, to gain access when necessary. Systems containing primary source data (information) for treatment, develop, document, implement, and test *break glass* procedures to be used in the event of an emergency requiring access to security protected systems. These systems must have a clearly stated and widely understood procedure for allowing access via alternate and/or manual methods. User authentication under this scenario is extremely time-sensitive, highly controlled and monitored to preserve security by restricting access. CBTS is engaged only under emergency conditions. The Subscribing Entity will contact the CBTS eNOC (24x7x365) at 513-397-9473.

The business process below provides for a 'high-touch' engagement overview for the State of Ohio Subscribing Entities that may have these types of requirements.

The Service Level Agreement and objectives stated in the Section 8.4, Service Levels Agreements of Service Attachment 1 VoIP Managed Services do not apply to these emergency features due to break-glass life safety protocols.

**High Touch Engagement Process Flow**



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**5.18.4 Fee Structure**

Miscellaneous Profiles	Per Profile/Per Month
1 – 1,000	\$9.78
1,001 and above	\$9.31

***Life Safety False Positive Alarm***

This High Touch Engagement Process is fully tested prior to activation and is subsequently tested once a year thereafter. The Service Provider conducts an annual Operational Readiness Test (ORT) to insure timely response at no charge to the Subscribing Entity. The mobilization of professional and technical resources allocated to test and implement the High Touch Engagement Process is a costly event. As an escalated critical event, staff is expected to respond within a specific timeframe to facilitate life safety protocols.

There is no charge for the mobilization of CBTS resources used in response to an actual emergency; however, there is a charge of \$1,000.00 per incident for each False Positive Alarm. The charge for False Positive Alarms is based on the cost of resources that are used when the High Touch Engagement Process is activated.

**5.18.5 Terms and Conditions**

There are no additional terms and conditions applied to these features.

**5.18.6 Equipment Discounts**

There are no additional discounts applied to these features.

**5.18.7 Billing Conversion Plan**

This is an add-on service and it will display as a separate item on the invoice.

Cincinnati Bell Any Distance (CBAD) provides an itemized bill to each Subscribing Entity for the selection of a Service.

**5.18.8 Additional Information**

Phones will be tested prior to deployment of the effective service date and CBTS will evaluate the use of the Low Use Phone twice a year.

**6 Term**

As per the Master Service Agreement (MSA), the current General Assembly cannot commit a future General Assembly to any expenditure. Therefore, all Service Attachments will automatically expire at the end of the current biennium, which is June 30, 2017.

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For the purposes of long-term pricing advantage, longer commitments exist in the pricing tables for Service and Equipment. The Term of the commitment begins upon the installation and acceptance of Service or Equipment. Modifications to Service(s) and/or Equipment will not constitute the beginning of a new Term.

The State reserves the right, subject to its needs, to renew Term C for an additional biennium period, and any subsequent biennium thereafter, if determined to be in the best interest of the State, and at the sole discretion of the State.

## 7 Placing Orders

As noted in the MSA, all Orders must be placed through the state of Ohio's Ordering System. This also applies to Cooperative Purchasing members who wish to use this State contract. It is the only requirement so they may take advantage of the purchasing power of the State's large user base.

Subscribing Entities may modify or cancel any Service and/or Equipment at any time without penalty.

Before transition, Cincinnati Bell will provide URLs for this contract that will describe what is available for ordering.

## 8 Service Level Objectives, Agreements, Credits & Penalties

### 8.1 Service Overview

Item	Short Name	Definitions
1	UC on UCS Monitoring and Management	The proposed solution will provide monitoring and management, Change and Support functions for the OhioDAS UC on UCS core. The UC on UCS Administration staff will be located in Cincinnati. In general, the ENOC staff will possess the following skills: <ul style="list-style-type: none"> <li>• Knowledge of the UC on UCS Infrastructure within OhioDAS</li> <li>• Knowledge of the Cisco Voice Gateway Infrastructure within OhioDAS</li> <li>• Ability to work and deal with supervisors, co-workers, vendors, customers, and global staff</li> <li>• Technical Knowledge of the UC on UCS Cisco Infrastructure</li> <li>• Knowledge of Cisco RMA and TAC processes</li> <li>• Working knowledge of Subscribing Entities' ticketing system</li> </ul>
2	Cisco Unified Communications Maintenance	The Proposed Solution includes equipment maintenance activities related Cisco Systems. This is covered with a maintenance agreement between the Subscribing Entity and CBTS. Procurement of hardware maintenance is a requirement for the Infrastructure as a Service solution.
3	CBTS Monitoring	The ENOC management platform provides for real-time reporting of events and alarms that are generated both by the management platform itself and the network elements. In- Scope supported equipment is

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4	Storage Management	<p>monitored to ensure end-to-end connectivity.</p> <p>CBTS offers storage management and monitoring services. This service is available at an additional cost. The high-level features of this service include the following:</p> <p>Change Management</p> <ul style="list-style-type: none"> <li>○ Storage Provisioning</li> <li>○ LUN Allocation</li> <li>○ SAN Fabric Zoning</li> <li>○ Array Firmware upgrades</li> </ul> <p>Incident Management</p> <ul style="list-style-type: none"> <li>○ Storage Monitoring</li> <li>○ Hardware break/fix</li> <li>○ Storage replication support</li> </ul> <p>Capacity Management and reporting</p> <p>Problem Management</p>
5	Normal Support	<p>Support for business impacting critical events are 24 hours per day, 7 days a week, 365 days a year as part of Incident Management approach.</p>

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## **8.2 Service Definitions**

CBTS will provide Tier 2 Help Desk Support for Subscribing Entities. Each end user should check with their own Help Desk or IT organization to make sure no problems exist before contacting CBTS. There should be a single point of contact and one backup within each organization that is appointed to contact CBTS Help Desk.

**Change** - The addition, modification or removal of anything that could have an effect on IT services. The scope should include all IT services, Configuration Items, Processes, Documentation, etc.

**Change Management** – The process for controlling the lifecycle of all Changes. The primary objective of Change Management is to enable beneficial Changes to be made, with minimum disruption to IT services.

**Configuration Item (CI)** - Any Component that needs to be managed in order to deliver an IT Service. Information about each CI is recorded in a Configuration Record within the Configuration Management System and is maintained throughout its Lifecycle by Configuration Management. CIs are under the control of Change Management. CIs typically include IT Services, hardware, software, buildings, people and formal documentation such as process documentation and SLAs.

**Configuration Management** -The process responsible for maintaining information about Configuration Items required to deliver an IT Service, including their Relationships. This information is managed throughout the Lifecycle of the CI. Configuration Management is part of an overall Service Asset and Configuration Management Process.

**Critical Business Function** - Vital function (such as production and sales) without which a firm cannot operate or remain viable. If a critical business function is interrupted, a firm could suffer serious financial, legal, or other damages or penalties.

**Emergency Change** - A Change that must be introduced as soon as possible. An Emergency Change is reserved for changes intended to repair an error in an IT service that is negatively impacting the business to a high degree. Emergency changes are normally associated with an Incident. For example, to resolve a Major Incident.

**Event (record)** - A Change of state which has significance for the management of a Configuration Item or service. The term Event is also used to mean an alert or notification created by any IT service, Configuration Item or monitoring tool. Events typically require IT operations personnel to take actions, and often lead to Incidents being logged.

**Event Management** - To filter and categorize Events and to decide on appropriate actions. Event Management is one of the main activities of Service Operations.

**Expedited Change** – A type of Emergency Change that is required quickly due to a pressing need such as legal requirements or a business need but are not related to restoring service. Expedited changes are not normally associated with an Incident.

**Full Support Location (FSL)** – A Subscribing Entity Site where CBTS provides dedicated, on-site support personnel for the Service.

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**IMAC** – Install Move, Add, and Change – A Standard Change tracked through the service request mechanism.

**Incident** - An unplanned interruption to an IT service or reduction in the quality of an IT service. Failure of an IT Service that has not yet impacted service is also an Incident, for example failure of one disk from a mirror set.

**Incident Management** - the process for dealing with all Incidents; this can include failures, questions or queries reported by the users (usually via a telephone call to the Service Desk), by technical staff, or automatically detected and reported by Event monitoring tools.

**IT Service:** A Service provided to one or more Subscribing Entities, by an IT Service Provider. An IT Service is based on the use of Information Technology and supports the Subscribing Entity's Business Process. An IT Service is made up from a combination of people, process and technology and should be defined in a Service Level Agreement.

**Limited Support Location (LSL)** – A Subscribing Entity Site where no CBTS on-site support personnel are provided. CBTS is responsible for dispatching CBTS personnel or CBTS subcontractors to the site as required in order meeting contractual obligations.

**Normal Change** - Any Change that is not a Standard Change, Emergency Change (or Expedited Change) is considered a "Normal" change and must be submitted via the Request for Change (RFC) process.

**Problem** - A cause of one or more Incidents. The cause is not usually known at the time a Problem Record is created.

**Problem Management** - To manage the lifecycle of all Problems. The primary objectives of Problem Management are to prevent Incidents from happening, and to minimize the impact of Incidents that cannot be prevented. Proactive Problem Management analyses Incident Records, and uses data collected by other IT Service Management processes to identify trends or significant Problems.

**Remote Support Location (RSL)** – A Subscribing Entity Site where no CBTS on-site support personnel are provided. The Subscribing Entity is responsible for providing resources to provide any on-site work required to complete CBTS' activities.

**Request for Change (RFC)** - A formal request for a Change to be implemented. An RFC includes details of the proposed Change, and are recorded electronically.

**Service Design** - An Activity or Process that identifies Requirements and then defines a solution that is able to meet these Requirements.

**Service Request** - A request from a user for information, or advice, or for a Standard Change or for access to an IT service. For example to reset a password, or to provide standard IT services for a new user. Service Requests do not require a Request for Change (RFC) to be submitted.

**Service Transition** - A change in state, corresponding to a movement of an IT Service or other Configuration Item from one Lifecycle status to the next.

**Service Operation** - Day-to-day management of an IT Service, System, or other Configuration Item. Operation is also used to mean any pre-defined Activity or Transaction. For example loading a magnetic tape, accepting money at a point of sale, or reading data from

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a disk drive.

**Severity Code** - A simple code assigned to Incidents, Problems and Known Errors, indicating the seriousness of their effect on the quality of IT service. It is a common name given to the means of recording priority for resolution.

**Standard change** - A pre-approved Change that is low risk, relatively common and follows a procedure or work instruction. For example, password reset or provision of standard equipment to a new employee. Request for Changes ( RFC's) are not required to implement a Standard Change, and they are logged and tracked using the Service Request Mechanism.

### 8.2.1 Service Level Definitions – Incident Management

Severity	Definitions
<b>Severity 1: Business Critical Incident</b>	<p>Any One of the Criteria below with no work-around available and more than 5 users impacted:</p> <ol style="list-style-type: none"> <li>1) <b>Total Outage impacting Critical Business Function.</b> The entire Service, Site, or Critical Business Application is unavailable.</li> <li>2) <b>Significant Outage impacting Critical Business Function.</b> More than 50% of the users of the Service, Site or Critical Business Application are completely unable to utilize the Service, Site or Critical Business Application.</li> <li>3) <b>Other Outage impacting Critical Business Function.</b> The incident presents a high business impact for the Subscribing Entity as defined as the inability to perform a Critical Business Function.</li> <li>4) <b>Patient Care Phones.</b> OhioDAS will have on-site spares that can be placed by patient care staff, facilities management or an OhioDAS designated resource (not part of this SOW) to replace a broken patient care phone. If that does not resolve the outage then OhioDAS patient care staff will initiate a call to the service desk for support. Although the ticket will be logged as a severity 2 incident, CBTS will treat it as a severity 1.</li> </ol> <p>Examples: Voice Mail system down, Manufacturing Application running in Virtual Data Center not accessible, Call Center unable to receive any calls.</p>
<b>Severity 2: Urgent Incident</b>	<p>Any One of these Criteria:</p> <ol style="list-style-type: none"> <li>1) <b>Minor Outage somewhat impacting Critical Business Function.</b> Partial outage OR Significant Performance Degradation of the Service, Site or Critical Business Application impacting more than 50% of the end users who can continue to perform Critical Business Functions, but in a severely degraded manner.</li> <li>2) <b>Outage impacting Non-Critical Business Functions.</b> Other incidents impacting a small group of end users of the Service, Site or Non-Critical Business Application (10%-50% of the Service's end user population AND greater than 5 users).</li> </ol> <p>Examples: Down data Switch, Access to Voice Mail Slow for multiple users, multiple users having a problem accessing a voice application.</p>
<b>Severity 3: Normal Incident</b>	<ol style="list-style-type: none"> <li>1) <b>Performance or Efficiency Concerns.</b> Incidents that have</li> </ol>

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**Severity 4: Scheduled or Out of Scope Incident**

little or no impact on Critical Business Functions, affecting the efficiency of the normal business operation of an individual user or less than 50% of the user community.

Examples: A Phone not working, existing account password/access reset, file backup restores etc.

Any One of these Criteria:

- 1) An incident that can be handled on a scheduled basis that extends beyond normal standard service level objectives. The incident may require an extended resolution time, but does not prohibit the execution of productive work.
- 2) Incidents related to non-standard or non-supported applications or hardware where there is no impact to Subscribing Entity's Critical Business Functions.
- 3) All incidents requesting support outside the current contractual support hours. Subscribing Entity will be charged for time and materials.
- 4) Out of scope requests. Subscribing Entity will be charged for time and materials OR the Subscribing Entity will be contacted by a sales representative and presented with an estimate. Once accepted, a mutually agreeable schedule will be developed by CBTS. CBTS will not take action, until the Subscribing Entity has accepted the time and materials rates or the estimate.

Example: 8x5 Subscribing Entity with an after-hours request, support for currently non-supported equipment.

**Severity SR1: Service Request Fulfillment for Standard Change**

- 1) **Standard Change.** A Service Request for a Standard Change to a Service, Site or Business Application

Examples: Telephone IMAC, Firewall Rule Add, Virtual Data Center Server Add.

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**8.2.2 Service Level Definitions - Change Management**

<b>Change Type</b>	<b>Definition</b>
<b>Type 1: Emergency Changes</b>	
<b>Type 1a: Emergency Change</b>	A Change that must be introduced as soon as possible. An Emergency Change is reserved for changes intended to repair an error in an IT service that is negatively impacting the business to a high degree. Emergency changes are normally associated with an incident. For example, to resolve a Major Incident.
<b>Type 1b: Expedited Change</b>	A type of Emergency Change that is required quickly due to a pressing need such as legal requirements or a business need but is not related to restoring service. Expedited changes are not normally associated with an incident and are considered out of scope of the Service. Subscribing Entity will be charged for time and materials once accepted. CBTS will not take action, until the Subscribing Entity has accepted the time and materials rates.
<b>Type 2: Standard Changes</b>	
<b>Type 2a: Soft IMAC</b>	Work can be accomplished remotely, without visiting the user or the site and typically impacts a single user.
<b>Type 2b: Hard IMAC</b>	Work requires an on-site visit to the user or site and typically impacts only a single user.
<b>Type 2c:</b>	Other changes that CBTS and Subscribing Entity pre-approve for use as a Standard Change.
<b>Other Standard Change</b>	
<b>Type 3: Normal Change</b>	
<b>Type 3a: Simple Change</b>	Less than 5 hours of work needed to plan, manage, implement and test the change.
<b>Type 3b: Complex Change</b>	More than 5, but less than 10 hours of work needed to plan, manage, implement and test the change.
<b>Type 3c: Project</b>	More than 10 hours of work needed to plan, manage, implement and test the change. More than 25 users potentially impacted at one time. New Services, Sites or Installations of Core Networking, Server or Application Components. Major Upgrades.

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### 8.3 Service Level Objectives

#### 8.3.1 Service Level Objectives – Incident

Severity	Incident Management		
	Response Time	Repair Time Full Support Location	Repair Time Limited Support Location
Severity 1	15 Minutes	4 Hours*	6 Hours*
Severity 2	30 Minutes	8 Hours*	8 Hours*
Severity 3	30 Minutes	1 Business day*	1 Business day*
Severity 4	1 Hour**	2 Business days*	2 Business days*
Severity SR	30 Minutes	2 Business days*	2 Business days*

\*Requires Subscribing Entity-Provided Resource to be available immediately by CBTS and all necessary equipment to be on-site.

\*\* Equipment should be monitored by CBTS

#### 8.3.2 Service Level Objectives – Change Management

Type	Change Management	
	Perform Time Full Support Location	Perform Time Limited Support Location
Type 1a- Emergency	4 Hours*	4 Hours*
Type 1b- Expedited	1 Business day	1 Business day
Type 2a- Soft IMAC	2 Business days*	2 Business days*
Type 2b- Hard IMAC	2 Business days*	2 Business days*
Type 2c- Other Standard	5 Business days*	5 Business days*
Type 3a- Simple RFC	10 Business days*	10 Business days*
Type 3b- Complex RFC	None	None
Type 3c- Project	None	None

\*Requires Subscribing Entity-Provided Resource to be available immediately by CBTS and all necessary equipment to be on-site.

\*\* Dependent on time of submittal, change window availability, and change acceptance board review schedule.

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## 8.4 Service Level Agreements (SLA)

### 8.4.1 Response Time SLA

**Initiation and Closure** Response starts when an Incident Ticket is assigned to CBTS and ends when CBTS has assigned a Tier 2 or Tier 3 engineer to work on the incident and a communication to the Subscribing Entity has been created.

**Measurement** Response to Incidents shall be measured as the percentage of all Incidents based on the Response Time Service Level Objective during a given month.

**Compliance Calculation** Response to Incidents shall be calculated, for a given month, as

$$\text{SERVICE LEVEL ATTAINMENT\%} = \frac{\text{TOTAL INCIDENTS MEETING SLA FOR THE MONTH PER SEVERITY LEVEL}}{\text{TOTAL INCIDENTS FOR THE MONTH PER SEVERITY LEVEL}}$$

Example: If total number of Incidents for which CBTS has met or exceeded the TTR SLA is 8 and the total number of Incidents for which CBTS has worked is 10, then the calculation would be as follows:  
 $8 / 10 = 80.00\%$

**SLA Thresholds and Default** Based on the table below, if a Service Level Attainment % drops below the minimum, then CBTS has created 1 Service Level Default per Severity Level.

Severity Level	Minimum Service Level Attainment % Response
Severity 1	95%
Severity 2	90%
Severity 3	85%
Severity 4	80%

### 8.4.2 Repair Time SLA

**Definition** Repair Time is a measurement of the average amount of time it takes to restore a service for a given month.

**Initiation and Closure** Repair Time starts when an Incident Ticket is assigned to CBTS. Severity 1 and 2 Incidents cannot be resolved without Subscribing Entity confirmation that issue has been resolved to its satisfaction. CBTS will attempt to contact the Subscribing Entity 3 times for closure. CBTS will not be held accountable for failure to close an Incident within SLA target due to inability to reach Subscribing Entity providing CBTS has made and documented 3 attempts to reach Subscribing Entity within a reasonable period of

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time.

**Measurement** Repair Time for Incidents shall be measured as the percentage of all Incidents based on the Repair Time Service Level Objective during a given month.

**Compliance Calculation** Repair Time for Incidents shall be calculated, for a given month, as

$$\text{SERVICE LEVEL ATTAINMENT} = \frac{\text{TOTAL INCIDENTS MEETING SLA FOR THE MONTH PER SEVERITY LEVEL}}{\text{TOTAL INCIDENTS FOR THE MONTH PER SEVERITY LEVEL}}$$

Example: If total number of Incidents for which CBTS has met or exceeded the Repair Time is 8 and the total number of Incidents for which CBTS has worked is 10, then the calculation would be as follows:

$$8 / 10 = 80.00\%$$

**SLA Thresholds and Default** Based on the table below, if a Service Level Attainment % drops below the minimum, then CBTS has created 1 Service Level Default per Severity Level.

Severity Level	Minimum Service Level Attainment % MTTR
Severity 1	95%
Severity 2	90%
Severity 3	85%
Severity 4	80%

### 8.4.3 Change Request Perform Time SLA

**Definition** Perform Time is a measurement of the amount of time it takes to perform change management activities for a given month.

**Initiation and Closure** Perform Time starts when a Change Ticket is assigned to CBTS and ends when CBTS has resolved the ticket and has verified with the Subscribing Entity.

**Measurement** Perform Time for Changes shall be measured as the percentage of all Changes based on the Perform Time Service Level Objective during a given month.

**Compliance Calculation** Perform Time for Changes Requests shall be calculated, for a given month, as

$$\text{SERVICE LEVEL ATTAINMENT} = \frac{\text{TOTAL CHANGE REQUESTS MEETING SLA FOR THE MONTH PER CHANGE TYPE}}{\text{TOTAL CHANGE REQUESTS FOR THE MONTH PER CHANGE TYPE}}$$

Example: If total number of Change Requests for which CBTS has met or exceeded the MTTP SLA is 8 and the total number of Change Requests for which CBTS has worked is 10, then the calculation would be as follows:

$$8 / 10 = 80.00\%$$

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**SLA Thresholds and Default** Based on the table below, if a Service Level Attainment % drops below the minimum, then CBTS has created 1 Service Level Default per Category.

Change Type Category	Minimum Service Level Attainment % Response
Type 1a – Emergency	95%
Type 1b – Expedited	80%
Type 2a – Soft IMAC	90%
Type 2b – Hard IMAC	90%
Type 2c – Other Standard	80%
Type 3a – Simple RFC	75%

#### 8.4.4 Customer Satisfaction SLA

**Definition** Customer Satisfaction is a measurement of the End User's satisfaction with the services provided by CBTS.

**Measurement** "Overall" satisfaction scores based on a scale of one to five, with one being the lowest and five being the highest level of satisfaction.

**Compliance Calculation** Average of "overall" satisfaction scores aligned with CBTS employees.

SERVICE LEVEL ATTAINMENT = Average score of 4.0 or higher

Example: If three surveys were completed in the month, overall scores of 3, 4 and 5; the average would be 4.

**SLA Thresholds and Default** Based on the table below, if a Service Level Attainment drops below the minimum, then CBTS has created 1 Service Level Default.

Customer Category	Minimum Service Level Attainment
Overall Customer Satisfaction	4

#### 8.4.5 Service Level Penalties

**Monthly Service Level Defaults** Service Level Defaults will be summed together for the month.

**Reporting** CBTS will provide, by the 10<sup>th</sup> business day of the month, a report to verify CBTS's compliance with the Service Levels. Upon request, CBTS will provide detailed supporting information for the report.

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**Subscribing Entity Credits** Subscribing Entity is entitled to a credit if CBTS has two (2) or more Service Level Defaults in any single month. Service credits will be issued by CBTS, based on the following table. In the event that CBTS defaults and is obligated to issue Subscribing Entity credit, CBTS will have the opportunity to earn back this credit. If the one month following the credit does not contain any Service Level Defaults, 100% of the credit will be forgiven. The credit is due to Subscribing Entity after this one month grace period.

Service Level Defaults	Subscribing Entity Credit
0-1	0% of monthly service charge
2-3	5% of monthly service charge
4-5	10% of monthly service charge
6-7	15% of monthly service charge
8 or more	20% of monthly service charge

**Severity 1 and Contract Breach.** An accumulation of Six (6) Monthly Service Level Defaults on Severity One incidents during a rolling 12-month period will result in a material breach of contract and Subscribing Entity may pursue all rights and remedies as defined in this Service Attachment or the MSA through DAS.

**8.4.6 SLA Exceptions**

Item	Short Name	Definitions
1	External Support Callback	Tickets assigned to CBTS, but require third party resources (not including CBTS contract work) to complete the CBTS portion of the request. This includes tickets that require the engagement of a third party vendor to make repairs (hardware, software, patches, circuits, cables, etc.) and tickets associated with Equipment that is not covered by a 24x7x365 maintenance agreement.
2	Third Party	Tickets associated with outages caused by non-affiliated third parties for which CBTS has no control or ability to remedy
3	Subscribing Entity Callback	Tickets assigned to CBTS, but unable to contact Subscribing Entity in order to resolve the problem
4	Facility Access Issue	After-Hour access issue where Subscribing Entity cannot control building access and entry cannot be granted through other means within the CBTS SLA window
5	Item Return	Waiting for return of defective unit before resolving ticket
6	Parts	Waiting on small parts not stocked
7	Scheduled	Scheduled events at the request of any authorized Subscribing Entity resource of convenience that goes beyond the SLA window.
8	Facilities	Outages caused by facilities issues, power, air handlers etc. Incident of Force Majeure.
9	Responsibilities	Any outage caused by a Subscribing Entity employee that has explicit responsibility, trouble tickets opened by Subscribing Entity by mistake.
10	Subscribing Entity-Provided Maintenance	Lack of hardware and/or software maintenance after Entity-Provides any applicable vendor warranty period expires.

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**9 Managed Service Support Plan**

**9.1 Change Management**

**9.1.1 Service Request Processes**

Item	Short Name	Definitions
1	Subscribing Entity Service Desk System	Subscribing Entity's End User Community will report Service Desk System trouble to the Subscribing Entity's Help Desk. The Subscribing Entity's Help Desk will then open a ticket and assign a priority to the ticket. Should the Subscribing Entity's Help Desk find the trouble to be CBTS service related, the Subscribing Entity's Agency Help Desk or designated primary or secondary authority would assign the ticket to the CBTS Legacy voice queue thus contacting CBTS.
2	eMail	Subscribing Entity's Helpdesk or authorized IT Staff may submit Requests for Service through an email request
3	Telephone	Subscribing Entity's Helpdesk or authorized IT Staff may submit Requests for Service by calling the ENOC
4	Coordination	Coordination with Subscribing Entity's existing Help Desk; The CBTS ENOC will coordinate with the Subscribing Entity's Help Desk to ensure that tickets are opened and managed. Help desk and authorized users shall be the interface between CBTS and Subscribing Entity. There will be one number to call for Help Desk assistance by Subscribing Entity's users.

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**9.1.2 Standard Change Processes**

Item	Short Name	Definitions
1	Authorization	CBTS will administer all authorization databases applicable for device
2	Changes	CBTS will administer logical move-add-change (MAC) work for the legacy voice systems
3	User Accounts	Creation / removal of user accounts.
4	System Documentation	System documentation

**9.1.3 Request for Change (RFC) Process**

Item	Short Name	Definitions
1	Operating System Upgrade	Upon written authorization by Subscribing Entity, CBTS Upgrade shall upgrade operating system during mutually agreeable maintenance window.
2	Dial Plan system configurations	CBTS will administer changes required to support the dial configurations plan, routing, station and adjunct systems
3	Patch Management	Upon written authorization by Subscribing Entity, CBTS will perform Patch management addition or removal, including operating system, firmware, drivers, and bios.
4	Script Creation	Creation/modification of scripts and/or batch files for log management, common tasks.
5	Software Audit	Creation/modification of scripts and/or batch files for log management, common tasks.
6	CBTS Routine Maintenance Window	Upgrades and patches may be performed, if necessary, during maintenance windows on Sunday from 00:01 a.m. to 06:00 a.m. Eastern Time and Tuesday from 7:00 p.m. to 11:00 p.m. Eastern Time, except for emergency repairs that cannot wait for a scheduled maintenance window.
7	Subscribing Entity Routine Maintenance Window	Upgrades and patches may be performed, if necessary Routine Maintenance during Subscribing Entity-provided maintenance windows, Window except for emergency changes approved by the Subscribing Entity.

**9.2 Service Operations**

**9.3 General**

**9.3.1 Support Hours**

Item	Short Name	Definitions
1	Normal Support	Support for business impacting critical events are 24 hours per day, 7 days a week, 365 days a year for Incident Management.

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**9.4 Incident Management**

**9.4.1 Troubleshooting**

Item	Short Name	Definitions
1	Incident Verification	The ENOC will monitor the legacy voice queue on the OhioDAS service desk application. The ENOC verifies that there is an incident and assigns a priority level to the incident.
2	Incident Identification	The ENOC isolates the source of the incident and attempts to resolve it through the appropriate management tool.
3	Tier 2	CBTS Tier2 technicians will work with the Subscribing Entity to resolve the issue.
4	Tier 3	If the issue cannot be resolved by Tier 2 technicians, the ticket will be assigned to Tier 3 engineering for resolution
5	Collaborative	CBTS engineers will work with Subscribing Entity and ENOC monitoring for advanced troubleshooting and repair
6	Incident Resolution	The ENOC uses its best efforts to resolve the incident within the parameters of the SLA. The ENOC determines whether the incident can be fixed remotely or if an onsite or a dispatch is necessary. If it can be resolved remotely, the incident is resolved, the trouble ticket is closed, and the client is notified.
7	On-Site Incident Resolution	If the incident cannot be resolved remotely, or the device has Incident lost total connectivity to the management station, the ENOC Resolution dispatches either an onsite internal or third-party field engineer to troubleshoot the problem. The dispatched field engineer contacts the Subscribing Entity to gain access to their location. The ENOC stays in contact with the dispatched field engineer regarding the status of the repair.
8	On-Site Incident Resolution Requirements	If onsite work by CBTS at Subscribing Entity's site(s) is Incident required, Subscribing Entity will permit CBTS access to its Resolution facilities at all reasonable times. Subscribing Entity will Requirements communicate all security and safety procedures in writing to CBTS prior to the start of such work. If escort or supervision of CBTS' personnel is required, Subscribing Entity will make such arrangements so there is no delay upon CBTS' arrival at Subscribing Entity's site(s). Subscribing Entity is responsible for all Subscribing Entity site preparation activities necessary for any onsite installation.
9	Temporary Work Around	Occasionally, a workaround is implemented while a fix is pursued. The ENOC will later replace the workaround with a permanent fix at an appropriate time.
10	3 <sup>rd</sup> Party Support	If required, the ENOC notifies the 3rd Party responsible for resolving the incident within 15 minutes of incident verification. Throughout the escalation process, the ENOC updates the Subscribing Entity's contact on the progress of repair as stated in the SLA.
11	3 <sup>rd</sup> Party Support Requirements	Subscribing Entity shall be responsible for any third-party vendor's timely performance so as not to delay CBTS' work schedule.
12	Incident Closure	Once the work is complete, the ENOC notifies the Subscribing Entity about resolution of the incident. The ENOC confirms that the incident was fixed satisfactorily.
13	Subscribing Entity-Provided Maintenance	In the event that CBTS does not provide maintenance or warranty for vendor hardware/software, Subscribing Entity shall provide vendor hardware/software maintenance to meet appropriate service level for term of contract.

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**9.4.2 Incident Repair – CBTS Provided Maintenance**

<b>Item</b>	<b>Short Name</b>	<b>Definitions</b>
1	Maintenance Discontinued Products	CBTS reserves the right to provide Subscribing Entity with at least thirty (30) days advance notice that maintenance for specific Products will be discontinued.
2	Maintenance Removals - Refund	CBTS will provide a pro-rated refund to Subscribing Entity for any pre-paid maintenance that is terminated due to product obsolescence, lack of spare parts, etc.
3	Maintenance Add-On's- CBTS Procured	If Subscribing Entity subsequently purchases products ("Added Products") from CBTS or its affiliates and co-locates those Added Products with the existing Products, the Added Products will automatically be covered under this Maintenance effective upon manufacturer's warranty expiration.
4	Maintenance Add-On's Other Procured	Added Products purchased from a party other than CBTS or its affiliates are subject to certification by CBTS at its then-current rates prior to being eligible for coverage under this Maintenance.
5	Maintenance Add-On's-Coterminous Expiration	Maintenance coverage will be coterminous with the coverage for the existing Products.
6	Maintenance Add-On's-Charges	Maintenance for added products will be at CBTS' Charges then-current rates.
7	Preventative Maintenance	Maintenance includes preventive maintenance as deemed appropriate by CBTS including new or refurbished replacement parts, required for Products used under normal operating conditions.
8	Remedial Maintenance	Maintenance includes remedial maintenance, including new or refurbished replacement parts, required for Products used under normal operating conditions.
9	Replacement Parts	Replacement parts and products may be new, remanufactured or refurbished. Replacement parts may include parts with equal or better value or features than the replaced part. Any removed parts and/or Products will become the property of CBTS.
10	Maintenance-based Reprogramming	Maintenance requiring software reprogramming is included in the event of equipment failure due to normal wear and tear. Programming will be completed on the system only to the point of the original configuration at the time of the initial installation of the system or last known good configuration backup.
11	Non-Maintenance-based Reprogramming	Any programming required beyond restoring the original configuration, including changes to the original configuration, of the system will be billed back to Subscribing Entity at the applicable T&M rate if not covered under this agreement.
12	System Monitoring and Auditing	CBTS may, at its discretion, electronically monitor Subscribing Entity's system for the purpose of collecting and recording the configuration of and the number and kinds of Products in the Subscribing Entity's system in order to provide for more accurate remote diagnostics and corrective actions.
13	System Auditing Quarterly	CBTS may, at its discretion, electronically monitor Subscribing Entity's system for the purpose of collecting and recording the configuration of and the number and kinds of Products in your system in order to confirm and/or modify applicable charges.

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		Products newly identified in the annual data collection will be treated as Added Products. Subscribing Entity will cooperate with CBTS in such data collection, including making remote access available to CBTS for this purpose.
14	Remote System Maintenance	CBTS may access Subscribing Entity's system remotely for the purpose of performing repairs to Products during maintenance situations. Subscribing Entity will cooperate with CBTS in such situations by making remote access available to CBTS for this purpose.
15	Remote System Maintenance - INADS	Subscribing Entity will provide, at Subscribing Entity's expense, a telephone line into the switch that will be used solely for this purpose.
16	Remote System Maintenance – Charges	Subscribing Entity agrees to notify CBTS prior to moving a Product from the location where it was installed. Additional charges may apply if CBTS incurs additional costs in providing maintenance as a result of the move.
17	Supported Devices	Devices supported under CBTS provided Maintenance is listed out in Appendix 1.

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**9.4.3 Incident Repair – Non CBTS-Provided Maintenance Hardware**

Item	Short Name	Definitions
1	Hardware Failure	Upon discovery or notification of hardware issues, CBTS engineers will facilitate ordering, repair/replacement, and return of equipment to vendor per vendor maintenance agreements (if applicable), including destruction/wipe of data, if necessary
2	Non-Service Affecting Hardware Failure	For non-service affecting issues, CBTS will investigate, update CI for system, and adjust threshold or alarm set point, as needed
3	Service Affecting Hardware Failure	For service affecting issues, CBTS shall investigate issue and restore the service within the Service Level Objectives for the severity
4	Hardware Replacement Approvals	Repair of equipment that requires service affecting outage must be approved by Subscribing Entity using email or other general means
5	Hardware Replacement Emergency Change	Repair of equipment that requires service affecting outage must follow Subscribing Entity approved Change Management Procedures
6	Subscribing Entity-Provided Maintenance	In the event that CBTS does not provide maintenance or warranty for vendor hardware/software, Subscribing Entity shall provide vendor hardware/software maintenance to meet appropriate service level for term of contract. If no vendor hardware maintenance is purchased by Subscribing Entity, there will be no Service Level Agreements or penalties associated with anything related to hardware replacement, software bugs and software upgrades. CBTS will not be able to call vendor TAC for help with Subscribing Entity's environment. Replacement equipment will have to be ordered on a best effort basis, unless Subscribing Entity decides to provide on-site spares.

**9.4.4 Incident Repair – Non CBTS-Provided Maintenance Software**

Item	Short Name	Definitions
1	Software Failure	Upon discovery or notification of software or operating system originated alarms, CBTS engineers will perform Standard Operating Procedures for software error incident response
2	Non-Service Affecting Software Failure	For non-service affecting issues, CBTS will update CI for system, and adjust threshold or alarm set point as needed
3	Service Affecting Software Failure	For service affecting issues, CBTS shall investigate issue and restore the service within the Service Level Objectives for the severity
4	Software Patch/Upgrade Approvals	Repair of equipment that requires service affecting outage must be approved by Subscribing Entity using email or other general means
5	Software Patch/Upgrade	Repair of equipment that requires service affecting outage must follow Subscribing Entity approved Change Management Procedures

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	Emergency Change	
6	Subscribing Entity Maintenance	<p>In the event that CBTS does not provide maintenance or warranty for vendor hardware/software, Subscribing Entity shall provide vendor hardware/software maintenance to meet appropriate service level for term of contract.</p> <p>If no vendor hardware maintenance is purchased by Subscribing Entity, there will be no Service Level Agreements or penalties associated with anything related to hardware replacement, software bugs and software upgrades. CBTS will not be able to call vendor TAC for help with Subscribing Entity's environment. Replacement equipment will have to be ordered on a best effort basis, unless Subscribing Entity decides to provide on-site spares.</p>

**9.4.5 Routine Configuration Management**

Item	Short Name	Definitions
1	CBTS-provided system for version control and backups	CBTS shall provide ongoing configuration management, including backup of configuration for version control, and rollback utilizing CBTS Management Platform, The systems that are able to utilize this function will be identified during the on-boarding process as well as network and system access to the remote systems.

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**9.5 Problem Management**

Item	Short Name	Definitions
1	Chronic Incidents	Upon discovery or notification of chronic hardware or software issues in the environment that have caused a service affecting outage or more than five (5) incidents in one month, CBTS shall create a problem management ticket
2	Root Cause Analysis	Upon request CBTS will determine root cause and provide recommendation in writing for mitigation of chronic issue
3	Subscribing Entity Review	Upon receipt of recommendation for mitigation. Subscribing Entity shall review the recommendation and provide in writing a decision to either accept or decline recommendations
4	Subscribing Entity Review – Deny	If the recommendation is declined, the device and other services impacted will be supported on a "best effort" basis until the corrective action is executed
5	Subscribing Entity Review – Approve	If the recommendation is accepted, all parties will determine and mutually agree to terms of execution

**9.6 Event Management**

**9.6.1 Event Detection**

Item	Short Name	Definitions
1	CBTS Monitoring	The ENOC management platform provides for real-time reporting of events and alarms that are generated both by the management platform itself and the network elements. In-Scope supported equipment is monitored to ensure end-to-end
2	Event to Incident Relationship	Voice or network element generated alarms shall be categorized
3	Device Incident Creation	The CBTS ENOC monitors the Subscribing Entity's devices continuously. When an event occurs, the CBTS ENOC will create an incident per device. The Subscribing Entity's Help Desk will be contacted and provided information pertinent to the incident.
4	Incident Assignment	Incidents Tickets will be assigned to an appropriate work queue. Notification of Incident Creation will be sent to appropriate work queue owners.
5	Definition	Basic monitoring includes polling devices on a regular basis for a simple response to ensure that the device can be reached by the monitoring system. When a device is unreachable by the monitoring platform, the platform will generate an event and subsequent incident.
6	Basic Monitoring	Basic monitoring includes polling devices on a regular basis for a simple response to ensure that the device can be reached by the monitoring system. When a device is unreachable by the monitoring platform, the platform will generate an event and subsequent incident. 180 daysn365 days.
7	Device Generated Event	Device-Generated Event Monitoring means that devices will provide information to the management platform based on an event that was generated in the device itself. Standard Events from Standard Devices are processed by the management platform and Incidents are created for events identified as critical. Non-critical events are logged in the management platform, but no action is taken. Syslog processing is a type of Event Monitoring based on Log Files sent from a device to the management platform.

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		Event information is retained for 180 days Incident information is retained for 365 days Monitoring Log Information is retained for 30 days
8	Threshold Monitoring	Threshold monitoring is a mechanism that allows you to place "alarms" on the statistical samples counted by a device. A counter records or 'counts' the number of times a specific action occurs on the device. An exceeded threshold will generate an Incident. Threshold Events from Standard Devices are processed by the management platform and incidents are created for events identified as critical. Non-critical events are logged in the management platform, but no action is taken.

## 9.7 Continuous Improvement

### 9.7.1 Root Cause Analysis

Item	Short Name	Definition
1	<b>Root Cause Analysis</b>	If warranted by the situation, the ENOC performs root-cause analysis to identify the true cause of the alarm, outage, performance problem, etc. The goal of root cause analysis is to determine which preventive measures, if any, can be taken so the event does not re-occur. Configuration changes, process improvement opportunities, or training needs may be identified during root-cause analysis.
2	<b>Subscribing Entity Satisfaction</b>	OhioDAS will perform routine customer satisfaction surveys. If the results of the survey indicate (current rating system 1-5, less than 4 indicates room for improvement) a lack of performance in the program or in any individuals, OhioDAS may request that CBTS develop a remediation plan for that lack of performance and CBTS will use its best efforts to remediate the issues.

### 9.7.2 Documentation

Item	Short Name	Definition
1	<b>Documentation</b>	If necessary, the ENOC updates standard operating procedures.

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**9.7.3 Operational Reviews**

<b>Item</b>	<b>Short Name</b>	<b>Definitions</b>
<b>1</b>	Monthly Incident and Change	CBTS shall provide monthly review reports, including Incident and Change reports as well as SLA Attainment Reports.
<b>2</b>	Addition and Deletions of Service Levels	OhioDAS may add or delete Service Levels, after the first contract year, by sending written notice to CBTS at least thirty days prior to the date that such additions or deletions are to be effective. OhioDAS and CBTS shall negotiate in good faith to determine the appropriate level for an added SLA.

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**9.7.4 Best Practices**

Item	Short Name	Definition
1	Upgrades and Patching	CBTS will make recommendations to Subscribing Entities for upgrade of voice system software or application of patches.
2	Operating System, Hardware, SOP	CBTS shall provide best practice service audit and remediation based upon mutually agreeable Standard Operating Procedures best practices from vendor for operating system environment, hardware vendor for hardware environment, and Standard Operating Procedures run book agreed upon between Subscribing Entity and CBTS.

**9.7.5 CBTS Server Management & Monitoring Service**

Item	Short Name	Definitions
1	Server Monitoring	Monitoring services will leverage the CBTS Toolsets and the Enterprise Network Operations Center [eNOC] for monitoring and reporting capabilities on a 24x7x365 basis. The CBTS eNOC will follow predetermined Standard Operating Procedures and Escalation Procedures for ticket creation and notification.
2	Server Management	Utilizing events from the CBTS Monitoring Systems, Subscribing Entity Service Calls and Change Requests, CBTS engineers will work with the eNOC and Subscribing Entity for advanced troubleshooting, repair and changes as mutually agreed.
3	Ticket Management	All service request tickets will be worked within the Management Subscribing Entity service desk system, Service Request, Incident, Problem, and Change Management processes.
4	Asset Inventory	Subscribing Entity will keep inventory of all devices under CBTS Monitoring Services within the Remedy Asset Management CMDB.
5	CBTS Portals	CBTS will provide access to the monitoring Toolset portal for access to CBTS monitored Subscribing Entity devices.
6	OS Patch Management	CBTS OS patch management service is available for Microsoft Management Windows, Red Hat Enterprise Linux Server, and SUSE Linux Enterprise Server based on CBTS Standard Operating Procedures for Patching. Patching of other Operating Systems may be available with additional costs.
7	Server Capacity Monitoring	CBTS will monitor Server disk capacity based on OS Capacity presented volumes capable of being monitored by CBTS Monitoring Toolsets.

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<b>8</b>	Hyper-visor Admin	CBTS is responsible for the maintenance and operation of the Admin hypervisor OS and hardware. Other tasks falling under CBTS responsibility include hardening, patching, resource allocation and presentation according to CBTS Standard Operating Procedures.
<b>9</b>	Cisco Unified Communications Monitoring	CBTS Toolsets have the capability to monitor the Cisco Communication Unified Communications offering components as a holistic. Monitoring service as mutually defined between the Subscribing Entity and CBTS.
<b>10</b>	Cisco Unified Communications Back-up Admin	CBTS will back-up according to Cisco best practices all Communication Ohio DAS Cisco UC voice applications on devices monitored Back-up by CBTS. CBTS will be responsible for setup, verification, and Admin restores of the Cisco UC voice applications and data.

**9.7.6 CBTS Storage Management & Monitoring Service**

Item	Short Name	Definitions
1	Storage Presentation	CBTS will perform storage allocations from the managed storage array to the Subscribing Entity's host systems in accordance with the storage and host operating system vendors' best practices. This will include creation, removal, or resizing of logical disks or volumes on the storage array, LUN masking, fiber fabric zoning, acquisition of the new logical disk on the Subscribing Entity's host, and NAS file system creation.
2	Storage Location	CBTS will perform back-end storage allocations on the Location managed storage array in accordance with the Subscribing Entity's capacity and performance needs and the storage array vendor's established best practices. This will include making newly installed physical disks visible to the storage array and creating any RAID groups, hyper devices, aggregates, or volumes.
3	NAS Storage Allocation	For network attached storage (NAS) systems, CBTS will perform allocation tasks, including creation, removal, or resizing of logical disks or volumes on the storage array, and file system creation.
4	Storage Replication Array	CBTS will provide replication support for logical volumes or file systems that are replicated via the array's native replication software, or through an external replication appliance. This support will be limited to up/down monitoring, notification, and troubleshooting, creation or deletion of both source and target devices as part of a Subscribing Entity requested storage allocation, and inclusion of new volumes or file systems into established replication configurations. Customizations or application integration required outside of the native capabilities of the replication software are the responsibility of Subscribing Entity. CBTS and Subscribing Entity will define replication policies for each protected data set.
5	Storage Replication – Network	CBTS will monitor WAN link required to support bandwidth for agreed upon data replication schedules.
6	Configuration Management	CBTS shall provide ongoing configuration management, including backup of configuration for version control, and rollback.
7	Fabric Administration	Administration of SAN Fabric including switch zoning.

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8	LUN Masking	Administration of LUN Masks
9	NAS Administration	Administration of NAS file system mapping tables.
10	Disk Erasure	CBTS will wipe data using a mutually agreed upon process from storage devices before being re-allocated or put back into a general storage pool and provide Subscribing Entity with verification of data erasure. CBTS will keep in place a non- returnable disk policy by destroying all bad drives where data erasure is not possible. Additional fees will be incurred for destroyed drives.

**9.7.7 Internal Escalation Processes**

CBTS has developed, documented and proven processes including an internal escalation flow (see graphic below). This process assures timely engagement of the appropriate levels of CBTS engineering and leadership necessary to assure that any issues are addressed quickly and effectively.

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## 10 Service Specific Terms and Conditions

Item	Short Name	Definitions
1	Pricing	The SOWs and pricing are valid for the TERM of the Agreement, excluding hardware, purchases and lease rates.
2	Remote Access	All CBTS installed systems are required to have remote capabilities to allow remote access and remote management systems by CBTS where applicable. This may include modem, VPN, direct IP, secure access link or dedicated phone line(s) that will allow CBTS personnel to remotely administer, troubleshoot, and repair systems. Charges incurred for this connectivity are the responsibility of the Subscribing Entity
3	Installation	For CBTS-installed products, CBTS will use diligent efforts to begin installation on the date scheduled by CBTS and Subscribing Entity. If no such date is scheduled, CBTS will schedule delivery and installation based on CBTS' normal product delivery and installation intervals. If Subscribing Entity is unable or unwilling to have the products installed on the originally scheduled installation date, CBTS may initiate billing for amounts due hereunder as of the originally scheduled installation date. If Subscribing Entity delays delivery or installation by more than thirty (30) days after the originally scheduled delivery date or installation date, CBTS may, at its option, cancel the order and/or bill Subscribing Entity for cancellation charges as set forth in "Cancellation Fees"
4	Location Change	Installation and shipping charges may be adjusted if Subscribing Entity changes the installation location
5	Additional Installation	No installation or other work is to be provided unless specifically set forth herein. In the event CBTS is to perform additional installation, it is understood that the price agreed upon herein does not include possible expenses entailed in coping with hidden or unknown contingencies found at the jobsite. In the event such circumstances arise and CBTS is required to furnish labor and materials or otherwise perform work not provided or contemplated by CBTS, the actual costs agreed upon between the client and CBTS will be paid by the Subscribing Entity. Contingencies include, but are not limited to, the inability to reuse existing wiring, switches, firewalls, VPNs, router configuration or reuse of electric circuits.
6	Sales Tax	Subscribing Entity will pay all applicable taxes relating to the services and products (sales, use, value added, personal property, etc.) other than taxes based on CBTS' net income. If Subscribing Entity is tax exempt, Subscribing Entity shall provide CBTS with a copy of its tax exemption certificate before CBTS begins invoicing.
7	Freight	Delivery of Product is FOB Origin. Shipping charges will be added to the invoice. Standard shipment is UPS Ground rates. Subscribing Entity may request expedited delivery in cases of a short installation interval or storage due to a delayed installation, both of which are available for the additional charge of the appropriate freight carrier.
8	Handling of the State's Data	"State Data" is any information, data, files, or software that the State or its Subscribing Entities use or store on or in conjunction with the Services, including but not limited to Generated Files. For the purpose of this service, State Data will include, but not be limited to, call records, video archives, and voicemail archives. Active Directory information, billing records, dial plans, etc. The Offeror (Service Provider) must use due diligence to ensure computer and

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	<p>telecommunications systems and Services involved in storing, using, or transmitting State Data are secure and to protect that data from unauthorized disclosure, modification, or destruction. To accomplish this, the Service Provider must comply with all applicable National Institute of Standards and Technology ("NIST") standards for Moderate Impact systems Cincinnati Bell understands the importance of standard adherence in today's dynamic IT environment. As such, Cincinnati Bell supports the spirit of the Ohio Department of Administrative Services OhioDAS requirement for NIST standard compliance. Cincinnati Bell will work in good faith to understand the applicable NIST standards as it relates to this engagement and make all reasonable accommodations to adhere to the letter and spirit of the applicable sections of the NIST standards. Likewise, Cincinnati Bell will negotiate in good faith for a mutually acceptable solution. Such adherence may incur additional Customer cost in order to meet the required standards, and:</p> <ol style="list-style-type: none"><li>(1) Apply appropriate risk management techniques to ensure security for all sensitive data, including but not limited to any data identified as Confidential information elsewhere in this Agreement.</li><li>(2) Ensure that its internal security policies, plans, and procedures address the basic security elements of confidentiality, integrity, and availability.</li><li>(3) Maintain plans and policies that include methods to protect against security and integrity threats and vulnerabilities, as well as and detect and respond to those threats and vulnerabilities.</li><li>(4) Maintain appropriate identification and authentication process for information systems and services associated with State Data.</li><li>(5) Maintain appropriate access control and authorization policies, plans, and procedures to protect system assets and other information resources associated with State Data.</li><li>(6) Implement and manage security audit logging on information systems, including computers and network devices.</li></ol> <p>Note: For moderate-impact information systems, organizations must, as a minimum, employ appropriately tailored security controls from the moderate baseline of security controls defined in NIST Special Publication 800-53 and must ensure that the minimum assurance requirements associated with the moderate baseline are satisfied Cincinnati Bell understands the importance of standard adherence in today's dynamic IT environment. As such, Cincinnati Bell supports the spirit of the Ohio Department of Administrative Services OhioDAS requirement for NIST standard compliance.</p> <p>The Service Provider must maintain a robust boundary security capacity that incorporates generally recognized system hardening techniques. This includes determining which ports and services are required to support access to systems that hold State Data, limiting access to only these points, and disabling all others. The Service Provider must use two-factor authentication to limit access to systems that contain State Data.</p> <p>Unless the State, through the applicable Subscribing Entity, instructs the Service Provider otherwise in writing, the Service Provider must assume all State Data is both confidential and critical for State operations, and the Service Provider's security policies,</p>
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	<p>plans, and procedure for the handling, storage, backup, access, and, if appropriate, destruction of that data must be commensurate to this level of sensitivity. As part of the Service Provider's protection and control of access to and use of data, the Service Provider must employ appropriate intrusion and attack prevention and detection capabilities. Those capabilities must track unauthorized access and attempts to access State Data, as well as attacks on the Service Provider's infrastructure associated with State Data. Further, the Service Provider must monitor and appropriately address information from its system tools used to prevent and detect unauthorized access to and attacks on the infrastructure associated with State Data.</p> <p>The Service Provider must use appropriate measures to ensure that State's data is secure before transferring control of any systems or media on which State Data is stored. The method of securing the data must be appropriate to the situation and may include erasure, destruction, or encryption of the data before transfer of control. The transfer of any such system or media must be reasonably necessary for the performance of the Service Provider's obligations under this Agreement.</p> <p>The Service Provider must have a business continuity plan in place. The Service Provider must test and update the IT disaster recovery portion of its business continuity plan at least annually. The plan must address procedures for response to emergencies and other business interruptions. Part of the plan must address backing up and storing data at a location sufficiently remote from the facilities at which the Service Provider maintains State Data in case of loss of that data at the primary site. The plan also must address the rapid restoration, relocation, or replacement of resources associated with State Data in the case of a disaster or other business interruption. The Service Provider's business continuity plan must address short- and long-term restoration, relocation, or replacement of resources that will ensure the smooth continuation of operations related to State Data. Such resources may include, among others, communications, supplies, transportation, space, power and environmental controls, documentation, people, data, software, and hardware. The Service Provider also must provide for reviewing, testing, and adjusting the plan on an annual basis.</p> <p>In case of an actual security breach that may have compromised State Data, including but not limited to loss or theft of devices or media, the Service Provider must notify the State in writing of the breach within 4 hours of the Service Provider becoming aware of the breach, and fully cooperate with the State to mitigate the consequences of such a breach. This includes any use or disclosure of the State Data that is inconsistent with the terms of this Agreement and of which the Service Provider becomes aware, including but not limited to, any discovery of a use or disclosure that is not consistent with this Agreement by an employee, agent, or subcontractor of the Service Provider.</p> <p>The Service Provider must give the State full access to the details of</p>
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		<p>the breach and assist the State in making any notifications to potentially affected people and organizations that the State deems are necessary or appropriate. The Service Provider must document all such incidents, including its response to them, and make that documentation available to the State on request. In addition to any other liability under this Agreement related to the Service Provider's improper disclosure of State Data, and regardless of any limitation on liability of any kind in this Agreement.</p> <p>All State Data will remain the property of the State. The Service Provider must ensure that the State retains access and download capability for purposes of retrieving its data. All State Data at rest in systems supporting the Service Provider's Services must reside within the contiguous United States</p>
9	Return of State Data	<p>At no additional cost to the Subscribing Entity, upon request made at any time during a Service term or within 90 days after the effective date of termination or expiration of the Subscribing Entity's Order for that Service, the Service Provider will make available to the Subscribing Entity for download the State Data covered by that terminated or expired Service, as well as any Generated Files, in native format or any other format the Subscribing Entity reasonably requests within one day of the request and at no additional charge to the Subscribing Entity. After such 90-day period, the Service Provider will have no obligation to maintain the State Data covered by an expired Service Order and must thereafter, unless legally prohibited, delete the applicable State Data in its systems or otherwise in its possession or under its control.</p>
10	Disentanglement Services	<p>On termination, in whole or in part, or expiration of an Order for any reason, the Service Provider will perform disentanglement Services if requested by Subscribing Entity to transition responsibility for any affected Services to another service provider or to Subscribing Entity itself ("Disentanglement Services").</p> <p>On request, the Service Provider will immediately provide a quote for such Disentanglement Services. The Service Provider will</p> <p>immediately begin providing necessary and appropriate assistance to allow the Services to continue without interruption and to facilitate the transfer of the Services to the ordering Subscribing Entity or its designee.</p> <p>All documents, processes, programs and other tangible materials created by the Service Provider at any time during the Term or otherwise pursuant to the relationship will be the sole property of the Subscribing entity.</p> <p>The Service Provider will assist the Subscribing Entity in developing a plan that will specify the tasks to be performed by the parties during disentanglement and the schedule for the performance of such tasks. The plan will be developed, implemented, and concluded with full disentanglement with all due speed, not to</p>

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		<p>exceed 90 days.</p> <p>The Service Provider will participate in all disentanglement meetings as reasonably requested by the Subscribing Entity.</p> <p>At the Subscribing Entity's request, the Service Provider will return all data as further stipulated in the previous section.</p> <p>The Service Provider will take part in parallel operations and cooperate with resources supplied by the succeeding service provider or, as the case may be, the Subscribing Entity.</p> <p>The Service Provider's personnel appropriate for knowledge transfer will be dedicated to the Subscribing Entity for the duration of the disentanglement the Subscribing Entity requests.</p> <p>The Service Provider also will provide the Subscribing Entity all information and documentation available regarding services and issues related to the Subscribing Entity's use of the Service.</p> <p>The Service Provider will turn over any tools, software, equipment, and any other materials owned by the Subscribing Entity.</p> <p>All Disentanglement Services will be performed as expediently and efficiently as reasonably possible to facilitate a timely, cost effective, and organized disentanglement.</p>
<b>11</b>	Travel and Parking Expense Reimbursement	No travel or parking expenses, nor any other expenses, will be covered.

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## 11 Transition Plan

CBTS will deliver the following services to the State and Subscribing Entities:

Configuration Management Systems

CBTS management platform

Monitoring Turn-Up	All elements, upon turn-up, feeds, discovery of the network are configured to allow the management platform to poll the devices for information post network commissioning, test, and acceptance. At the same time, network elements are also configured to send alarms automatically to the management station. This relationship between management station and network element creates an environment in which all alarms and events can be viewed from a single source. There are some systems that are not capable of alarming and being polled. In these cases an Incident will be created in the service desk application.
CMDB Load	All Managed devices and authorized people that make requests will be tracked as Configuration Items (CI's). All tickets related to CI's will contain all information pertaining to outages and requested changes as submitted to the ENOC. Any operations within a Subscribing Entity environment must follow authentication procedures. Alteration of this process and or methodology must be mutually agreed upon between Subscribing Entity and CBTS.
Access Method Development	Subscribing Entity shall work with CBTS to establish mutually agreeable access methods, including IP schema. Provide reasonable access for IN-BAND communications with managed device's IP address, including but not limited to connectivity to CBTS Managed Services network via dedicated circuit VPN or otherwise, AND REMOTE OUT OF BAND IP ADDRESS for operating system independent access.

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**11.1 Contacts**

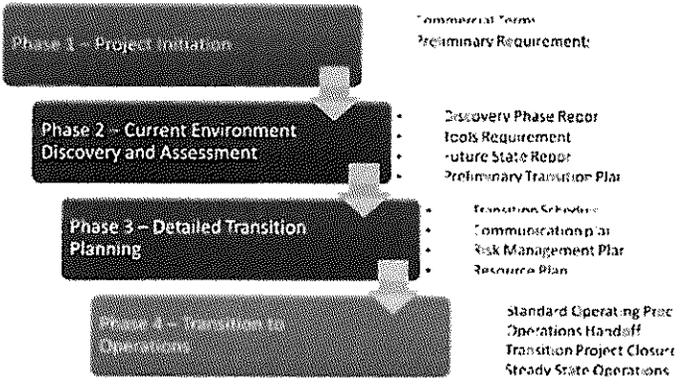
General	For all monitoring Services, Subscribing Entity shall keep all Points of Contact information correct. All Points of Contact must be reachable so CBTS can report alarms, outages, emergencies, etc. CBTS will not be responsible for any actions taken or not taken as a result of Subscribing Entity's failure to respond.
Incident	Subscribing Entity shall provide a contact list with correct telephone and email information for incident escalation that indicates who to contact, at what severity level, and the precedent of the contact order.
Change	Subscribing Entity shall provide a contact list for Change Management authorization, and keep the contact list up to date.
Escalations	Subscribing Entity shall identify points of contact with decision-making and approval authority.

**11.2 Release and Deployment Management**

**11.2.1 Transition to Operations (TTO) Methodology**

Effective Transition	CBTS' most effective methods and practices will be used to transition the support operations from Subscribing Entity's internal IT department and/or current vendor(s) to CBTS, as appropriate. CBTS has a long history of utilizing the TTO Methodology with its most demanding Subscribing Entities.
Phases	The TTO Methodology has pre-defined phases. These phases are broken down into groups of activities that are in turn broken down into the individual tasks needed to complete the activities. This allows a standard methodology to be dynamic enough to handle complex projects that are more easily tracked and measured. Critical Toll-Gates will be created to allow Subscribing Entity to accept major milestones as complete and allow CBTS to move into the next phase of the project.

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<p><b>Phase Drawing</b></p>	 <p><b>Phase 1 – Project Initiation</b></p> <ul style="list-style-type: none"> <li>Commercial Terms</li> <li>Preliminary Requirement</li> </ul> <p><b>Phase 2 – Current Environment Discovery and Assessment</b></p> <ul style="list-style-type: none"> <li>Discovery Phase Report</li> <li>Tools Requirement</li> <li>Future State Report</li> <li>Preliminary Transition Plan</li> </ul> <p><b>Phase 3 – Detailed Transition Planning</b></p> <ul style="list-style-type: none"> <li>Transition Schedule</li> <li>Communication plan</li> <li>Risk Management Plan</li> <li>Resource Plan</li> </ul> <p><b>Phase 4 – Transition to Operations</b></p> <ul style="list-style-type: none"> <li>Standard Operating Proc</li> <li>Operations Handoff</li> <li>Transition Project Closure</li> <li>Steady State Operations</li> </ul>
<p><b>MS Project Tool</b></p>	<p>Microsoft Project is our standard tool for traditional project management scheduling and tracking of projects. Predecessors, interdependencies and scheduling are all identified and used to help ensure a logical, on-time, on-budget implementation. Properly used, the tool can quickly identify risk areas, as well as areas that are doing well. This allows for reallocation of resources and adjustments to the project schedule, as needed.</p>
<p><b>Project Manager</b></p>	<p>During the transition to CBTS' support service, Subscribing Entity will be assigned a Project Manager. The Project Manager will act as Subscribing Entity's primary interface and escalation point for Subscribing Entity issues and requests during the project.</p>

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**11.2.2 TTO Phase 1, Project Initiation**

<p>Commercial and Legal Terms</p>	<p>Commercial &amp; Legal Terms. The tasks that are to be performed by CBTS during transition will be defined in a formal Statement of Work (SOW) along with an estimated transition schedule. The SOW also identifies and lists the responsibilities of Subscribing Entity for the project. After the SOW is finalized and approved, any changes to the SOW will be processed by a formal "Project Change Request" process. From time to time, the investigation and/or implementation of changes may result in modifications to the estimated schedule, charges and/or other terms of the SOW. Communication of all changes will be clear and punctual notice will be made to Subscribing Entity.</p> <p>Deliverables:</p> <ul style="list-style-type: none"> <li>• SOW Development &amp; Signing</li> <li>• MSA Development &amp; Signing • Establishment of approved purchasing vehicle</li> </ul>
<p>Preliminary Requirements Definition</p>	<p>CBTS resources will work with Subscribing Entity to develop a concise document identifying all of the high level goals of the Transition.</p>
<p>Deliverables</p>	<p>Deliverables:</p> <ul style="list-style-type: none"> <li>• High-Level Subscribing Entity Requirements</li> <li>• Preliminary Functional Requirements</li> <li>• Preliminary Technical Requirements</li> <li>• Preliminary Communications Plan</li> <li>• Preliminary Responsibility Assignment Matrix</li> <li>• Preliminary Design(s)</li> </ul>

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**11.2.3 TTO Phase 2, Current Environment Discovery**

<p>Current Environment Review</p>	<p>CBTS will evaluate the current environment and develop a detailed Report identifying any gaps and remediation's needed to transition steady state operations to CBTS. An implementation strategy will be developed to meet Subscribing Entity's requirements and timeline. CBTS performed a preliminary discovery of the legacy voice systems.</p>
<p>On-Site Analysis</p>	<p>The full Discovery and Assessment Phase is the on-site analysis performed by the Transition Team that involves an interview process, the collection and review of data, and observation of support operations. An implementation strategy will be developed to meet Subscribing Entity's requirements and timeline. CBTS starts by gaining an understanding of the support structure, service requirements, goals and objectives from interviewing Subscribing Entity Management, end-users as appropriate and support personnel. CBTS also reviews the scope and depth of support, service level agreements and the organization/location of the support resources. The resulting data captured during the Discovery Phase is documented in the Current State Report, which will be provided by the Transition Manager in order to develop the standard operating procedures.</p>
<p>Project Schedule</p>	<p>To deliver a project of this size successfully, CBTS requires a thorough analysis of current operations and a detailed definition of the desired state. With this knowledge, CBTS will develop a comprehensive project schedule for implementation and transition. This approach requires that sufficient time and resources be allocated by both organizations to ensure that Subscribing Entity receives a transparent transition of service to the new support operation. In preparation for the initial on-site analysis, project background information and documentation are collected and reviewed with the account team and Subscribing Entity.</p>

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Deliverables	<p>The contents of this document are defined below and may include all or some of the following:</p> <ul style="list-style-type: none"> <li>Discovery Phase Report <ul style="list-style-type: none"> <li>As-Is Documentation</li> <li>Service request processes and procedures</li> <li>Service delivery expectations</li> <li>Current project workflow</li> <li>Documentation processes and requirements</li> <li>Success criteria equipment</li> <li>Inventory Systems Access</li> <li>Guidelines</li> </ul> </li> <li>New Tools requirements <ul style="list-style-type: none"> <li>Availability Management</li> <li>Performance Management</li> <li>Configuration Management</li> </ul> </li> <li>Future State Reports <ul style="list-style-type: none"> <li>Define To-BE Processes</li> <li>Define To-Be Systems</li> <li>Perform Impact/Gap Analysis and Final FMEA</li> </ul> </li> <li>Preliminary Transition Plan</li> </ul>
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**11.2.4 TTO Phase 3, Detailed Transition Plan**

Overview	<p>As projects are developed and tasks are defined, a major consideration is the transition from the current state to the new state. CBTS will work with Subscribing Entity in transition planning to develop a strategy in order to facilitate changes and reduce their impact. This planning will take place and a strategy will be developed well in advance of any changes being implemented.</p> <p>CBTS will develop a detailed project/transition plan to migrate current support to CBTS. The transition will be customized with input from Subscribing Entity that includes agreed upon deliverables and acceptance criteria. The picture below depicts an example of a high level overview of the timeline for an integrated services implementation process. The actual timeline will be tailored specifically to the Subscribing Entity project. The designated Subscribing Entity Relationship Executive and CBTS Transition Team will oversee implementation of comprehensive service level agreements and new support operational processes. This team, if required, will also define facilities and system requirements, and develop a resource plan.</p>
Detailed Transition Schedule	<p>A detailed implementation schedule will be created listing all tasks, resources, milestones, deliverables and contingencies. The management tools used for the implementation of the new support model will be identified. These include computer applications, such as project management software. Data and reports (GANNT and PERT charts), that will be made available to Subscribing Entity will be detailed and examples will be provided.</p>

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Detailed Communication Plan	A communication plan for Subscribing Entity's executive management and all end-user will be developed. The goals are to keep everyone well informed of planned events and to eliminate any last-minute surprised. CBTS will assist Subscribing Entity in writing and distributing program announcements
Detailed Risk Management Plan	FMEA is a disciplined approach used to identify possible failures of a product or service and then determine the frequency and impact of the failure. Such an analysis is helpful in anticipating and mitigating project risk.
Resource Plan	CBTS will integrate resource-staffing plans into the entire implementation plan. CBTS will supply the necessary staff levels to meet the approved project schedule. Initial staffing plans will also include provisions for personnel cross training and backfill to provide continuous on-site coverage.
Transition Plan Toll-Gate	This is a formal step to ensure that all parties are in lock-step with the plan and the responsibly for all parties and all timeliness. The key stakeholders all agree and signoff of all the plans and timeliness. The project will be monitored closely and reported on by the assigned Project Manager.

**11.2.5 TTO Phase 4, Transition to Operations**

Overview	This process allows for the cohesive transfer of information about Subscribing Entity, to the operational resources at CBTS. Rigorous testing of the service, within the parameters of the Service Level Agreement, takes place in this phase.
Transition Plan Management	An assigned "Transition Manager" coordinates ongoing support activity meetings and communications. During the first 20 days after going live with the CBTS services, we will monitor and report service performance. The Project Manager will adjust processes as necessary in CBTS will assign a qualified and certified Project Manager (PM) to direct all activities associated with implementation. The PM will coordinate and manage all phases of the project during implementation when working with Subscribing Entity personnel on project scope definition, project plan development and project plan execution. Project activities are managed and controlled utilizing industry standard project management disciplines that include: <ul style="list-style-type: none"> <li>• Deliverable and Task Summaries (from the Statement of Work)</li> <li>• Tracking and Reporting of progress as defined in the Transition Plan</li> <li>• Weekly Project Status Reports</li> <li>• Change Requests as needed</li> <li>• Acceptance Forms upon completion of deliverables as defined by the Transition Plan</li> <li>• The Transition Phase includes the implementation of all designed components.</li> </ul>
Standard Operating Procedures	CBTS will work with Subscribing Entity to complete a detailed Standard Operating Procedures Document that will be used as a living document through the life of the contract. The contents of this document are defined below and may include all or some of the following: <ul style="list-style-type: none"> <li>• Staffing and Training Plan</li> <li>• Responsibility Matrix</li> <li>• Operational Policies and Subscribing Entity Support Procedures</li> <li>• Call Flow/Process Diagrams</li> <li>• Service Level Agreement(s)</li> </ul>

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	<ul style="list-style-type: none"> <li>• Escalation Guide</li> <li>• Measurement and Reporting Mechanisms</li> <li>• Subscribing Entity Satisfaction Survey Procedures &amp; Mechanisms</li> <li>• Continuous Improvement/Quality Program</li> <li>• Facilities and Systems Configuration Guideline</li> <li>• Call Management System Requirements</li> <li>• Data Conversion Requirements &amp; Plan</li> <li>• Disaster Recovery Procedures</li> </ul>
Operations Handoff	<p>The last step in transitioning support to CBTS is the actual execution of the Standard Operating procedures and Engagement of CBTS into the routine Operations of Subscribing Entity. These tasks have well defined execution dates:</p> <ul style="list-style-type: none"> <li>• Deliver Training to CBTS</li> <li>• Communicate New Processes and Procedures to End-Users</li> <li>• Engage Monitoring Processes and Procedures</li> <li>• Engage Reporting Processes and Procedures</li> <li>• Engage Incident Management Processes and Procedures</li> <li>• Engage Change Management Processes and Procedures</li> <li>• Engage other Standard Operating Procedures</li> <li>• Engage Service Level Management</li> <li>• Engage Escalation Management</li> <li>• Engage Program Management</li> <li>• Engage Billing / Reporting Design &amp; Processes</li> </ul>
Position Plan Close	<p>As good Project Management practices dictate, the Transition Project will have a formal handoff and approval. In addition, CBTS best practice has learned that this formal process has value in understanding important "Lessons Learned" that Subscribing Entity and CBTS can apply in future initiatives.</p>

**For additional information regarding implementation and transition, please refer to Exhibit E.**

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**12 Cost Recovery**

The Service Provider must pay a Cost Recovery Fee to the State to cover the estimated costs the State will incur administering this Agreement and the Services offered under it.

The Cost Recovery Fee will be 2% of the total quarterly sales reported under this Agreement to all Subscribing Entities, including all State-level entities and all Cooperative Purchasing Members. The Cost Recovery Fee is included in the prices reflected on the Service Attachment and the Service Provider may not add a surcharge to orders under this contract to cover the amount of the Cost Recovery Fee. The State will generate notification to the Service Provider via email on the last day of the calendar quarter advising the Service Provider to complete a revenue reporting form provided by the State within 30 days after the close of the quarter. The State may compare the form provided by the Service Provider to information in the State's accounting system, the State's Ordering System, and other records for purposes of verifying the accuracy of the form.

- Examples of calculation of a Cost Recovery Fee:  
(Log-In and Password Established for Cost Recovery Contact to Report Sales)

1) (State Entities Only Example)

Quarter	Revenue State Agencies	Revenue Local Governments	Revenue Share Due	Reported by
Q1	\$ 79,193	\$ 0	\$ 1,584	"Name of Contact"
Q2	\$ 10,392	\$ 0	\$ 208	"Name of Contact"
Q3	\$ 209,105	\$ 0	\$ 4,182	"Name of Contact"
Q4	\$ 74,970	\$ 0	\$ 1,499	"Name of Contact"

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2) (State Entities and Cooperative Purchasing Member Sales Example)

<b>FY14</b>				
<b>Quarter</b>	<b>Revenue State Agencies</b>	<b>Revenue Local Governments</b>	<b>Revenue Share Due</b>	<b>Reported by</b>
Q1	\$ 79,193	\$ 20,963	\$ 2,003	"Name of Contact"
Q2	\$ 10,392	\$ 4,197	\$ 292	"Name of Contact"
Q3	\$ 209,105	\$ 63,210	\$ 5,446	"Name of Contact"
Q4	\$ 74,970	\$ 1,471	\$ 1,529	"Name of Contact"

3) (Reporting \$0 Sales to both State Entities and Cooperative Purchasing Members)

Note: Reporting still required although sales reported for quarter - \$0

<b>FY14</b>				
<b>Quarter</b>	<b>Revenue State Agencies</b>	<b>Revenue Local Governments</b>	<b>Revenue Share Due</b>	<b>Reported by</b>
Q1	\$ 0	\$ 0	\$ 0	"Name of Contact"
Q2	\$ 0	\$ 0	\$ 0	"Name of Contact"
Q3	\$ 0	\$ 0	\$ 0	"Name of Contact"
Q4	\$ 0	\$ 0	\$ 0	"Name of Contact"

The Service Provider must remit to the State the 2% Cost Recovery Fee within 30 days of receipt of the notice from the State by check to the State of Ohio, Office of Information Technology. The check must be made payable to the Treasurer, State of Ohio, and must be sent to the State at the following address:

Department of Administrative Services  
L-3686  
Columbus, OH 43260-3686

The State will direct the Service Provider to the State's in-house reporting system to enter all reporting information to include all State entity sales as well as Cooperating Purchasing sales. To ensure that the payment is credited properly, the Service Provider must identify the check as a State of Ohio Cost Recovery Fee and reference this Master Cloud Service Agreement and the

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supporting Cost Recovery Report. Credit of the Cost Recovery Fee will begin in the month of execution of this Agreement.

If the full payment of the Cost Recovery fee is not paid within 30 days after the end of the applicable reporting period, the non-payment will constitute a contract debt to the State. The State may offset any unpaid cost recovery from any amount owed to the Contractor under this Contract and employ all other remedies available to it under Ohio law for the non-payment of Cost Recovery. Additionally if the Contractor fails to pay the Cost Recovery in a timely manner, the failure will be considered a breach of this Contract, and the State may terminate this Contract for cause and seek damages to the full extent of applicable Ohio law.

### **13 Reporting**

On a monthly basis, CBTS will prepare the following reports for

DAS:

Cost Recovery:

- a total of all services billed to all Subscribing Entities broken down as follows:
  - by each agency, board & commission
  - by each Cooperative Purchasing member a recap of the cost recovery calculations

Inventory:

- an inventory of all equipment installed per Subscribing Entity
- an inventory of all working services per Subscribing Entity

Performance Measurements

- On a monthly basis the results of all SLAs and SLOs will be reported to DAS

Basic/Enhanced mix will be reported monthly to DAS

Pricing discounts based on thresholds will be adjusted quarterly and reported to DAS

### **14 Statement of Work (SOW)**

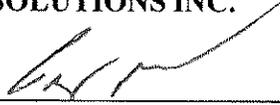
Each Subscribing Entity will negotiate a Statement of Work with Cincinnati Bell Technology Solutions, Inc. that will be specific to its implementation. A sample of this document can be found in Exhibit C.

**SIGNATURE PAGE TO FOLLOW**

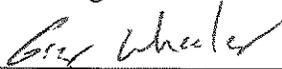
CINCINNATI BELL TECHNOLOGY SOLUTIONS, INC.  
for  
STATE OF OHIO  
Service Attachment #5  
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In Witness Whereof, the Parties have executed this Service Attachment, which is effective on the date the State's duly authorized representative signs it on behalf of the State, ("Effective Date").

CINCINNATI BELL TECHNOLOGY  
SOLUTIONS INC.



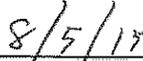
Signature



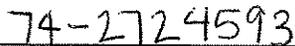
Printed Name



Title



Date



Federal Tax ID

STATE OF OHIO,  
DEPARTMENT OF  
ADMINISTRATIVE SERVICES



Signature



Printed Name



Title



Effective Date

# Exhibits

## 15 Exhibit A - Executive Order 2011-12k



JOHN R. KASICH  
GOVERNOR  
STATE OF OHIO

### Executive Order 2011-12K

Governing the Expenditure  
of Public Funds for Offshore Services

**WHEREAS**, State of Ohio officials and employees must remain passionately focused on initiatives that will create and retain jobs in the United States in general and in Ohio in particular, and must do so especially during Ohio's continuing efforts to recover from the recent recession.

**WHEREAS**, allowing public funds to pay for services provided offshore has the potential to undermine economic development objectives in Ohio.

**WHEREAS**, the expenditure of public funds for services provided offshore may deprive Ohioans and other Americans of critical employment opportunities and may also undermine efforts to attract businesses to Ohio and retain them in Ohio, initiatives in which this State has invested heavily.

**NOW THEREFORE**, I, John R. Kasich, Governor of the State of Ohio, by virtue of the authority vested in me by the Constitution and the laws of this State, do hereby order and direct that:

1. No State Cabinet Agency, Board or Commission ("Executive Agency") shall enter into any contract which uses any public funds within its control to purchase services which will be provided outside the United States. This Executive Order applies to all purchases of services made directly by an Executive Agency and services provided by subcontractors of those providing services purchased by an Executive Agency.
2. This Executive Order will be personally provided, by the Director, Chair or other chief executive official of each Executive Agency, to the Chief Procurement Officer or other individual at that entity responsible for contracts for services.
3. The Department of Administrative Services, through Ohio's Chief Procurement Officer, shall have in place, by July 1, 2011, procedures to ensure all of the following:
  - a. All agency procurements officers (APOs), or the person with equivalent duties at each Executive Agency, have standard language in all Executive Agency contracts which:
    - i. Reflect this Order's prohibition on the purchase of offshore services.

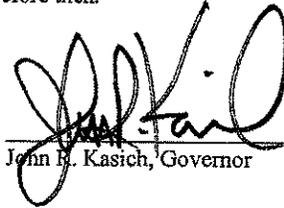
## Exhibits

- ii. Require service providers or prospective service providers to:
    - 1. Affirm that they understand and will abide by the requirements of this Order.
    - 2. Disclose the location(s) where all services will be performed by any contractor or subcontractor.
    - 3. Disclose the locations(s) where any state data associated with any of the services they are providing, or seek to provide, will be accessed, tested, maintained, backed-up or stored.
    - 4. Disclose any shift in the location of any services being provided by the contractor or any subcontractor.
    - 5. Disclose the principal location of business for the contractor and all subcontractors who are supplying services to the state under the proposed contracts.
  - b. All APOs confirm that all quotations, statements of work, and other such proposals for services affirm this Order's prohibition on the purchase of offshore services and include all of this Order's disclosure requirements.
    - i. Any such proposal for services lacking the affirmation and disclosure requirements of this Order will not be considered.
    - ii. Any such proposal where the performance of services is proposed to be provided at a location outside the United States by the contractor or any subcontractor will not be considered.
  - c. All procurement manuals, directive, policies, and procedures reflect the requirements of this Order.
  - d. All APOs have adequate training which addresses the terms of this Order.
4. Nothing in this Order is intended to contradict any state or federal law. In addition, this Order does not apply to:
- a. Services necessary to support the efforts of the Department of Development to attract jobs and business to the state of Ohio;
  - b. Academic, instructional, educational, research or other services necessary to support the international missions of Ohio's public colleges and universities; or
  - c. Situations in which the Director of the Department of Administrative Services, or the Director's designee, shall determine that it is an emergency or that it is necessary for the State to waive some or all of the requirements of this Order. The Director shall establish standards by which Executive Agencies may request a waiver of some or all of the requirements of this Order and by which such requests will be evaluated and may be granted.
5. Executive Order 2010-09S is hereby rescinded.

# Exhibits

I signed this Executive Order on June 21, 2011 in Columbus, Ohio and it will expire on my last day as Governor of Ohio unless rescinded before then.



  
\_\_\_\_\_  
John E. Kasich, Governor

ATTEST:

\_\_\_\_\_  
Jon Husted, Secretary of State

# Exhibits

## 16 Exhibit B - Standard Affirmation and Disclosure Form

### EXECUTIVE ORDER 2011-12K Governing the Expenditure of Public Funds on Offshore Services

All of the following provisions must be included in all invitations to bid, requests for proposals, state term schedules, multiple award contracts, requests for quotations, informal quotations, and statements of work. This information is to be submitted as part of the response to any of the procurement methods listed.

By the signature affixed hereto, the Service Provider affirms, understands and will abide by the requirements of Executive Order 2011-12K. If awarded a contract, both the Service Provider and any of its subcontractors shall perform no services requested under this Contract outside of the United States.

The Service Provider shall provide all the name(s) and location(s) where services under this Contract will be performed in the spaces provided below or by attachment. Failure to provide this information may subject the Service Provider to sanctions. If the Service Provider will not be using subcontractors, indicate "Not Applicable" in the appropriate spaces.

1. Principal location of business of Service Provider: Cincinnati Bell Technology Solutions, Inc

4600 Montgomery Rd Suite 400  
(Address)

Cincinnati, OH 45212  
(City, State, Zip)

Name/Principal location of business of subcontractor(s):

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Address, City, State, Zip)

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Address, City, State, Zip)

2. Location where services will be performed by Service Provider:

5500 Frantz Rd Suite 160  
(Address)

Dublin, OH 43017  
(City, State, Zip)

Name/Location where services will be performed by subcontractor(s):

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Address, City, State, Zip)

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Address, City, State, Zip)

**Exhibits**

3. Location where state data will be stored, accessed, tested, maintained or backed-up, by Service Provider:

5500 Frantz Rd Suite 160  
(Address)

Dublin, OH 43017  
(City, State, Zip)

Name/Location(s) where state data will be stored, accessed, tested, maintained or backed-up by subcontractor(s):

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Address, City, State, Zip)

Service Provider also affirms, understands and agrees that Service Provider and its subcontractors are under a duty to disclose to the State any change or shift in location of services performed by Service Provider or its subcontractors before, during and after execution of any Contract with the State. Service Provider agrees it shall so notify the State immediately of any such change or shift in location of its services. The State has the right to immediately terminate the contract, unless a duly signed waiver from the State has been attained by the Service Provider to perform the services outside the United States.

On behalf of the Service Provider, I acknowledge that I am duly authorized to execute this Affirmation and Disclosure form and have read and understand that this form is a part of any Contract that Service Provider may enter into with the State and is incorporated therein.

By: Vonda Dilley  
Service Provider's Signature

VONDA DILLEY  
Printed Name

Business Relationship Manager  
Title

8-4-2015  
Date

## Exhibits

### 17 Exhibit C - Sample Statement of Work

**This Statement of Work** (the "SOW"), is between Cincinnati Bell Technology Solutions, Inc. ("Service Provider") having an office at 4600 Montgomery Rd., Cincinnati, Ohio 45212-2600, and the State of Ohio, Department of Administrative Services, ("the State"), having its principal place of business at 40 E. Broad St., 40<sup>th</sup> Floor, Columbus, Ohio 43215. (jointly referred hereto as the "Parties"), and it is effective as of the date signed by the Department of Administrative Services ("DAS.") This SOW is governed by CBTS's Master Service Agreement and Service Attachment(s) with the state of Ohio. If there are any conflicts between the SOW and the MSA or SAs, the MSA and SAs will prevail.

Cincinnati Bell is engaged to provide Basic Voice and Enhanced Voice services to OhioDAS and all Ohio State Agencies as defined in the MSA and SA1.

This request, when signed serves as the agreement between OhioDAS and Cincinnati Bell for Next Generation Telephony services to be provided by Cincinnati Bell as governed in the Master Services Agreement (MSA) and further defined in the Service Attachment (SA1) with OhioDAS .

#### **Cincinnati Bell Approach**

Cincinnati Bell adheres to a structured approach when initiating new Service Requests for sites or Agencies defined as Transition Methodology. Transition Methodology consists of four (4) phases to ensure agreement in scope and continuous alignment through the process.

- 1) Project Initiation:
  - a. Review of SA1 as fit for purpose
  - b. Commercial Terms
  - c. Preliminary Requirements Collection
- 2) Current Environment Discovery and Assessment
  - a. Discovery Phase Report
  - b. Tools Requirements Determination
  - c. Future State Report
  - d. Preliminary Transition Plan
- 3) Detailed Transition Planning
  - a. Transition Schedule Baseline
  - b. Communication Plan Agreement
    - i. End User Communication
    - ii. Departmental Communication
  - c. Risk Management Plan
  - d. Resource Plan
- 4) Transition to Operations
  - a. Standard Operating Procedures Review
  - b. Operations Handoff
  - c. Transition Project Closure
  - d. Customer Satisfaction Survey
  - e. Steady State Operations

To ensure continuous alignment and proper diligence for changes and risks, Cincinnati Bell will deliver status reports weekly and conduct weekly status meetings with key OhioDAS share and stake holders.

Cincinnati Bell will adhere to all OhioDAS MSA and SA1 Service Level Agreements (SLA) for Operational and Service Request Management and all additional services and support not enumerated in this Statement of Work.

# Exhibits

## **Client Responsibilities**

OhioDAS must fulfill the following responsibilities for Cincinnati Bell work tasks to be performed:

OhioDAS will be responsible for appointing a single point of contact (SPOC) to handle all communications involved with the project. This individual will also possess decision-making authority for project related issues.

OhioDAS will be responsible for appointing an OhioDAS contact authorized to review and approve documentation and scope definitions. The person responsible may change from function to function but a single authority from OhioDAS will have accountability for the overall work product.

OhioDAS will be responsible for final acceptance of the appropriate solutions presented by Cincinnati Bell.

OhioDAS is responsible for site Remediation if required unless requested from Cincinnati Bell to execute the service at an agreed rate.

Adherence to

## **Project Charges and Timing**

New Service Initiation costs are not incurred until scope is defined and Non Recurring Cost project costs, if applicable are executed. Monthly Recurring Cost will be initiated upon the successful turn up of the service.

All cost and billing activities are governed in the MSA and associated SA1 documents and will be applied universally to leverage its pricing scales as agreed with OhioDAS.

## **Project Change Request**

Should OhioDAS require changes in scope other than the initially agreed in this New Service Initiation contract, OhioDAS shall engage the Cincinnati Bell commercial team to discuss scope and impact to determine if change is financially impacting through the Cincinnati Bell established Project Change Request process.

## **Standard Cincinnati Bell payment terms**

Please reference the Next Generation Telephony Service MSA and SA1 between OhioDAS and Cincinnati Bell.

## **Proposal Acceptance**

Parties agree to the responsibilities outlined in this SOW by signatures below:

**CINCINNATI BELL TECHNOLOGY  
SOLUTIONS, INC.**

**SUBSCRIBING ENTITY**  
*(fill-in the correct name)*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Effective Date

# Exhibits

## 18 Exhibit D – Technical Design

The proposed design has been developed with best-of-breed industry leading telecommunications solutions. The Next Generation Telephony Service to the State of Ohio will be a dedicated solution providing the security, redundancy, and scalability required.

### Vendor Partners

The solution consists of Acme Packets and Cisco. CBTS was awarded the UC Partner of the Year for the Central Region in 2012 by Cisco. As a Cisco Gold Partner, CBTS is recognized as continuing to invest in Cisco Systems, and leading internetworking technology for our customers. To achieve Gold Certification, CBTS had to meet or surpass Cisco's stringent personnel certifications, customer satisfaction, specialization, and post-sales support requirements. Cisco Gold Certified Partners provide the highest level of customer support, including 24x7 technical services and a one-hour response time for problem resolution. Dedication to these and many other support requirements highlight CBTS' commitment to supporting our customers, strategic business network, and sustainable business models.

Cisco Gold certification reinforces CBTS' position as one of the premier leaders in the deployment of technology offerings and services. Expanding our partnership with Cisco is a win-win situation for everyone, because not only does CBTS benefit from our Gold status, but our customers will benefit from the commitment we have to expanding our knowledge and skills to better serve their needs.

We believe that our experience in networks, the expertise of our technicians—93 Cisco Certified Engineers including 13 Cisco Certified Internetwork Experts (CCIE)—coupled with our successful partnership with Cisco, provide our Customers with network designs and installations that are state-of-the-art. Our network solutions present our Customers with a long-term return on investment for the future. CBTS's Cisco Gold Authorization makes us a unique Telephony/Network Solutions provider.

### Design

Cincinnati Bell will approach this solution in building out two redundant data centers. We will build out the environment at the 7<sup>th</sup> Street Data Center in Cincinnati, Ohio and the redundant data center in Hamilton, Ohio; to provide a solution that will offer 99.99% core availability. The build out will be able to sustain

22,000 subscribers. Our design will be built out as needed in increments of 22,000 subscribers to meet the total 200,000 subscribers.

### Call Management and Connectivity

The architecture comprises of Session Manager and Communications Manager, along with the Acme Packet Session Border Controller (SBC), will constitute the Call Processing environment for the Next Generation Telephony Service for the State of Ohio. The physical infrastructure and the Call Processing environment will consist of multiple Local Area Network segments that will be designed for product specific requirements and industry standard best practices. The proposed solution will conform to the State of Ohio requirements. The segments will comprise of an outside, inside, DMZ, VPN, production, control, SIP carrier, and OARnet WAN. The Local Area Network will be a Gigabit switched network and will be configured for 802.1q and will employ DIFSERV QOS. All the handset categories will use SIP for communication to the Cincinnati Bell voice core.

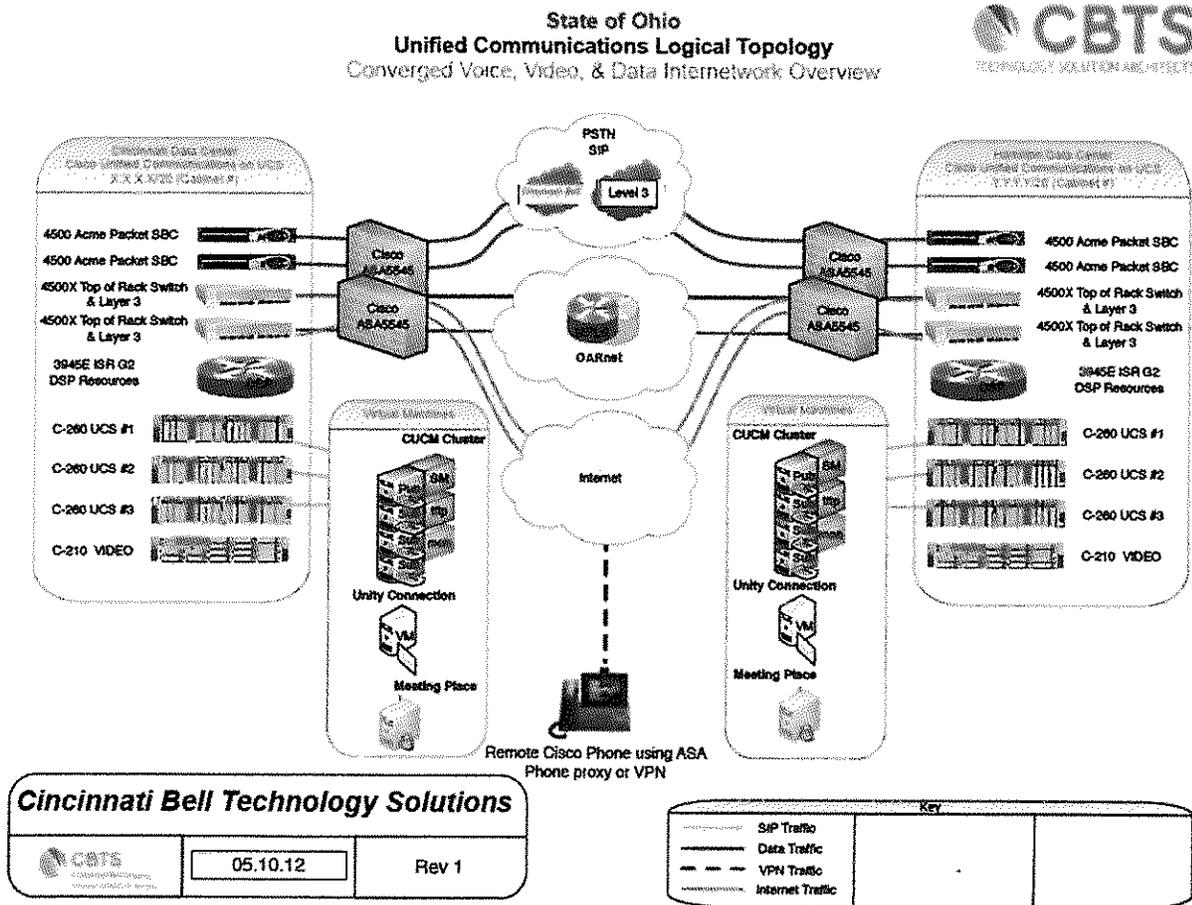
Cincinnati Bell will build out within the data centers, redundant call processing, data network environment, and components for the Voice Core. All signaling and media will traverse the OARnet network. The complete view of the Next Generation Telephony Service network is depicted in Figure 1.

### Data Centers

In addition to offering geographically dispersed locations, we've designed each facility to deliver the security and redundancy it takes to protect our customers' assets. That is why we institute up to seven layers of physical security, as well as service level agreements (SLAs) for power availability, environmental stability and network availability.

# Exhibits

Figure 1



## Superior Bandwidth

Cincinnati Bell has a unique transport option in the Midwest – a DWDM fiber loop that connects six (6) data centers, as well as the Mason facility. This high-speed loop facilitates a number of business continuity and disaster recovery options.

## 100% Redundancy

Power and Electrical – N x N

The data centers have 100% redundancy capabilities throughout our power delivery system. This means the data centers have diverse power grid feeds to separate power connections into the cabinet. Power enters the building from two separate power grids provided by the public utility company. Power inside the facility is provided to each individual cabinet supplied by separate power feeds from disparate UPS systems. If a power outage is sensed by our detection systems, the battery portion of the system kicks in immediately and within one minute, the backup generators are activated to provide full backup power to the data center. This process is transparent to all customer equipment in the facility and ensures that no device is affected by the outage. In addition, all customer cabinets are grounded and

## Exhibits

protected by anti-static mats and floor tiles. The power system is fully tested and certified by a third party testing service.

### Environment – N + 1

The Tier 3 data centers have N + 1 redundancy capability for all environmental controls. Temperature and humidity are continuously monitored and controlled via multiple sensors to maintain air temperature between 70 – 74 degrees and relative humidity between 40% – 60%. Each unit has a data interface board that reports the environmental status and all alarms to the building's environmental management system, which is monitored 24x7. Our facilities also have a state-of-the-art fire suppression system, VESDA (Very Early Smoke Detection Apparatus) that proactively monitors for smoke and fires. Once VESDA detects particles or smoke in the air, it immediately notifies the Enterprise Network Operations Center (ENOC) and the staff will immediately see the alert. All of our facilities are meshed for monitoring purposes.

### Connectivity – N x N

We leverage a meshed, redundant DWDM network to interconnect the Midwest Tier 3 data centers and provide a stable and robust platform for business continuity applications.

## Security

The Tier 3 data centers feature seven (7) layers of physical security to ensure that your data is completely safeguarded. They offer well-secured environments, including 24x7 presence of guards, closed-circuit TV monitoring, and electronic card-key access. A series of access procedures prevent unauthorized parties from accessing our clients' IT equipment. Some of the facilities are also designed and built with the capability to protect your IT infrastructure in the event of a disaster such as an earthquake.

## Compliance

All of the Tier 3 data centers, as well as the Mason facility, undergoes an annual SSAE 16 audit. Every three calendar years, they also have a "HIPAA Compliance" audit performed during that year's SSAE 16 audit. The additional HIPAA audit testing fulfills CBTS' obligations as a "Business Associate" to protect customer PHI according to the Privacy and Security Regulations.

## Green Data Centers

These premium data centers enable organizations to house their data and IT infrastructure in a completely redundant and secure environment without the burden of expensive capital outlays. By sharing the network and space with other customers, the data centers were operated more efficiently when it comes to energy consumption. We recycle products used at the data centers and offer our customers "green" products that include more than 80 efficient power supply products and virtual display units.

We have strategically leveraged leading virtualization technologies to consolidate our core server environments. This allows us to economically scale to meet the space, power and bandwidth needs of our customers, while minimizing energy consumption costs. The virtualized environments also provide an effective backup and disaster recovery solution for business continuity purposes.

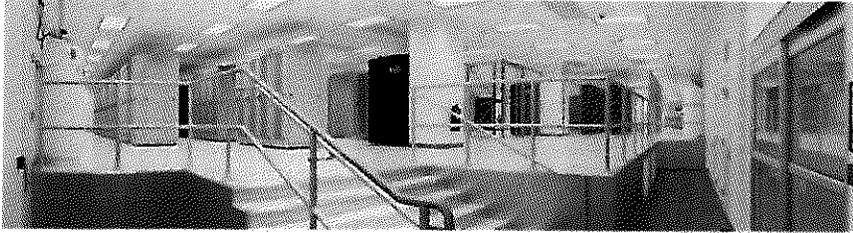
With motion sensor lighting and manual lighting controls, we save power during peak hours. The data centers are also equipped with virtual display clients to reduce the energy footprint by up to 95%, compared to using traditional PCs.

We are committed to minimizing the impact on the environment while providing world-class data center

## Exhibits

services. The data centers are eco-friendly facilities and we continuously evaluate every aspect of our delivery model to offer our solutions as environmentally friendly as possible.

### Cincinnati, Ohio – Cincinnati Data Center



The Cincinnati West 7<sup>th</sup> Data Center will be the location of the primary telecommunications solution. CBTS will leverage our meshed, redundant DWDM network of interconnected data centers and provide a stable and robust platform for the State of Ohio.

### FEATURES

- Seven levels of security
- 24 X 7 X 365 Staffing
- Triple-wall construction with engineering designed to protect against earthquake movement
- Advanced fire alarm and VESDA systems
- SSAE 16 compliant
- HIPAA compliant
- Current: 80,000 sq feet raised white floor; expansion 80,000 sq ft
- Six telecommunication POPs
- 40 peering arrangements
- Guaranteed network availability
- Multiple power substations power feeds with onsite backup generation
- Spot power network
- 100% Redundancy
  - Power and electrical
  - Communications
  - Environmental

### Hamilton, Ohio – Hamilton Technical Center



## Exhibits

The Hamilton Technical Center is located 30 miles north of downtown Cincinnati, this 60,000 sq foot facility is SSAE 16 and HIPAA compliant. This "green" data center utilizes power from the city that is 45% from a non-carbon source.

### FEATURES

- 60,000 sq feet data center space
- 24 x 7 x 365 onsite security
- On-site data center staff
- Alarm system with security cameras and card readers on all perimeter points of ingress/egress to the building with 30 day video storage
- Under floor Eacro Fe-25 gas suppression
- Ceiling-Dry pipe-action system
- Two separate power feeds from City of Hamilton
- Geothermal cooling
- Piping with redundant piping paths and automatic valving
- Closed loop condenser water system
- SSAE 16 compliant
- HIPAA compliant
- Six telecommunication carrier POPs
- 40 peering arrangements

### Connectivity

#### OARnet

The 10Gbps southern leg of OARnet between Cincinnati, Columbus, and Dayton will be interfaced with at the Evendale Central Office and the Dayton PoP.

#### Cincinnati

From the Cincinnati Bell West 7<sup>th</sup> data center our dark fiber and DWDM networks will be utilized between the facility and the Evendale Central Office for a 1 Gigabit port on OARnet.

#### Columbus

Cincinnati Bell will provision redundant circuits on our regional network between Cincinnati and Columbus that does not use the current provider of OARnets' dark fiber. This ensures that our third and fourth connections into OARnet comply with the connectivity options outlined in the RFQ for Option 2 connectivity. Our assumption is that OARNet has redundant network equipment to allow for 2 Gigabit ports with redundancy within the Columbus CityNet POP.

#### Dayton

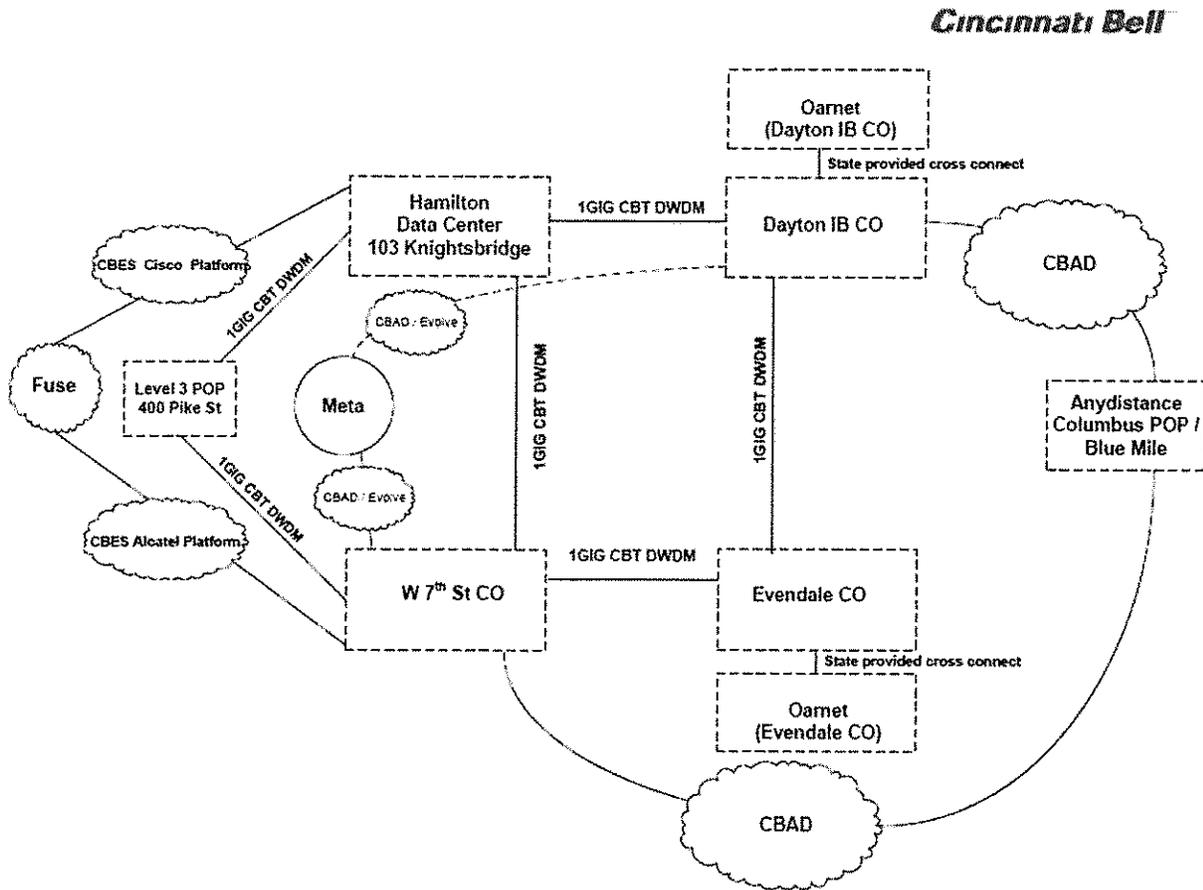
From the Cincinnati Bell Hamilton Data Center we will connect to the OARnet PoP in Dayton via our DWDM network for a 1 Gigabit port on OARnet. This connectivity is depicted on the following page.

#### Network and Telephony Redundancy:

When "redundant" or "redundancy" is used within this document please use the follow definition: the duplication of a critical component that does not share any environmental infrastructure with its duplicate component. An example would be to have two separate servers that have power supplies plugged into two (2) separate power outlets that in turn have separate power feeds, going to separate power panels that go to separate power generation. They are completely independent from each other.

# Exhibits

Figure 2



The RFQ requirement given to Cincinnati Bell was for 99.99% uptime within the Core (Cincinnati, Ohio and Hamilton, Ohio).

The goal of the design is to ensure that no one piece of equipment, circuit, power unit, or a combined data center would impact the State of Ohio. Every component has redundancy. This allows the State of Ohio to also have a built in Business Continuity.

### Network Connectivity:

The physical phone within the State's network is configured to register or login to both the Cincinnati, Ohio and Hamilton, Ohio Cisco Communications Managers. This feature allows the phone to have an active/standby connection with both data centers in the event of an outage that would limit connectivity between the phone and the communications managers. State locations will connect to the Voice core data centers via OARnet.

In Cincinnati, Ohio two (2) physically redundant connections between the OARnet core and Cincinnati Bells voice core. These connections do not reside in the same conduit, are not cross connect within the same wall field and do not terminate within the same fiber tray they are redundant.

### TCP/IP routing:

Voice routing takes advantage of routing protocols that allow traffic to flow in the event of an outage. BGP will be used in most of the network routing. This allows the traffic to route on either physical circuit without

## Exhibits

human intervention in the event of a failure. This way both circuits are up and operations at all times. This is a standard practice within the industry.

Deployment of the State of Ohio solution will require two (2) Classless Inter Domain Routing (CIDR) block of x.x.x.x/255.255.224.0 "CIDR Netmask" or otherwise known as /19 OARnet routable ip address.. This will allow each Data center location enough space allocated for the core and as well as the VPN phones being allocated. With the scale of the offer being 200,000 subscribers this address space could support 13% the total subscriber population. However, if this assumption does not hold true, CBTS would need x.x.x.x/255.255.192.0 or a /18.

### **SIP:**

Two primary SIP telephony providers will be utilized for redundancy. Cincinnati Bell AnyDistance (CBAD) to the Meta Switch for Long Distance and Level (3) for extended local service.

The voice core will be designed so that the voice traffic would not be dropped if a component failed. The CBAD SIP service will use circuits that are running on different Cincinnati Bell Metro-Ethernet networks terminating into the Meta SIP solution. Reference Figure 2.

The Cincinnati Bell solution has been designed for SIP connectivity only. There are no TDM gateways for PSTN, and Long distance. Session Border Controllers (SBCs) will be provided to terminate and provide proxy services to secure the voice core.

### **Level (3):**

The peering will be designed (a logical connection between two (2) SBCs) within Level (3)'s network to have redundancy between the locations of Dallas, TX and Washington DC. We chose these two (2) locations as they are close from a latency (speed between the locations) perspective and are about 1,200 miles apart. The Level (3) network is build with redundancy so that between these two cities there are at least four (4) network paths that connect them. Next Generation Telephony Service shares in the connectivity because both the Cincinnati Bell data centers have four (4) circuits to Level (3)'s network for SIP. Reference Figure 2.

### **Inbound:**

The primary location from within Level (3) that sends calls is Dallas. Dallas in turn sends the calls to Cincinnati as the primary. In the event that Dallas fails the calls are re-routed via DC and then to Cincinnati. If in the event of Cincinnati, Ohio failing Hamilton, Ohio is chosen to terminate the calls. The main concern when designing this aspect was to protect against a node outage within the Level (3) network. Within the Cincinnati Bell data centers our SBCs are a High Available cluster.

### **Outbound:**

Cincinnati, Ohio is the primary data center with this in mind Cincinnati has been designed to route traffic outbound to Level (3) and CBAD. Cincinnati's SBC has been configured to route outbound calls on a round-robin basis. This strategy employs routing calls first to Dallas and then DC on a per call basis. Roughly speaking this would mean that 50% of the calls outbound are split between Dallas and DC. This protects the outbound calls from a total outage event. If in the event that the Cincinnati data center goes off line a total failure; the phones will use Hamilton's SBCs.

### **Internet**

Internet connectivity will be available for VPN phone access into the Cincinnati Bell data centers. This connectivity will allow signaling and media traffic for VPN phones only. Each Data center will have two (2) redundant 1Gigabit circuits each.

### **Inter- Data Center**

Cincinnati Bell connectivity between the two data centers has been designed to terminate redundant 1Gigabit DWDM connections. Our solution will use this connectivity to keep all internal systems synchronized. As part of the redundancy SIP signaling and media will traverse this network segment.

## Exhibits

### **Session Manager**

Session Manager enables a distributed system featuring multi-vendor integration, centralized dial plans, easier centralized SIP trunking, easier "on-net" call routing, and enhanced scalability and security. Session Manager has been designed to be highly available. SIP is the connectivity between session manager and communications manager and the SBCs.

### **Communication Manager**

This key component of the Cincinnati Bell voice core provides an extensible IP Telephony platform. It offers PBX features, high reliability and scalability, and advanced features for workforce productivity and mobility. A wide range of servers, gateways, analog, digital, and IP-based communication devices is supported. For a full list of features please see:

[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/cucm/admin/8\\_6\\_1/ccmfeat/fsgd-861-cm.html](http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/admin/8_6_1/ccmfeat/fsgd-861-cm.html)

### **Gateway DSP resources**

#### **Cisco 3945E**

The Cisco 3945E voice Gateways are the digital signal processing resource for the voice core solution. The gateway will be used for conferencing and call setup in some call flow scenarios. As part of the redundancy and disaster recovery Cincinnati Bell will deploy multiple gateways per location with failover between data center facilities. The media gateways will be logically connected via communications manager.

#### **Gateway Categories**

The proposed standard model will deliver 5 different types of gateway categories. These categories all have distinct feature sets in terms of number of subscribers supported in an OARnet WAN failure.

#### **Category 01 – Cisco 2911 voice gateway with SRST for 1-50 users**

This category is based on the Cisco 2911 voice gateway. The IP Hardphones on this site will register to the gateway. This gateway is positioned if the end-user requires local survivability. If the OARnet network fails the Subscriber becomes active, controlling the gateway and local IP Hardphones with retention of limited access to features of the Communication Manager software. This gateway has been fitted with the following connectivity interfaces: 2 T1 Interfaces and a 4 port FXO.

#### **Category 02 – Cisco 2951 voice gateway with SRST for 51-250 users**

This category is based on the Cisco 2951 voice gateway. The IP Hardphones on this site will register to the gateway. This gateway is positioned if the end-user requires local survivability. If the OARnet network fails the Subscriber becomes active, controlling the gateway and local IP Hardphones with retention of limited access to features of the Communication Manager software. This gateway has been fitted with the following connectivity interfaces: 2 T1 Interfaces and a 4 port FXO.

#### **Category 03 – Cisco 3925E voice gateway with SRST for 251-1350 users**

This category is based on the Cisco 3925E voice gateway. The IP Hardphones on this site will register to the gateway. This gateway is positioned if the end-user requires local survivability. If the OARnet network fails the Subscriber becomes active, controlling the gateway and local IP Hardphones with retention of limited access to features of the Communication Manager software. This gateway has been fitted with the following connectivity interfaces: 4 T1 Interfaces and a 4 port FXO.

#### **Category 04 – Cisco 3945E gateway with SRST for 1351-1500 users**

This category is based on the Cisco 3945E voice gateway. The IP Hardphones on this site will register to the gateway. This gateway is positioned if the end-user requires local survivability. If the OARnet network fails the Subscriber becomes active, controlling the gateway and local IP Hardphones with retention of limited access to features of the Communication Manager software. This gateway has been fitted with the following connectivity interfaces: 4 T1 Interfaces.

## Exhibits

### **Category 05 – Cisco 3925E Voice gateway with 7835 Subscriber 1501- + users**

This category is based on the Cisco 3925E voice gateway with a Cisco 7835 Communications Manager Subscriber. The IP Hardphones on this site will register to the Communications Manager. This gateway is positioned if the end-user requires local survivability. If the OARnet network fails the Subscriber becomes active, controlling the gateway and local IP Hardphones with retention of full access to all features (including mobility) of the Communication Manager software. This gateway has been fitted with the following connectivity interfaces: 4 T1 Interfaces.

#### **Voice Messaging**

Designed for multi-site, this powerful IP- and standards-based unified messaging platform provides features like call answering, voice messaging, and speech capabilities. Unity Connections keeps messages accessible anytime, anywhere, from a wide array of devices. Cincinnati Bell will deploy a redundant Unity Connection solution. The Unity Connections environment will be integrated with Communications Manager using SIP. The design will incorporate security best practices according to the Cisco security guide.

[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/connection/8x/security/guide/8xcucsecpdf.pdf](http://www.cisco.com/en/US/docs/voice_ip_comm/connection/8x/security/guide/8xcucsecpdf.pdf)

For a full list of Unity Connections features please see the following:

[http://www.cisco.com/en/US/prod/collateral/voicesw/ps6789/ps5745/ps6509/data\\_sheet\\_c78-634096.html](http://www.cisco.com/en/US/prod/collateral/voicesw/ps6789/ps5745/ps6509/data_sheet_c78-634096.html)

#### **Session Border Controllers (SBC)**

Acme Packet Net-Net Session Border Controllers (SBC) provide critical control functions to deliver trusted, first-class interactive communications—voice, video and multimedia sessions—across IP network borders. The SBC will be built as High Availability pair. The total number of SBC's will be two per Data Center. As SIP trunks are provisioned the SBCs will be configured to provide redundancy and disaster recovery for this crucial voice core component. Security is the basis for deploying SBC for Topology hiding & privacy, Authentication of trunk access and fraud prevention. Acme Packet SBC's also Monitor performance and availability of L3 router, SIP registrar, SIP session agent Re-route or re-distribute traffic based upon performance degradation or failure Manage avalanche SIP registration events resulting from power outages or registrar failures by statefully managing endpoint re-registration process and load. The SBCs will also provide standard reporting quality-based routing, Measure QoS (latency, jitter and packet loss) and ASR per session, Append QoS and ASR information to CDR and route sessions based on observed QoS – jitter, loss, latency – or answer seizure ratio (ASR).

#### **Firewalls**

VPN Phones will connect through a high availability pair of Cisco ASA5545's to the Cincinnati Bell Voice core solution with the Anyconnect client on the phone. The design of the VPN Phone configuration will be to use standard group name along with a vendor certificate to establish the tunnel.

#### **Management**

In the area of continuous improvements within Cincinnati Bell Voice Operations Management, Cincinnati Bell has invested in a unique combination of tools and processes to monitor voice platforms and respond quickly and efficiently to events. Cincinnati Bell has integrated this platform with the EM7 IT Management Suite for the integrated management of systems, assets, configuration, events, ticketing, and service levels. Some key features of these integrated tools include:

- Proactively manage service levels through automation - set thresholds, alerts, notification and escalation policies

- Produce key customer reports - including service level and availability, performance levels and bandwidth usage for billing and analysis

- Increase the responsiveness and efficiency of our IT support staff

## Exhibits

Automate manual time-intensive tasks and free up IT resources

Allow customers to create their own problem tickets on EM7's integrated ticketing system according to rules and policies you can set yourself

Email, Pager or Text Messaging Options based on alarm type and service offering

Web Access alarm history for Techs and/or customers based on Product ID

Automatic Acknowledge of alarm to PBX, lets your customers system know CBTS received the alarm.

Auto-Print of alarm based on alarm type.

Auto-Export of alarms to 3rd party dispatch systems based on alarm type.

Dial-Back module for automatic testing of faulted hardware, up to 6 individual commands per alarm.

### Backups

Cincinnati Bell will provide ongoing configuration management, including backup of configuration for version control, and rollback. In the event of hardware replacement, Cincinnati Bell will restore hardware to last-known-working configuration. Through the use of the unified storage capabilities, an SFTP server will be provided for the native UCS backup tools to perform the data protection and replicated between data centers.

### Patching

All solutions include audit tracking and monitoring. Additional communication from CBTS will be published in the event that any proactive or reactive defects need correction. CBTS will regularly scan for new patches and updates to the infrastructure. This is done so that the whole system is as safe as possible and potential downtimes or lack of features is prevented.

Cincinnati Bell patch management service includes patching for Microsoft Windows and Cisco Unified Communications based on Cincinnati Bell Standard Operating Procedures for Patching.

### Self service change

The proposed solution provides role-based access. Each role can be fully customized down to command line level. However, Cincinnati Bell is offering a managed service that is based on stringent quality and SLA deliverables. User access beyond our control jeopardizes those deliverables.

### CDR

As part of the Cincinnati Bell voice core solution the CDR package will be the Veramark VeraSMART. VeraSMART's user-friendly interface makes it easy to create and distribute customized reports, perform inbound and outbound traffic analysis, track employees and project billing, identify toll fraud and abuse, and measure productivity of call centers and individuals.

Tracks emergency calls and suspicious calling activity

Measure productivity of call center teams and individuals

Optimize trunking to match capacity to demand

Monitor calling activity with interactive dashboards

Tested and certified by **Cisco**

Web browser-based

Generate reports in HTML or ASCII for hassle-free use in applications such as Microsoft® Excel®

Permission Based access

## Exhibits

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State Administrators as well as Cincinnati Bell personnel who request access will be evaluated based on need to know basis. The solution can be set up according to customer regulations. Normally only a user with a "Security Role" can access reports showing actual call details. Manager reports are on an aggregated level not showing any of privacy concerning data. This means that it can be very strictly regulated which application users that have access to CDR data. Support personnel will for possible support issues have access to CDR data. During system set up and CDR verification also project manager and application engineer will have access to the solution.

**Cisco IP Phone Specifications:**

CP-6941-C-K9 | [6941 Data Sheet](#)

CP-8961-C-K9 | [8961 Data Sheet](#)

CP-9951-C-CAM-K9 | [9951 Data Sheet](#)

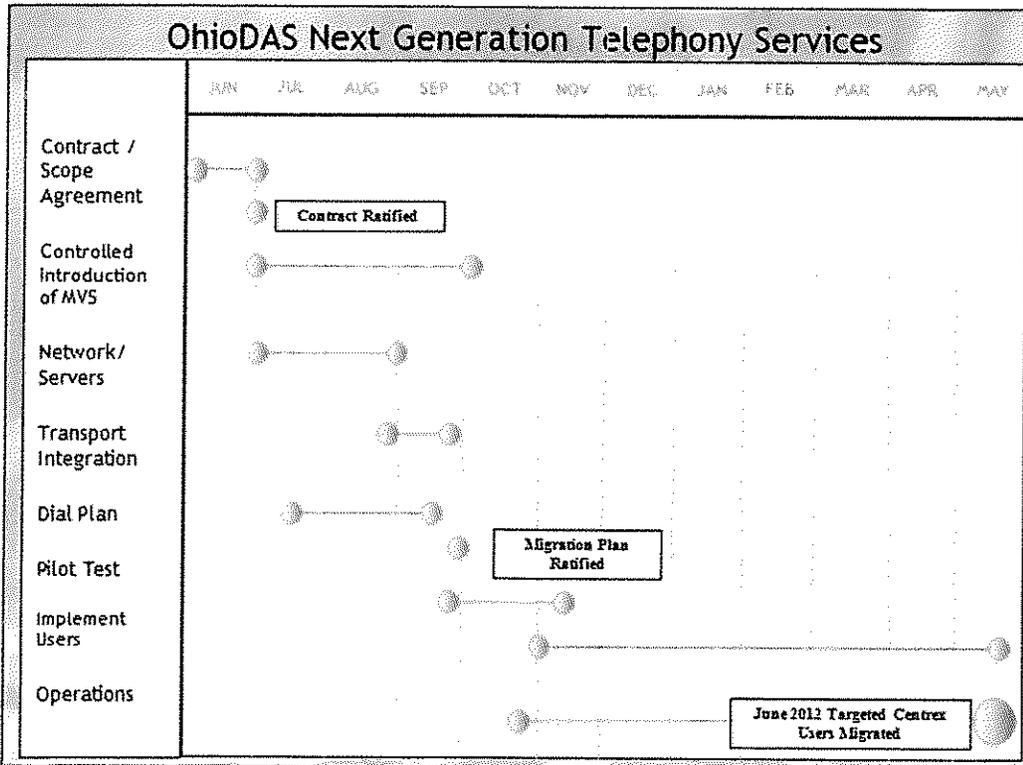
CP-9971-C-CAM-K9 | [9971 Data Sheet](#)

All phones and features will have URLs available for Transition.

# Exhibits

## 19 Exhibit E - Implementation Plan

Cincinnati Bell is an Ohio based Telecommunications Company established over 139 years ago. We have evolved and thrived over time by early adoption of emerging Telecommunications and IT Services through a structured and disciplined Discover, Design, Implement (Build), Run methodology. Our methodology has continuously matured and adapted to the diverse needs of our customers to provide consistent and predictable services that reduce complexity and effectively manage cost. The Cincinnati Bell Managed Voice Service high level approach is universally applied for all endeavors.



**Project Management:** Our Project Management Methodology forms the foundational core of what we deliver. It was developed by combining best practices with our proven experience in the field. We update it in parallel with changes to our products and services in order to deliver the best solution for our customers. The following tasks define the core components of our process:

**Defined Objective:** From the start, the objective must be thoroughly understood and agreed upon by all parties. This ensures that tasks can be identified and scheduled to meet project or program requirements, which improve client satisfaction when expectations are met and exceeded.

**Planned Activities:** A list of the activities is defined and analyzed as to how each task interrelates. This is structured to achieve a smooth project implementation and improves productivity for the client, as well as the technical resource utilization.

**Master Schedule:** The final schedule for implementation is completely documented. This allows pro-active planning for system downtime, coordination with other planned projects and routine scheduled network maintenance.

**Control and Communication:** CBTS project and program managers keep tasks on schedule to prevent budget overruns or under utilization of resources. Plans are continuously monitored to ensure successful

## Exhibits

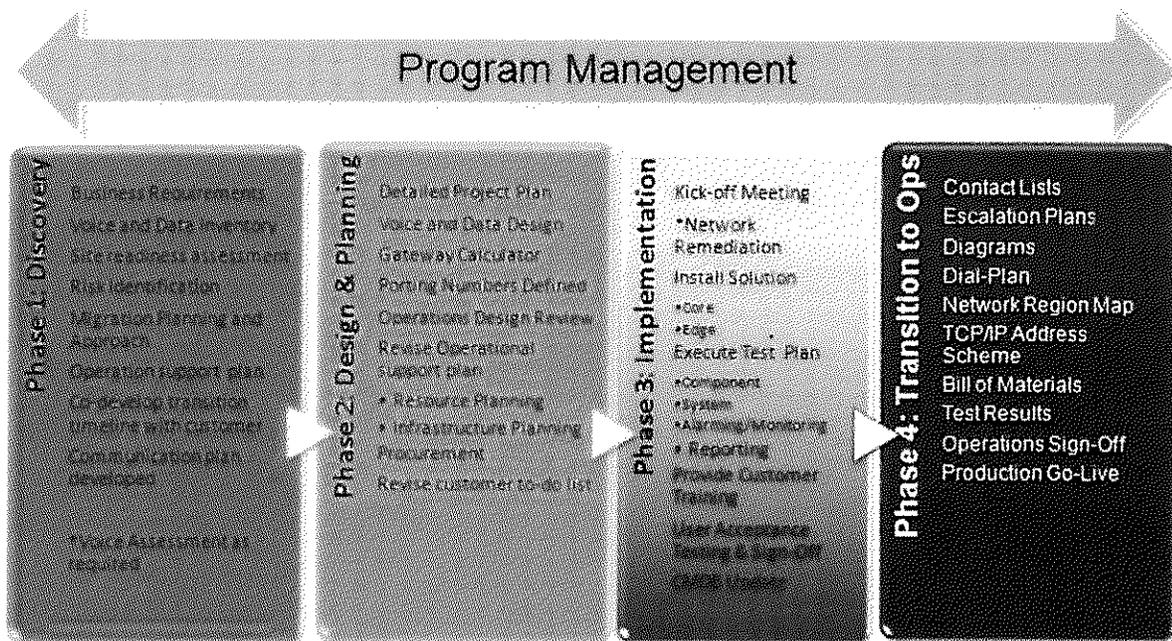
implementation, consistent communication and client satisfaction. Regular meetings and reports ensure complete communication with the Customer.

**Technical Resource Management:** Technical resources are allocated based on skill-set and a project plan in order to maximize productivity.

**Change Management:** Based on unforeseen circumstances, the schedule is adjusted accordingly to meet stated objectives. This monitoring will keep all parties informed to ensure the best solution is implemented according to the information available and identify potential risks related to time-lines, costs, and business “down-time”.

**Delivering Solutions within Budget:** Costs are identified by task and then allocated resources when the project or program is scoped. When all segments of the project or program have been identified and timeline requirements understood, costs are more accurate and fall within the budget.

### OhioDAS Site Migration Methodology



#### Phased Approach

##### High Level Critical Path

- June 2012 – Scope of Work Agreed in Writing
- Immediately – Engagement Initiated
- August 2012 – Controlled Introduction of Managed Voice Service
- September 2012 – Migration Plan Ratified
- October 2012 – Initiate Migration of Users
- Prior to July 2013 – Critical Centrex Users Migrated

## **Exhibits**

### **Transition to Operations**

#### **Phase 1: Network and Servers (2-3 Weeks)**

- Partner with IT Staff to document all involved components
- Create and Review Detailed Design Document
- Voice VLANs, QOS, Server, and Gateways per design

#### **Phase 2: PSTN and Integration (1-2 Weeks)**

- Provide ISDN PRI termination on Gateways
- Setup basic Dial Plan and Integrate with existing PBX systems

#### **Phase 3: Test System with Pilot Group (2-3 Weeks)**

- Cutover IT Staff or designated production phones to Net New
- Conduct Call Flow Testing and Feature Rollout

#### **Phase 4: Dial Plan and Analog Discovery (6-8 Weeks)**

- Conduct Dial Plan interviews with managers and key contacts
- Map Call Flow and treatment with Supervisors
- Perform discovery of Analog Endpoints

#### **Phase 5: Deploy and Manage (4-7 Months)**

- Conduct Building or Dept based phone training and rollout
- Route Voice Tickets to onsite Voice Support Engineer

### **Planning & Design**

Cincinnati Bell standard deliver methodology leverages people, process and tool to delivery consistent, predictable, cost controlled quality solutions. Cincinnati Bell with work with OhioDAS to create a working Transition Plan for the effort to ensure alignment is approach, scope, time and cost with the OITRFQ056 response. The Transition Plan provides the base project artifact for all project deliverables, including Change, Issue/Risk and Decision Registers Communication Plans, Cut Over Check Lists and Project Schedules.

### **End User Requirements Definition**

Cincinnati Bell solutions from the core service to the individual. Requirements are gathered and solutioned end to end for connectivity, capacity and quality metrics. As with all organizations challenges arise at the site and end user level. Building environmental constraints and individual wants often challenge the service catalog standards OhioDAS will establish. Cincinnati Bell Site to User level Survey to capture information, solution around constraints and deliver services as required. As subset of the initial Survey is identified with focus on the End Users.

## Exhibits

### Survey Checklist Master Categories

1	Data network Checklist / questionnaire
1.1	LAN Checklist
1.2	WAN checklist
1.3	Computer room checklist
1.4	IT Services
1.5	DHCP Scope
1.5.1	Is the existing telephony system IP?
2	Unified Communication Checklist / questionnaire
2.1	General scope
2.2	Local PSTN connectivity
2.3	ISDN connectivity other then PSTN
2.4	Dialplan
2.5	Availability
2.6	Analog ports
2.7	Callcenter
2.8	DECT
2.9	Additional Telephony elements
3	Business Unit Supported Network or Security
3.1	Business Supported Network
3.2	Business Supported Network Security

### Unified Communications Checklist

<b>2</b>	<b>Unified Communication Checklist /Questionnaire</b>
2.1	<b>General scope</b>
2.1.01	How many physical sites are involved
2.1.02	How many users approximate will joining the NGTS service
2.1.03	Are you using an Cisco system now
2.1.04	If yes on Q 2.1.03 What Cisco Systems are on location
2.1.05	Do you require assistance for data gathering and or call routing design

## Exhibits

2	<b>Unified Communication Checklist /Questionnaire</b>
2.2	<b>Local PSTN connectivity</b>
2.2.01	Do you require NGN (dialing Non Geographical Numbers as 0800)
2.2.02	Do you require Emergency dialing (112, 999, 911 etc.)
2.2.03	Do you require local PSTN PRI circuit's connectivity?
2.2.04	Do you require additional PRI circuits
2.2.05	How many PRI channels approximate are needed
2.2.06	Do you require local PSTN BRI circuit's connectivity?
2.2.07	Do you require additional BRI circuits
2.2.08	How many BRI channels approximate are needed
2.2.09	Do you require local PSTN Analog trunk connectivity?
2.2.10	Do you require additional Analog trunks
2.2.11	How many Analog trunks approximate are needed
2.3	<b>ISDN connectivity other then PSTN</b>
2.3.01	Do you require local ISDN circuits other than for PSTN
2.3.02	Do you require local PRI circuit's connectivity?
2.3.03	Do you require additional PRI circuits
2.3.04	How many PRI channels approximate are needed
2.3.05	Do you require local BRI circuit's connectivity?
2.3.06	Do you require additional BRI circuits
2.3.07	How many BRI channels approximate are needed
2.4	<b>Dial Plan</b>
2.4.01	Do you require DDI number(s) to be ported
2.4.02	Do you require additional DDI numbers for future growth
2.4.03	How many additional DDI numbers do you require
2.4.05	Do you require Dialcom connectivity
2.4.06	Do you require new Dialcom DDI ranges
2.4.07	Does the current Dialcom range match with the last 4 digits of the DID range
2.5	<b>Availability</b>
2.5.01	Do you require local survivability?

## Exhibits

2	<b>Unified Communication Checklist /Questionnaire</b>
2.5.02	Do you require redundant WAN connectivity?
2.6	<b>Analog Ports</b>
2.6.01	Do you need analog ports (POTS)
2.6.02	How many analog ports approximate are needed
2.7	<b>Call Center</b>
2.7.01	Do you require Callcenter functionality
2.7.02	How many callcenter agents approximate needs to be supported
2.7.03	How many callcenter supervisors approximate needs to be supported
2.7.04	Do you require skill based routing (EAS) functionality
2.7.05	Do you require additional functionality (CTI/Predictive etc)
2.7.06	Do you require Quality Monitoring (voice and or desktop recording)
2.7.07	Do you require CTI integration
2.7.08	Do you require Predictive dialing functionality
2.7.09	Do you require historical reporting tools
2.7.10	Do you require assistance for Call center design
2.7.11	Do you require Call Blending?
2.8	<b>DECT</b>
2.8.01	Do you require DECT functionality
2.8.02	Do you require assistance to perform a DECT site Survey
2.8.03	How many DECT handsets approximate are needed
2.8.04	How many DECT Base stations approximate are needed
2.9	<b>Additional Telephony Elements</b>
2.9.01	Do you require local CDR
2.9.02	Do you require call recording
2.9.03	Do you require any CTI
2.9.04	Do you require Paging functionality
2.9.05	Do you require Alarm lining
2.9.06	Do you require dedicated alarm lines

## Exhibits

2 Unified Communication Checklist /Questionnaire	
2.9.07	Do you require tinny functionality
2.9.08	Do you require Music on Hold

High Level Site or Business Unit Requirements feed the standard population for the End User Requirements required testing and a successful deployment at the desktop.

First name	Last name	VP	Wall Mount Kit Required	Mobile number (Mandatory for ES500 & one line)	Mobile Type	existing TdL (TRF) number	DID Y/N	Discom number	Headset	Old analog port	Shared instance Y/N	Sponsor instance Y/N	pick-up group	Hunt Group	Cover path ID	Number to be ported?	Number to Post	remarks
Mark																Yes		
Jeremy																Yes		
William																Yes		
Zachary																Yes		
Jonathan																Yes		
Cathy																Yes		

### Implementation/Cut Over

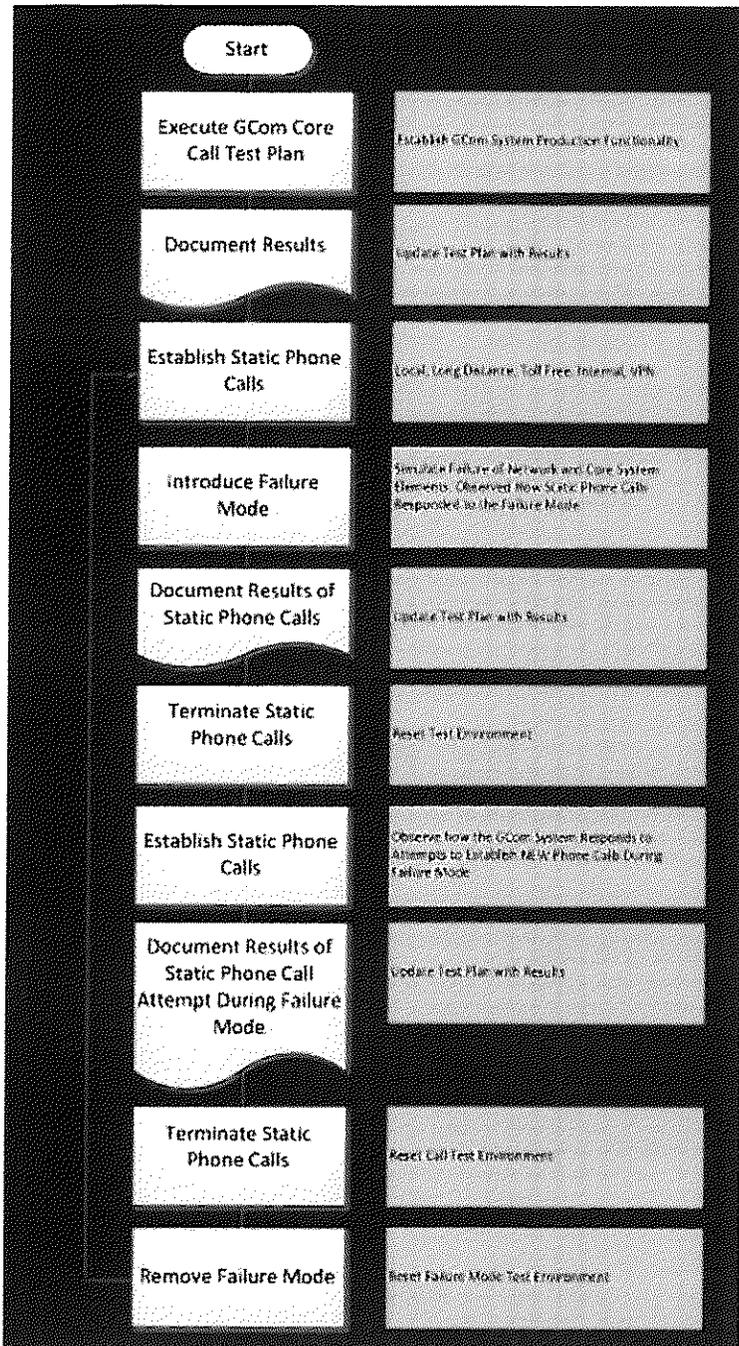
Cincinnati Bell Managed Voice Team leverages all collected information and planning document during the implementation phase at the Site/User level. All activities are planned with the empowered OhioDAS contact to ensure continuity of business integrations. An advanced communication plan is customized and delivered to manage both expectations and perceptions throughout the process ensuring continuous feedback loops for immediate issue resolutions and implementation process improvements. The focus for the Cincinnati Bell implementation team is on Customer Satisfaction. Ultimately the team on the ground will be the face of the change and the Run team will be the voice. Both are essential for short term adoption and long term viability.

Communication Plan Includes

- Executive Communications
- 30 Day Briefing
- 15 Day Briefing
- Week of Cut Preparation Reminder
- Night of Cuts Briefing
- Insert OhioDAS Example Nigh of Cut communications
- Testing

Cincinnati Bell Managed Voice Team deploys a multiphase testing approach to ensure "as planned" End User Experience services equate to the "as built" solution. Specific needs of OhioDAS employees and customers will be determined during the Discovery phase of the project and optimized throughout the Design phase. Specific customer needs vary depending on experience, knowledge, capabilities and other internal and external factors but core Voice functions are universal and mandatory. As such Cincinnati Bell Testing methodology is firmly established and well documented. An example of a customer optimized methodology is identified below.

## Exhibits



Failure Test – End User Experience is critical for initial adoption and acceptance of change when new technologies are introduced but Availability for long term success is mandatory. Cincinnati Bell Failure Testing is deployed to ensure SLA availability levels will be achieved over the life of the Managed Voice Service. The focus on Power, Transport and overall voice providing System Availability is at the core of what you would expect from us. A customized subset of system testing is included below for an indicative capabilities review

## Exhibits

Step	Type	Customer Core Failure Mode Testing
1	Firewall	Switch from Cincinnati Bell Primary ASA Firewall in Cincinnati to backup Firewall, ensure VPN Phones can reconnect; restore Firewall
2	Network Switch	Shut down one inside interconnect switch in Cincinnati; verify calls flow through the redundant inside interconnect switch in Cincinnati; restore switch
3	Network Switch	Shut down one outside interconnect switch in Cincinnati; verify calls flow through the redundant outside interconnect switch in Cincinnati; restore switch
4	Firewall	Fail the Cincinnati Firewall pair to force traffic through Customer A side, ensure full operational capability of calls/voicemail; restore Firewalls
5	Firewall	Switch from Customer Primary Firewall in A side to backup Firewall, ensure full operational capability of calls/voicemail; restore Firewall
6	Network Switch	Shut down the Customer 6500 A switch in Cincinnati; verify calls flow through the redundant Customer 6500 switch in Cincinnati; restore switch
7	Network Switch	Shut down the Customer 6500 B switch in Cincinnati; verify calls flow through the redundant Customer 6500 switch in Cincinnati; restore switch
8	Power	Shut down power supply A on the Customer 6500 A switch in Cincinnati; verify no impact. Restore the power supply
9	Power	Shut down power supply B on the Customer 6500 A switch in Cincinnati; verify no impact. Restore the power supply
10	Power	Shut down power supply A on the Customer 6500 B switch in Cincinnati; verify no impact. Restore the power supply
11	Power	Shut down power supply B on the Customer 6500 B switch in Cincinnati; verify no impact. Restore the power supply
12	Power	Shut down power supply A on the Customer 6500 A switch in A side; verify no impact. Restore the power supply
13	Power	Shut down power supply B on the Customer 6500 A switch in A side; verify no impact. Restore the power supply
14	Power	Shut down power supply A on the Customer 6500 B switch in A side; verify no impact. Restore the power supply
15	Power	Shut down power supply B on the Customer 6500 B switch in A side; verify no impact. Restore the power supply
16	Connectivity	Temporarily interrupt connectivity to Customer Core in Cincinnati (turn down network connection for 2 seconds), ensure full operational capability of calls/voicemail.

## Exhibits

Step	Type	Customer Core Failure Mode Testing
17	Connectivity	Simulate Link Flap in Cincinnati (turn down network connection for 2 seconds, then on for 2 seconds; repeat 5 times), ensure full operational capability of calls/voicemail.
18	Connectivity	Disable BGP interface on OhioDAS Cincinnati core switch A; ensure traffic flows through OhioDAS Cincinnati core switch B; restore switch
19	Connectivity	Disable BGP interface on OhioDAS Cincinnati core switch B; ensure traffic flows through OhioDAS Cincinnati core switch A; restore switch
20	SM Server	Disable Cincinnati Session Manager 0 server, ensure full operational capability of calls/voicemail; restore Session Manager 0 server. Restore service Cincinnati Session Manager 0. Ensure phones continue to have service while, Session Manager 0 server is coming back online (this will make many phones use the entity link between the Session Managers to gain access to Communications Manager)
21	Gateway	Disable Cincinnati G450, ensure full operational capability of calls/voicemail; restore G450 media gateway
22	Gateway	Disable A side G450, ensure full operational capability of calls/voicemail; restore G450 media gateway
23	Connectivity	Disable Cincinnati SIP PROVIDER connectivity. Ensure new calls are established via A side. Restore Cincinnati SIP Connectivity.
24	SBC	Disable Cincinnati SBC A. Ensure new calls are established via Cincinnati SBC B. Restore Cincinnati SBC A.
25	SBC	Disable A side SBC A. Ensure new calls are established via A side SBC B. Restore A side SBC A.
26	SBC	Disable Cincinnati SBC pair. Ensure new calls are established via A side. Restore Cincinnati SBCs.
27	Core	Simulate complete failure of Cincinnati hub (shut down connectivity between A side/Cincinnati as well as Cincinnati/OhioDAS). Ensure new call processing continues to function.
28	GIS Network	Simulate a GIS Network Failover on the GIS side of the Cincinnati core
29	CM Server	Disable Cincinnati Communications Manager A Server, ensure full operational capability of calls/voicemail; restore CM A server.

## Exhibits

Call Out Test – Functional Testing focuses the End User / Site to agreed functional connectivity requirements.

Phone Type	Trunk Group Name	Test Number Dialed	Test Number Description	Direction	Test description	Test Result Pass/Fail	Notes	Testing Date	Testing Time
H323	Level (3)	1-513-721-1700	Time & Temp Cincinnati	Out	Test Outbound Local				
H323	Level (3)	1-800-242-2121	Avaya TSO	Out	Test Outbound Toll free				
H323	GCom On Network	1518-348-8844	H323 to H323	On Net	Station to Station Talk Path				
PSTN		1513-426-7244	PSTN to H323	in	PSTN to Station Talk Path				
H323	GCom On Network	1518-348-8844	H323 to H323	On Net	MWI - Cover On				
H323	GCom On Network	1-513-426-7272	H323 to AAM	On Net	MWI - Off				
H323	CBAD	1.312-222-2222	Chicago Tribune Classified Ads	Out	Test Outbound Long Distance				
H323	CBAD	011 613-966-94916	Time & Temp Australia	Out	Test Outbound International				
H323	Dialcomm	*8.263-0100	Lynn, MA	Out	Welcome to GE's Aviation business in Lynn, Mass.				

### Training

Cincinnati Bell is able to leverage existing customer defined training methodologies or customize our approach to meet the needs of OhioDAS utilizes the training. Comprehensive training is required at multiple levels and functional units. Areas of focus for Cincinnati Bell include but are not limited to, Operations

- Call Center Agents
- Provisioning / deprovisioning
- Reporting

### Infrastructure

- As Built
- Performance

### Administration

- Contract obligations
- Process and Procedure (touch points)
- Billing and Invoicing

### End User

- How to

- Utilize functionality
- Report Issues
- Etc

- Future state capabilities
- Reference Material

## Exhibits

Training can be delivered through document distribution, video and audio conferencing and face to face. The standard Cincinnati Bell approach is core education and alignment is Administration, Engineering and Operational teams. Final training approach will be agreed and formalized and documented during the pilot.

### Transition to post cutover support

Cincinnati Bell supports a rigorous testing process from the core to the desktop for all features and functions. The testing includes

- Functional / Unit Testing
- Performance
- Failover
- ORT - Operational Readiness Testing
- EUS – End User Testing

Operational Success or Run requires that all people, processes, tools and partners (if required) are in place as the first user of the Pilot is deployed. Cincinnati Bell leverages an ITIL V3 aligned operational model and has deployed tools and process that integrate with our customers to ensure Incident, Problem, Change management are prioritized and performance and other operational or SLA mandated reporting is initiated prior to Pilot User #1. As such the Transitioned from Implementation or Cut Over to Operational Run support is fully functional for ORT and EUS testing in the pilot. The Cut Over process at the Site/User level is maintained throughout the Implementation and is perpetuated for MAC (move, add, change) and SRM (service request management) efforts for the life of the relationship

- Dedicated and Scalable Operational (Run) Organization
- Dedicated OhioDAS Engineers / NOC resources

The OhioDAS solution is of the size, complexity and strategic importance to Cincinnati Bell. The Run support model will provide dedicated Cincinnati Bell Engineers, Architects, Operations Management (Provisioning, Administration, Technical Ops) operating in on a OhioDAS team. In addition, Cincinnati Bell has the full support of the ENOC described earlier in this document.

## Exhibits

### 20 Exhibit F - International Calling

Dedicated	Country Code	U5
AFGHANISTAN	93	\$0.74
ALBANIA	355	\$0.32
ALGERIA	213	\$0.32
ANDORRA	376	\$0.24
ANGOLA	244	\$0.43
ANGUILLA	1-264	\$0.38
ANTARCTIC (CASEY)	672	\$3.00
ANTARCTIC (SCOTT)	64240	\$3.00
ANTIGUA / BARBUDA	1-268	\$0.31
ARGENTINA	54	\$0.26
ARMENIA	374	\$0.59
ARUBA	1-297	\$0.32
ASCENSION	247	\$1.30
AUSTRALIA	61	\$0.09
AUSTRIA	43	\$0.11
AZERBAIJAN	994	\$0.42
AZORES	351	\$0.27
BAHAMAS	1-242	\$0.20
BAHRAIN	973	\$0.62
BANGLADESH	880	\$0.76
BARBADOS	1-246	\$0.43
BELARUS	375	\$0.34
BELGIUM	32	\$0.11
BELIZE	501	\$0.60
BENIN	229	\$0.47
BERMUDA	1-441	\$0.17
BHUTAN	975	\$0.62
BOLIVIA	591	\$0.53
BOSNIA / HERZEGOVINA	387	\$0.32
BOTSWANA	267	\$0.39
BRAZIL	55	\$0.21
BRITISH VIRGIN ISLANDs	1-284	\$0.28
BRUNEI	673	\$0.38
BULGARIA	359	\$0.30
BURKINA FASO	226	\$0.53
BURMA MYAN	95	\$0.89
BURUNDI	257	\$0.53
CAMBODIA	855	\$1.28
CAMEROON	237	\$0.67
CANADA	All NPAs	\$0.05
<i>Calls to Canada are dialed the same as domestic long distance from the U.S.</i>		

## Exhibits

CAPE VERDE	238	\$0.47
CAYMAN ISLANDS	1-345	\$0.35
CENTRAL AFRICA REP	236	\$0.40
CHAD	235	\$0.91
CHILE	56	\$0.21
CHINA	86	\$0.17
COLOMBIA	57	\$0.26
COMOROS	269	\$0.40
CONGO	242	\$0.68
COOK ISLANDS	682	\$0.89
COSTA RICA	506	\$0.36
COTE D'IVORIE	225	\$0.81
CROATIA	385	\$0.31
CUBA	53	\$1.20
CYPRUS	357	\$0.27
CZECH REP	42	\$0.24
DENMARK	45	\$0.14
DIEGO GARCIA	246	\$1.50
DJIBOUTI	253	\$0.65
DOMINICA	1-767	\$1.00
DOMINICAN REPUBLIC	1-809	\$0.19
ECUADOR	593	\$0.41
EGYPT	20	\$0.46
EL SALVADOR	503	\$0.36
EQUATORIAL GUINEA	240	\$0.83
ERITREA	291	\$0.80
ESTONIA	372	\$0.25
ETHIOPIA	251	\$0.90
FALKLAND ISLANDS	500	\$0.30
FAROE ISLANDS	298	\$0.25
FIJI	679	\$0.68
FINLAND	358	\$0.14
FRANCE	33	\$0.07
FRENCH ANTILLES	596	\$0.39
FRENCH POLYNESIA	689	\$0.55
GABON	241	\$0.68
GAMBIA	220	\$0.47
GEORGIA	995	\$0.56
GERMANY	49	\$0.07
GHANA	233	\$0.48
GIBRALTAR	350	\$0.31
GLOBAL MOBILSATSERV	881	\$4.69
GREECE	30	\$0.22
GREENLAND	299	\$0.72
GRENADA	1-473	\$0.48
GUADELOUPE	590	\$0.37
GUAM	1-671	\$0.64
GUANTANAMO	53	\$0.53
GUATEMALA	502	\$0.26

## Exhibits

GUIANI (French Department)	594	\$0.37
GUINEA (Republic of)	224	\$0.83
GUINEA BISSAU	245	\$0.50
GUYANA	592	\$0.58
HAITI	509	\$0.51
HONDURAS	504	\$0.39
HONG KONG	852	\$0.11
HUNGARY	36	\$0.23
ICELAND	354	\$0.23
INDIA	91	\$0.19
INDONESIA	62	\$0.51
INMARSAT (SNAC) PROPER	870	\$4.60
INMARISAT - ATL EAST	871	\$4.60
INMARISAT - ATL WEST	874	\$4.60
INMARISAT - IND OCEAN	873	\$4.60
INMARISAT - PAC OCEAN	872	\$4.60
<i>INMARISAT = Marine Satellite</i>		
IRAN	98	\$0.68
IRAQ	964	\$0.77
IRELAND	353	\$0.11
IRIDIUM	881	\$6.00
ISRAEL	972	\$0.23
ITALY	39	\$0.07
IVORY COAST	225	\$0.81
JAMAICA	1-876	\$0.30
JAPAN	81	\$0.10
JORDAN	962	\$0.62
KAZAKHSTAN	7	\$0.25
KENYA	254	\$0.63
KIRIBATI	686	\$0.69
KOREA (Republic of)	82	\$0.12
KOREA NORTH	850	\$0.80
KUWAIT	965	\$0.68
KYRGYZSTAN	996	\$0.50
LAOS	856	\$0.71
LATVIA	371	\$0.30
LEBANON	961	\$0.62
LIECHTENSTEIN	423	\$0.17
LESOTHO	266	\$0.21
LIBERIA	231	\$0.41
LIBYA	218	\$0.32
LITHUANIA	370	\$0.36
LUXEMBOURG	352	\$0.17
MACAU	853	\$0.38
MACEDONIA - FEDERAL REPUBLIC OF	389	\$0.16
MADAGASCAR	261	\$0.63
MALAWI	265	\$0.41
MALAYSIA	60	\$0.25
MALDIVES	960	\$0.55

## Exhibits

MALI REPUBLIC	223	\$0.73
MALTA	356	\$0.24
MARSHALL ISLAND	692	\$0.38
MARTINIQUE (French Department)	596	\$0.39
MAYOTTE ISLAND	269	\$0.74
MAURITANIA	222	\$0.50
MAURITIUS	230	\$0.54
MEXICO	52	
Band 1	52	\$0.12
Band 2	52	\$0.14
Band 3	52	\$0.16
Band 4	52	\$0.16
Band 5	52	\$0.16
Band 6	52	\$0.16
Band 7	52	\$0.16
Band 8	52	\$0.16
MICRONESIA	691	\$0.62
MOLDOVA	373 382	\$0.44
MONACO	377	\$0.18
MONGOLIA	976	\$0.74
MONTSERRAT	1-809	\$0.49
MOROCCO	212	\$0.47
MOZAMBIQUE	258	\$0.50
MYANMAR	95	\$0.89
NAMIBIA	264	\$0.38
NAURU	674	\$0.68
NEPAL	977	\$0.69
NETHERLANDS	31	\$0.08
NETHERLANDS / ANTILLE	599	\$0.27
NEVIS	1-809	\$0.40
NEW CALEDONIA	687	\$0.56
NEW ZEALAND	64	\$0.14
NICARAGUA	505	\$0.42
NIGER	227	\$0.67
NIGERIA	234	\$0.56
NIUE	683	\$1.05
NORWAY	47	\$0.11
OMAN	968	\$0.73
PAKISTAN	92	\$0.41
PALAU	680	\$0.71
PALESTINIAN TERRITORY	970	\$0.25
PANAMA	507	\$0.47
PAPUA NEW GUINEA	675	\$0.75
PARAGUAY	595	\$0.50
PERU	51	\$0.49
PHILIPPINES	63	\$0.18
POLAND	48	\$0.26
PORTUGAL	351	\$0.27
PUERTO RICO	787	OB

## Exhibits

		Domestic
QATAR	974	\$0.68
REUNION ISLANDS	262	\$0.53
ROMANIA	40	\$0.30
RUSSIA	7	\$0.25
RWANDA	250	\$0.71
SAINT HELENA	1-290	\$1.50
SAINT KITTS	1-869	\$0.40
SAINT LUCIA	1-758	\$1.25
SAINT VINCENT	1-809	\$1.45
SAN MARINO	378	\$0.35
SAO TOME	239	\$1.30
SAUDI ARABIA	966	\$0.65
SENEGAL	221	\$0.81
SEYCHELLES	248	\$0.79
SERBIA	381	\$0.36
SIERRA LEONE	232	\$0.66
SINGAPORE	65	\$0.17
SLOVENIA	386	\$0.45
SLOVAKIA	421	\$0.24
SOLOMON ISLANDS	677	\$1.25
SOMALIA	252	\$0.69
SOUTH AFRICA	27	\$0.09
SPAIN	34	\$0.08
SRI LANKA	94	\$0.74
SUDAN	249	\$0.43
SURINAME	597	\$0.82
SWAZILAND	268	\$0.31
SWEDEN	46	\$0.11
SWITZERLAND	41	\$0.08
SYRIA	963	\$0.58
TAIWAN	886	\$0.23
TAJIKISTAN	992	\$0.56
TANZANIA	255	\$0.36
THAILAND	66	\$0.36
THURAYA SATELLITE	882	\$4.60
TOGOLESE REPUBLIC	228	\$0.74
TONGA	676	\$0.74
TRINIDAD / TOBAGO	1-868	\$0.52
TUNISIA	216	\$0.36
TURKEY	90	\$0.36
TURKMENISTAN	993	\$0.56
TURKS/ CAICOS ISLAND	1-649	\$0.39
TUVALU	688	\$0.62
UGANDA	256	\$0.52
UKRAINE	380	\$0.35
UNITED ARAB EMIRATE	971	\$0.47
UNITED KINGDOM	44	\$0.05
URUGUAY	598	\$0.57

## Exhibits

UZBEKISTAN	998	\$0.50
VANUATU	678	\$0.56
VATICAN	396	\$0.54
VATICAN CITY	379	\$0.25
VENEZUELA	58	\$0.20
VIETNAM	84	\$0.69
WALLACE & FURTUNA ISLAND	681	\$0.80
WESTERN SAMOA	685	\$0.51
YEMEN ARAB	967	\$0.62
YUGOSLAVIA	381	\$0.36
ZAIRE	243	\$0.53
ZAMBIA	260	\$0.63
ZIMBABWE	263	\$0.41

## Exhibits

### 21 Exhibit G – Rate Card

ID No./ Level	Labor Category Position Title	Year 1	Year 2	Year 3	Year 4	Year 5
C101	Administration/Clerical					
C101-1	Administration/Clerical (Entry Level)	\$ 42.08	\$ 43.63	\$ 45.23	\$ 46.88	\$ 48.64
C101-2	Administration/Clerical (Journeyman)	\$ 50.55	\$ 52.41	\$ 54.32	\$ 56.32	\$ 58.44
C101-3	Administration/Clerical (Senior)	\$ 56.26	\$ 58.34	\$ 60.48	\$ 62.71	\$ 65.06
C102	Applications Developer					
C102-1	Applications Developer (Entry Level)	\$ 67.90	\$ 70.41	\$ 72.99	\$ 75.68	\$ 78.50
C102-2	Applications Developer (Journeyman)	\$ 83.74	\$ 86.83	\$ 90.03	\$ 93.32	\$ 96.83
C102-3	Applications Developer (Senior)	\$ 100.47	\$ 104.18	\$ 108.00	\$ 111.97	\$ 116.16
C102-4	Applications Developer (Master)	\$ 130.95	\$ 135.81	\$ 140.76	\$ 145.95	\$ 151.40
C103	Applications Systems Analyst					
C103-1	Applications Systems Analyst (Entry Level)	\$ 67.90	\$ 70.41	\$ 72.99	\$ 75.68	\$ 78.50
C103-2	Applications Systems Analyst (Journeyman)	\$ 83.74	\$ 86.83	\$ 90.03	\$ 93.32	\$ 96.83
C103-3	Applications Systems Analyst (Senior)	\$ 100.47	\$ 104.18	\$ 108.00	\$ 111.97	\$ 116.16
C103-4	Applications Systems Analyst (Master)	\$ 130.95	\$ 135.81	\$ 140.76	\$ 145.95	\$ 151.40
C104	Business Process Consultant	\$ 121.77	\$ 126.26	\$ 130.88	\$ 135.69	\$ 140.78
C105	Business Systems Analyst	\$ 108.84	\$ 112.87	\$ 117.01	\$ 121.32	\$ 125.85
C106	Chief Information Security Officer	\$ 145.62	\$ 151.00	\$ 156.53	\$ 162.28	\$ 168.35
C107	Computer Scientist	\$ 126.87	\$ 131.56	\$ 136.37	\$ 141.39	\$ 146.67
C108	Computer Forensic and Intrusion Analyst	\$ 134.69	\$ 139.65	\$ 144.77	\$ 150.09	\$ 155.71
C109	Configuration Management Specialist					
C109-1	Configuration Management Specialist (Journeyman)	\$ 76.26	\$ 79.08	\$ 81.98	\$ 84.98	\$ 88.16
C109-2	Configuration Management Specialist (Senior)	\$ 94.26	\$ 97.74	\$ 101.33	\$ 105.05	\$ 108.98
C109-3	Configuration Management Specialist (Master)	\$ 113.32	\$ 117.50	\$ 121.81	\$ 126.28	\$ 131.02
C110	Data Architect	\$ 126.87	\$ 131.56	\$ 136.37	\$ 141.39	\$ 146.67
C111	Data Warehousing Specialist					
C111-1	Data Warehousing Specialist (Entry Level)	\$ 75.86	\$ 78.65	\$ 81.53	\$ 84.53	\$ 87.70

## Exhibits

C111-2	Data Warehousing Specialist (Journeyman)	\$ 94.91	\$ 98.41	\$ 102.02	\$ 105.78	\$ 109.74
C111-3	Data Warehousing Specialist (Senior)	\$ 114.62	\$ 118.86	\$ 123.21	\$ 127.75	\$ 132.51
C111-4	Data Warehousing Specialist (Master)	\$ 126.87	\$ 131.56	\$ 136.37	\$ 141.39	\$ 146.67
<b>C112</b>	<b>Database Specialist</b>					
C112-1	Database Specialist (Entry Level)	\$ 75.86	\$ 78.65	\$ 81.53	\$ 84.53	\$ 87.70
C112-2	Database Specialist (Journeyman)	\$ 94.91	\$ 98.41	\$ 102.02	\$ 105.78	\$ 109.74
C112-3	Database Specialist (Senior)	\$ 114.62	\$ 118.86	\$ 123.21	\$ 127.75	\$ 132.51
C112-4	Database Specialist (Master)	\$ 126.87	\$ 131.56	\$ 136.37	\$ 141.39	\$ 146.67
<b>C113</b>	<b>Disaster Recovery Specialist</b>					
C113-1	Disaster Recovery Specialist (Journeyman)	\$ 90.28	\$ 93.63	\$ 97.05	\$ 100.62	\$ 104.38
C113-2	Disaster Recovery Specialist (Senior)	\$ 102.98	\$ 106.77	\$ 110.68	\$ 114.75	\$ 119.05
C114	Enterprise Architect	\$ 142.71	\$ 147.99	\$ 153.40	\$ 159.03	\$ 165.00
C115	ERP Analyst	\$ 130.95	\$ 135.81	\$ 140.76	\$ 145.95	\$ 151.40
<b>C116</b>	<b>ERP Business/Architectural Specialist</b>	<b>\$ 169.72</b>	<b>\$ 175.99</b>	<b>\$ 182.44</b>	<b>\$ 189.14</b>	<b>\$ 196.24</b>
C117	Financial Analyst	\$ 79.51	\$ 82.45	\$ 85.48	\$ 88.61	\$ 91.92
C118	GIS Analyst/Programmer	\$ 118.09	\$ 122.46	\$ 126.93	\$ 131.60	\$ 136.53
C119	Graphics Specialist	\$ 63.96	\$ 66.34	\$ 68.75	\$ 71.29	\$ 73.97
C120	Groupware Specialist	\$ 75.86	\$ 78.65	\$ 81.53	\$ 84.53	\$ 87.70
<b>C121</b>	<b>Hardware Engineer</b>					
C121-1	Hardware Engineer (Entry Level)	\$ 64.10	\$ 66.47	\$ 68.91	\$ 71.45	\$ 74.12
C121-2	Hardware Engineer (Journeyman)	\$ 76.26	\$ 79.08	\$ 81.98	\$ 84.98	\$ 88.16
C121-3	Hardware Engineer (Senior)	\$ 94.26	\$ 97.74	\$ 101.33	\$ 105.05	\$ 108.98
C121-4	Hardware Engineer (Master)	\$ 113.32	\$ 117.50	\$ 121.81	\$ 126.28	\$ 131.02
<b>C122</b>	<b>Helpdesk Specialist</b>					
C122-1	Helpdesk Specialist (Entry Level)	\$ 55.86	\$ 57.91	\$ 60.03	\$ 62.24	\$ 64.57
C122-2	Helpdesk Specialist (Journeyman)	\$ 62.10	\$ 64.39	\$ 66.77	\$ 69.20	\$ 71.81
C122-3	Helpdesk Specialist (Senior)	\$ 82.73	\$ 85.78	\$ 88.91	\$ 92.19	\$ 95.63
<b>C123</b>	<b>Information Assurance/Security Specialist</b>					
C123-1	Information Assurance/Security Specialist (Entry Level)	\$ 92.09	\$ 95.51	\$ 98.99	\$ 102.65	\$ 106.47
C123-2	Information Assurance/Security Specialist (Journeyman)	\$ 113.19	\$ 117.37	\$ 121.67	\$ 126.12	\$ 130.85
C123-3	Information Assurance/Security Specialist (Senior)	\$ 131.87	\$ 136.74	\$ 141.74	\$ 146.95	\$ 152.46
C123-4	Information Assurance/Security Specialist (Master)	\$ 167.81	\$ 174.03	\$ 180.39	\$ 187.03	\$ 194.01

## Exhibits

C124	Information Specialist/Knowledge Engineer	\$ 126.87	\$ 131.56	\$ 136.37	\$ 141.39	\$ 146.67
C125	Modeling and Simulation Specialist	\$ 116.73	\$ 121.03	\$ 125.46	\$ 130.06	\$ 134.93
C126	Network Specialist					
C126-1	Network Specialist (Entry Level)	\$ 61.70	\$ 63.99	\$ 66.34	\$ 68.78	\$ 71.34
C126-2	Network Specialist (Journeyman)	\$ 73.93	\$ 76.66	\$ 79.46	\$ 82.38	\$ 85.48
C126-3	Network Specialist (Senior)	\$ 104.39	\$ 108.25	\$ 112.22	\$ 116.33	\$ 120.69
C126-4	Network Specialist (Master)	\$ 135.85	\$ 140.86	\$ 146.02	\$ 151.38	\$ 157.06
C127	Program Manager	\$ 190.21	\$ 197.23	\$ 204.45	\$ 211.97	\$ 219.90
C128	Project Manager	\$ 162.46	\$ 168.46	\$ 174.63	\$ 181.06	\$ 187.84
C129	Quality Assurance Specialist					
C129-1	Quality Assurance Specialist (Entry Level)	\$ 64.10	\$ 66.47	\$ 68.91	\$ 71.45	\$ 74.12
C129-2	Quality Assurance Specialist (Journeyman)	\$ 76.26	\$ 79.08	\$ 81.98	\$ 84.98	\$ 88.16
C129-3	Quality Assurance Specialist (Senior)	\$ 94.26	\$ 97.74	\$ 101.33	\$ 105.05	\$ 108.98
C129-4	Quality Assurance Specialist (Master)	\$ 127.66	\$ 132.36	\$ 137.21	\$ 142.26	\$ 147.60
C130	Research Analyst	\$ 99.64	\$ 103.33	\$ 107.11	\$ 111.04	\$ 115.20
C131	Strategic/Capital Planner	\$ 132.94	\$ 137.84	\$ 142.90	\$ 148.15	\$ 153.69
C132	Subject Matter Expert					
C132-1	Subject Matter Expert (Journeyman)	\$ 118.36	\$ 122.75	\$ 127.25	\$ 131.91	\$ 136.84
C132-2	Subject Matter Expert (Senior)	\$ 149.22	\$ 154.74	\$ 160.41	\$ 166.29	\$ 172.53
C132-3	Subject Matter Expert (Master)	\$ 207.48	\$ 215.13	\$ 223.00	\$ 231.20	\$ 239.87
C133	Systems Engineer	\$ 113.32	\$ 117.50	\$ 121.81	\$ 126.28	\$ 131.02
C134	Technical Editor	\$ 63.96	\$ 66.34	\$ 68.75	\$ 71.29	\$ 73.97
C135	Technical Writer	\$ 80.58	\$ 83.55	\$ 86.62	\$ 89.81	\$ 93.16
C136	Test Engineer					
C136-1	Test Engineer (Entry Level)	\$ 64.10	\$ 66.47	\$ 68.91	\$ 71.45	\$ 74.12
C136-2	Test Engineer (Journeyman)	\$ 76.26	\$ 79.08	\$ 81.98	\$ 84.98	\$ 88.16
C136-3	Test Engineer (Senior)	\$ 94.26	\$ 97.74	\$ 101.33	\$ 105.05	\$ 108.98
C137	Training Specialist					
C137-1	Training Specialist (Entry Level)	\$ 64.34	\$ 66.72	\$ 69.15	\$ 71.70	\$ 74.39
C137-2	Training Specialist (Journeyman)	\$ 78.63	\$ 81.54	\$ 84.52	\$ 87.63	\$ 90.90
C137-3	Training Specialist (Senior)	\$ 93.30	\$ 96.76	\$ 100.31	\$ 103.98	\$ 107.87
C138	Voice/Data Communications Engineer					
C138-1	Voice/Data Communications Engineer (Entry Level)	\$ 73.93	\$ 76.66	\$ 79.46	\$ 82.38	\$ 85.48
C138-2	Voice/Data Communications Engineer (Journeyman)	\$ 89.65	\$ 92.96	\$ 96.38	\$ 99.91	\$ 103.65