



EVERGREEN STATE COLLEGE

RADIO AND DISPATCH SYSTEM REPLACEMENT

19 APRIL 2021

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19 April 2021

Linda Horn
Evergreen State College
2700 Evergreen Parkway NW
Olympia, WA 98505

Subject: Radio System Replacement

Dear Mrs. Horn,

Motorola Solutions, Inc. (“Motorola”) is pleased to have the opportunity to provide Evergreen State College with quality communications equipment and services. The Motorola project team has taken great care to propose a solution that will meet your needs and provide unsurpassed value. To best meet the functional and operational specifications of this request, Motorola’s solution includes a combination of hardware, software, and services. Specifically, this solution is for a new dispatch site connecting into Thurston County Communications (TCOMM 911) and includes:

- One (1) MCC7500E fixed dispatch console
- Two (2) MCC7500E portable dispatch consoles
- Evergreen State College Microwave connection to the TCOMM 911 ASTRO25 master site
- One (1) Ethernet MPLS router
- Two (2) 7/800/VHF APX Consolettes for backup dispatch
- Thirteen (13) APX NEXT Portables and One (1) APX8500 mobile
- CommandCentral Aware GPS Mapping Application

This proposal consists of this cover letter, the Communications System and Services Agreement (CSSA), together with its exhibits and the Equipment Lease-Purchase Agreement. This proposal shall remain valid for 60 days. Motorola has priced this project using the CRESA Contract. Evergreen State College may accept the proposal by delivering to Motorola the CSSA signed by the appropriate Evergreen State College contact.

We thank you for the opportunity to furnish Evergreen State College with “best in class” solutions and we hope to strengthen our relationship by implementing this project. Questions or inquiries can be addressed to your Motorola Account Executive, Nicole Jackson, at (847) 420-8989.

Sincerely,
Motorola Solutions, Inc.



Micah Applewhite
MSSSI Vice President

TABLE OF CONTENTS

Section 1

System Description	1-5
1.1 Overview	1-5
1.2 System Block Diagram	1-6
1.3 Coverage	1-7
1.4 Connectivity	1-7
1.4.1 Aviat Microwave Link – ESC to Maxwell Hill	1-7
1.4.2 MPLS	1-11
1.4.3 Ethernet Connectivity within the campus	1-11
1.5 Solution components	1-12
1.5.1 MCC7500E IP Dispatch Console	1-12
1.5.1.1 Standard Radio Transmission and Reception	1-12
1.5.1.2 Capturing and Logging Audio – NICE Inform v9 NIR Solution	1-14
1.5.1.3 Record and Replay of Archived Calls	1-15
1.5.1.4 Management of Logging Recorder Subsystem	1-15
1.5.1.5 MCC 7500E Console Operator Position	1-15
1.5.2 APX Next radio solution	1-17
1.5.2.1 SmartConnect Application Service	1-18
1.5.2.2 SmartLocate Application Service	1-19
1.5.3 APX 8500 Mobile Radio	1-20
1.5.4 APX All-Band Console	1-21

Section 2

2.1 Assumptions	1-22
-----------------------	------

Section 3

Equipment List	2-24
3.1 Dispatch Equipment:	2-24
3.2 Subscriber Equipment:	2-28

Section 4

Implementation Plan	3-31
4.1 Dispatch Center Statement of Work	3-31
4.2 SmartConnect Statement of Work	3-40
4.2.1 Overview	3-40
4.2.2 Project Roles	3-41
4.2.3 Project Documentation	3-42
4.2.4 Initiation	3-42
4.2.5 Data Collection and Planning Session	3-43
4.2.6 Domain and Device Setup	3-43
4.2.7 SmartConnect Gateway Configuration	3-44

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4.2.8	ASTRO Infrastructure Preparation	3-44
4.2.9	ASTRO System Configuration.....	3-44
4.2.10	Subscriber Provisioning.....	3-45
4.2.11	Operational Demonstration	3-46
4.2.12	SmartConnect training.....	3-46
4.2.13	Project Finalization and Handover to Support.....	3-47
4.3	SmartLocate Statement of Work	3-48
4.3.1	Overview	3-48
4.3.2	Project Roles.....	3-48
4.3.3	Project Documentation	3-49
4.3.4	Project Initiation.....	3-50
4.3.5	ASTRO Infrastructure Preparation	3-50
4.3.6	Data Collection and Planning Session	3-51
4.3.7	APX NEXT Provisioning	3-51
4.3.8	CommandCentral Aware Geospatial Mapping Configuration.....	3-52
4.3.9	CommandCentral Aware Agency, User, and Device Setup	3-52
4.3.10	CommandCentral Aware Client.....	3-53
4.3.11	Operational Demonstration	3-53
4.3.12	CommandCentral Aware training	3-54
4.3.13	Project Finalization and Handover to Support.....	3-54
4.5	Implementation Assumptions	3-56
4.6	Change Order Process	3-56

Section 5

Estimated Project Shedule.....	4-57
--------------------------------	------

Section 6

Acceptance Test Plan.....	5-58
6.1 MCC 7100/7500 Trunked Resources.....	5-59
6.1.1 Instant Transmit.....	5-59
6.1.2 Talkgroup Selection and Call	5-60
6.1.3 Talkgroup Patch	5-61
6.2 Audio IP Logging.....	5-62
6.2.1 Logging Secure Trunking Talkgroup Call.....	5-62
6.3 SmartConnect	5-63
6.3.1 SmartConnect - Link Failure - Major Link Failure/Recovery.....	5-63
6.3.2 SmartConnect - Subscriber Mobility - LMR to LTE Switchover.....	5-64
6.3.3 SmartConnect - Subscriber Mobility - Manual Switchover to Broadband.....	5-66
6.3.4 SmartConnect - Radio Authorization - Radio Fails Authentication.....	5-67
6.3.5 SmartConnect - Radio Authorization - Radio Successfully Authenticates	5-68
6.4 Over The Air Rekeying (OTAR).....	5-69

6.4.1	Clear Hello.....	5-69
6.4.2	Encrypted Hello.....	5-70
6.5	Signoff Certificate.....	5-1

Section 7

Training Plan.....	6-2
7.1 Training Overview.....	6-2
7.2 Motorola Solutions Training.....	6-2
7.2.1 Training Delivery.....	6-3
7.2.2 Training Courses.....	6-4
7.2.3 Training Tools.....	6-6
7.3 Proposed Training for Evergreen State College.....	6-7
7.3.1 Consoles Supervisors & Operators.....	6-7
7.3.2 Course Descriptions for Evergreen State College.....	6-7
7.3.2.1 MCC7500 Console Supervisor.....	6-8
7.3.2.2 MCC7500 Console Operator.....	6-9
7.3.2.3 APX NEXT RadioCentral and MyView Overview.....	6-10
7.3.2.4 APX NEXT RadioCentral and MyView Workshop.....	6-11

Section 8

Service Plan.....	7-12
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Section 9

Pricing Summary.....	8-21
9.1 Pricing for Dispatch System.....	8-21
9.2 Support and Maintenance Services.....	8-22
9.3 Payment Terms.....	8-22

Section 10

Contractual Documentation.....	8-24
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SYSTEM DESCRIPTION

1.1 OVERVIEW

Motorola is proposing to Evergreen State College (ESC) a comprehensive solution to solve the problem of their aging RF infrastructure and subscribers. Motorola is proposing a new dispatch site connected into the Thurston County system (TCOMM911) master site. ESC will use the APX NEXT on the TCOMM911 700Mhz RF layer for on-street RF coverage. Motorola will coordinate with ESC to implement this solution on their existing IP network.

Figure 1-1 is the System Block Diagram of the proposed solution. Here are the main highlights of the design:

1. The replacement of the two (2) existing Zetron Consoles with a new MCC7500E dispatch site. The new dispatch site will include:
 - a. One (1) MCC7500E fixed dispatch position
 - i. Including PC and console accessories
 - b. Two (2) MCC7500E proxy dispatch positions
 - i. Including laptops and console accessories
 - c. A NICE IP logger and Motorola AIS for logging
 - d. Two (2) all-band APX Consolettes connected to the consoles via CCGW to allow dispatchers to access RF in the case of a site link failure
2. Evergreen State College connection to the TCOMM master site.
 - a. Aviat Split mount microwave radios at ESC and Maxwell Hill – an existing TCOMM microwave site
 - b. Nokia SAR8 MPLS router
3. APX NEXT Portables and APX8500 mobiles
 - a. Using the Thurston 700Mhz RF for on-street coverage and the APX NEXT SmartConnect application for in-building coverage over WiFi and LTE
 - b. The existing VHF RF layer on campus can be used as a backup. The VHF system will not be upgraded
4. This proposal assumes the ability to mount the following equipment at the top of the clock tower on campus:
 - a. One (1) 4ft Microwave Dish (SB4-100D)
 - i. This is required for the microwave link into the TCOMM backhaul network to be physically possible
 - b. Two (2) RF antennas for the consolettes
 - i. 1 VHF (~11ft) and 1 700Mhz (~4ft)



1.2 SYSTEM BLOCK DIAGRAM

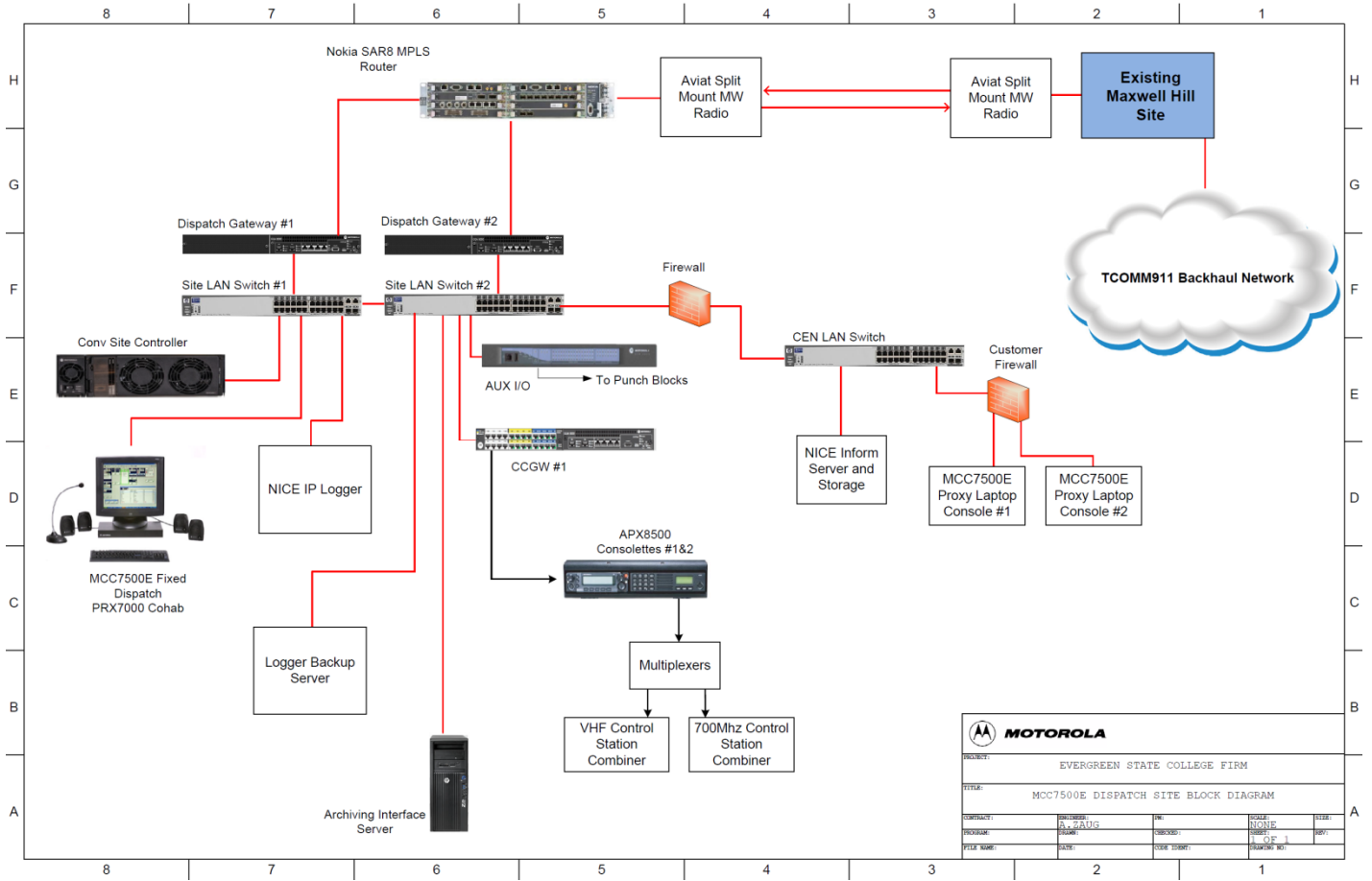


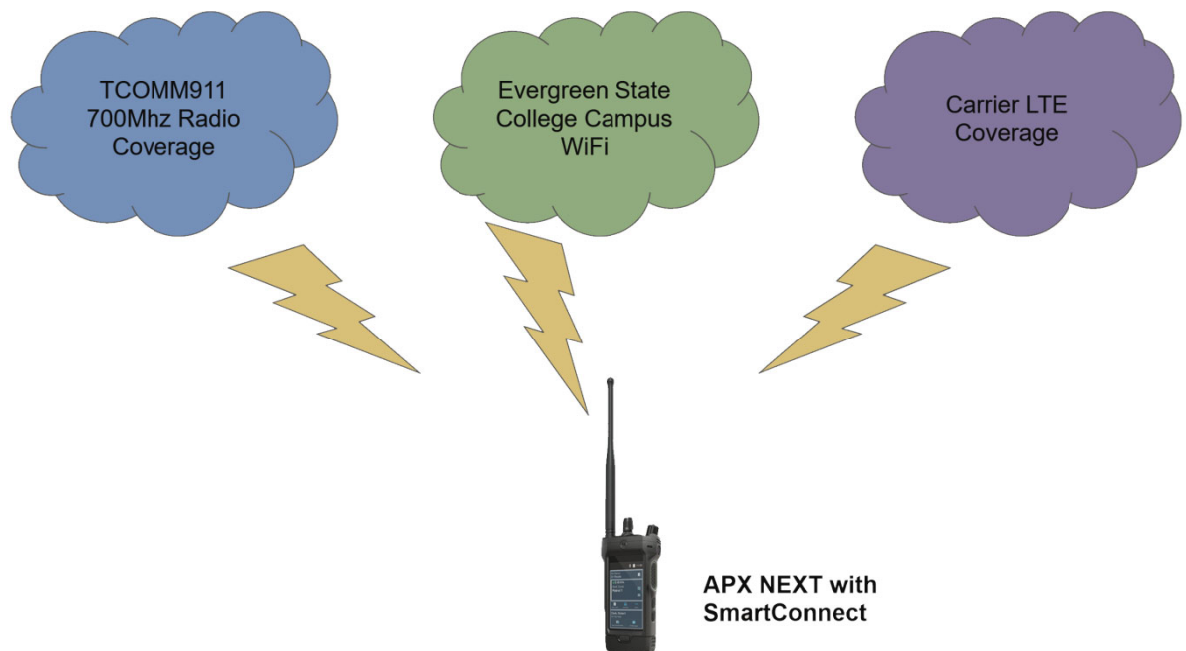
Figure 1-1: System Block Diagram

1.3 COVERAGE

This proposal includes the combination of APX NEXT (Motorola Solutions' new state-of-the-art LTE capable radio) and an application exclusive to the NEXT called SmartConnect. There is more info in a subsequent section on both the APX NEXT and SmartConnect, but this section will talk specifically about the operational impacts on coverage provided by this combination.

The value of SmartConnect is that it improves communication by using LTE and WiFi networks to complement LMR coverage. This feature provides coverage as long as an APX NEXT is within range of one of the three networks. The purpose of the feature is to provide voice services when the radio is out of range of LMR sites but in range of broadband or WiFi connectivity.

For ESC, this feature will allow the APX NEXT to access campus WiFi and LTE coverage in campus buildings or other areas that RF coverage might not be available – increasing the span of reliable coverage for public safety users on campus.



1.4 CONNECTIVITY

1.4.1 Aviat Microwave Link – ESC to Maxwell Hill

Aviat Networks' proposal includes the design, engineering, supply, and installation of one (1) Eclipse Packet Node microwave radio link for Evergreen State College in Washington. The proposed new microwave radio system provides wireless connectivity to the TCOMM911 TCERN Microwave backhaul network with Native Ethernet transport services. The proposed new microwave radio link will connect the Evergreen State College site to Maxwell Hill (WSP).

The proposed microwave link design and equipment is for one hop of **Eclipse Packet Node Microwave Radios with 1+1 Hot Standby Protected 11GHz ODU600v2 link**. The Eclipse

Packet Node INUe shelves at each end of the link are equipped with RAC70 radio interface modules and DAC GE3 switch modules for Gigabit Ethernet Transport.

Aviat Networks' ProVision Element Management System (EMS) is proposed for comprehensive FCAPS management of the new proposed Eclipse microwave site. ProVision EMS provides full management solutions for all of Aviat Networks' new and legacy product platforms and can also provide fault management of any SNMP managed third party devices if preferred eliminating the need to maintain multiple management platforms in a single network. The Evergreen State College site will be added as a new node in the TCOMM911 microwave management system.

The proposed design for the new microwave radio link provides an air-link capacity 132Mbps with 30MHz Channel BW size in the 11GHz FCC band. The proposed radio link use Radio Frequency Systems (RFS) FCC Class A compliant CompactLine Ultra High-Performance antennas. Our proposed coaxial cable lengths at each site are based on estimates with an assumed horizontal run of 40 Feet in addition to the antenna centerline. Our proposal includes all installation materials and services for the complete install of the new proposed antennas and cable systems. All new cable runs will be supplied with the required installation hardware and accessories. New cable entry panels with 4" ports are also proposed for each site. All cable lengths in our proposal are preliminary and are subject to change upon completion of site and path surveys during the project phase.

The proposed radio links has been designed to meet 99.999% two-way annual availability using the 11GHz FCC band. Please note that the path calculation report and path profile submitted are preliminary using available site data, and path designs are subject to change as new information becomes available for each site upon completion of formal field LOS surveys during the project phase. The preliminary path profiles include an additional 10ft (10-yr) of tree growth factor on top of the assumed maximum tree heights along each path in reference to the NASA JPL Global Tree Canopy Heights data as projected over Google Earth, and USGS NLCD 2011 clutter data.

Here is the preliminary path report:





Evergreen State College	
Latitude	47 04 24.50 N
Longitude	122 58 37.50 W
Azimuth	273.17°
Elevation	192 ft ASL
Antenna CL	110.0 ft AGL

Frequency (MHz) = 11200.0
Main 1 K = 1.330 %F1 = 100.00
Main 2 K = 0.670 %F1 = 30.00

Maxwell Hill (WSP)	
Latitude	47 04 52.20 N
Longitude	123 11 06.90 W
Azimuth	93.02°
Elevation	1566 ft ASL
Antenna CL	90.0 ft AGL

Guaranteed Tx/Rx Specifications over time and operational range

Aviat Networks Confidential and Proprietary Information

Transmission details (Evergreen State College-Maxwell Hill.pl5)

	Evergreen State College	Maxwell Hill (WSP)
Latitude	47 04 24.50 N	47 04 52.20 N
Longitude	122 58 37.50 W	123 11 06.90 W
True azimuth (°)	273.17	93.02
Elevation (ft)	192.17	1565.57
Antenna model	SB 4 - W100D (TR)	SB 4 - W100D (TR)
Antenna gain (dBi)	40.10	40.10
Antenna height (ft)	110.00	90.00
Orientation loss (dB)	0.00	0.00
TX line model	CNT-400	CNT-400
Connector loss (dB)	0.39	0.39
Circulator branching loss (dB)	1.60	1.60
Frequency (MHz)	11200.00	
Polarization	Vertical	
Path length (mi)	9.84	
Free space loss (dB)	137.45	
Atmospheric absorption loss (dB)	0.29	
Net path loss (dB)	61.51	61.51
Configuration	HSB	HSB
Radio model	E6v2H11_30M 64Q 132R70	E6v2H11_30M 64Q 132R70
TX power (dBm)	27.50	27.50
EIRP (dBm)	65.61	65.61
RX threshold criteria	1E-6 BER	1E-6 BER
RX threshold level (dBm)	-74.50	-74.50
Receive signal (dBm)	-34.01	-34.01
Thermal fade margin (dB)	40.49	40.49
Dispersive fade margin (dB)	62.00	62.00
Dispersive fade occurrence factor	1.00	
Effective fade margin (dB)	40.46	40.46
Annual multipath availability (%)	99.99998	99.99998
Annual multipath unavailability (sec)	5.11	5.11
Annual 2 way multipath availability (%)	99.99997	
Annual 2 way multipath unavailability (sec)	10.23	
Polarization	Vertical	
Rain region	Tacoma, Washington	
Annual rain availability (%)	99.99999	
Annual rain unavailability (min)	0.05	
Annual rain + multipath unavailability (min)	0.22	

Multipath fading method - Vigants - Barnett
 Rain fading method - Crane

Guaranteed Tx/Rx Specifications over time and operational range

Aviat Networks Confidential and Proprietary Information

1.4.2 MPLS

Motorola has included a Nokia IP/MPLS transport system in the design that will reside on top of the microwave network to support all the routing and management of IP traffic throughout the network. The MPLS transport system uses all COTS equipment designed for use with microwave in a public safety grade network. The services to implement and configure the traffic for the site are included in this proposal.

Qty 1 Nokia MPLS SAR-8 router is proposed at the dispatch site to monitor traffic to/from the TCOMM 911 ASTRO 25 master site. The proposed MPLS router will specifically manage traffic between ESC and Maxwell Hill (TCOMM 911 site).



Nokia 7705 Service Aggregation Router (SAR-8)

Motorola has designed a highly reliable IP/MPLS network solution that enables ESC to meet the performance requirements of all their mission-critical services and applications. The Nokia SAR platform provided in this proposal will provide a highly reliable network platform from which Ethernet services will be delivered to end user applications. An IP/MPLS implementation offers advantages and savings such as:

- Optimizing the bandwidth available in the network to make possible the introduction of new applications.
- Reducing the dependency on leased lines.
- Extending services to remote areas.
- Satisfying the growing IT functions.
- Providing network virtualization with QoS guaranteed for priority traffic.
- Improving agency interoperability and access to critical information.

The Nokia SAR-8 is a two-rack unit (2 RU) version of the SAR that is Ethernet optimized with IP/MPLS and optional TDM. This industry-leading, independently-validated High Availability feature has been inherited from the Service Router product line and is a strong contributor to overall network uptime.

This proposal also includes the addition of the Evergreen State Nokia 7705 SAR8 into TCOMM911's existing Nokia Network Management Solution.

1.4.3 Ethernet Connectivity within the campus

There are network requirements for Evergreen State College in order to implement this solution as it is proposed:

1. In order for the MCC7500E proxy consoles to function correctly outside of the radio network, an Ethernet connection between the consoles and the CEN switch through

the customer firewall is required – regardless of where consoles are going to be used.

2. The campus WiFi must have the bandwidth and device capacity for the operation of the APX NEXT outside of the on-street RF and LTE carrier coverage.

1.5 SOLUTION COMPONENTS

1.5.1 MCC7500E IP Dispatch Console

Motorola Solutions, Inc. (Motorola Solutions) proposes our MCC 7500E dispatch console to provide ESC with the confidence of state-of-the-art secure communications, seamless IP-based connectivity, flexible system architecture with scalable components, and centralized console management.

Motorola Solutions designs its console to help reduce the total cost of owning an IP-based, feature-rich dispatch system without compromising quality and reliability. The console provides ESC with sophisticated network management and easy migration to future capabilities. The proposed solution offers ESC 3 dispatch positions.



Figure 1-2: MCC 7500E Dispatch Position provides a small form factor, familiar GUI, and advanced features.

1.5.1.1 Standard Radio Transmission and Reception

A typical proposed dispatch position has a headset and two speakers. One speaker is for selected audio and the second speaker is for all remaining unselected audio. Additional speakers can be added to a console allowing dispatchers to configure a specific speaker for a set of designated audio sources. This simplifies multitasking between multiple audio sources and allows flexibility in the way the audio is presented to the dispatcher.



Receiving Calls from the Field and Other Dispatchers

The proposed console provides dispatchers with greater flexibility for how to hear calls from field radio users and other dispatchers. Each dispatcher can define his or her own audio reception profile by selecting a single audio source, whether conventional or talkgroup, to be heard on a selected speaker or headset (Single Select). The dispatcher can also define groups of radio resources that can all be heard on a selected speaker or headset (Multi- Select).

Initiating Calls to the Field and Other Dispatchers

The dispatcher has several different ways of initiating a call. In most circumstances, a General Transmit is appropriate. With the General Transmit, the dispatcher selects a resource on the console and activates the transmission through a footswitch, headset transmit button, or a microphone transmit button. If the dispatcher needs to quickly transmit on a resource that is not selected, the dispatcher uses the Instant Transmit function.

An Instant Transmit safety switch prevents accidental activation of functions that may cause negative consequences. The safety switch can be used with Aux I/Os and preprogrammed pages, as well as Instant Transmit switches.

Audio Communication to the Field and Other Dispatchers

The dispatcher can transmit audio in different ways. They can make calls to all users listening to a specific conventional radio resource or a specific trunking talkgroup. When multiple resources are required, the dispatcher can select additional talkgroups and/or conventional channels, as needed using the Multi-Select feature.

The proposed console also enables dispatchers to make private calls to individual field radio users or dispatchers. Once a private call is established, it can be patched in with another resource at the dispatcher's discretion.

Controlling Console Audio

The proposed console offers dispatchers several different ways of controlling or muting the audio on their consoles, such as the following:

Audio volume can be changed for any specific resource.

All non-selected resources on the console can be muted for 30 seconds (All Mute) or unmuted, if already muted.

A dispatcher can transmit on a resource while receiving audio from the same resource or other resources.

A dispatch position can be configured to automatically mute the other dispatch audio on a shared resource to prevent acoustic feedback when a co-located dispatch position transmits.

RF Cross Mute automatically mutes the receive audio from a specified channel when the dispatcher transmits on another specified channel to prevent acoustic feedback.

Controlling Network Audio

Dispatchers can control audio on the ASTRO 25 network. The dispatcher can enable or disable radio users to compartmentalize traffic, reduce interruptions, and maintain communications between dispatch and the field. When this function is enabled or disabled, all dispatch consoles with this resource assigned are updated with the current status of the feature. This feature can be controlled from any dispatch position.



1.5.1.2 Capturing and Logging Audio – NICE Inform v9 NIR Solution

The proposed dispatch site includes a logging recorder subsystem that enables the recording and replay of audio and other information associated with real-time conversations over the network. These capabilities provide ESC personnel with clear audio and enough information to easily understand the context and content of any recorded transmission.

This quotation proposes the following new radio logging hardware and software for Evergreen State College:

1. One (1) new single MCC7500E IP radio logger with single internal storage center to interface to the new ESC dispatch site. The IP radio logger will reside on the MCC7500E dispatch console radio network that is part of the ASTRO 25 radio system.
 - a. Capacity for 6 simultaneous talk paths, which includes recording 5 trunked talk paths and 1 conventional talk path coming through the Archiving Interface Server (AIS).
2. Inform V9 Professional to reside on the Logging Backup Storage (LBS) server that comes with the IP radio bundle.
 - a. Inform is a web-based client that allows users to search and compile audio tracks that are captured on the NICE logging recorders
 - b. The LBS server will reside on the console radio network, while the Inform server will reside on the Customer Enterprise Network. This proposal includes a playback station will also reside on the Customer Enterprise Network.
 - c. Inform modules include Verify, Monitor, Reconstruction, Media Player, and Organizer

In addition to recording audio, the logging recorder has the ability to capture the following information, if supported:

- Talkgroup and channel information
- User identification, such as unit ID and alias
- Call type, such as Talkgroup Call, Telephone Patch Call, and Emergency Call
- Non-voice events, such as Call Alerts, Radio Status Check, and Radio Message

Upon playback, this information can be displayed and searched to retrieve a desired call. The logging recorder's capacity is based on the number of radio transmissions it needs to record simultaneously, not on the number of channels that it can record.

A call can be saved either as a complete call (audio and any information associated with the call) or as a simple .wav file. Files saved as complete calls must be played using the application included with the logging recorder. Files saved as .wav files can be played on any application that supports them.



1.5.1.3 Record and Replay of Archived Calls

The logging recorder for the ESC is an IP-based recorder that can record all IP traffic sent to it. It provides ESC with the capability to record audio at the same level of quality as that heard at the dispatch position. In addition, it can record information associated with the call beyond just the audio.

A replay station can access recordings on multiple recorders, even ones that are not being used with AISs. This provides the user with a complete view of everything being recorded from a single point.

1.5.1.4 Management of Logging Recorder Subsystem

Security and fault management for the logging recorder subsystem are configured and managed by a common administration application, residing on either a playback station or a dedicated PC. Administrative personnel can use the management controls of the logging recorder subsystem to configure how calls are recorded.

On a global level, administrators can define which calls are recorded by which agency or department. On a more granular level, administrators can define the following recording behavior:

- Which talkgroups and conventional resources to record and which resources are critical.
- Whether secure calls are recorded.
- What access rights are assigned to replay station user accounts.
- What operational characteristics are assigned to the recorders (for example watermark limits for the recording media, or what to do when the recording media fills up).

1.5.1.5 MCC 7500E Console Operator Position

The dispatch position supports commercially available accessories, including a USB microphone, USB headset, and USB footswitch, as shown in the figure titled “MCC 7500E Dispatch Position.” The following list describes the components included in the proposed configuration.

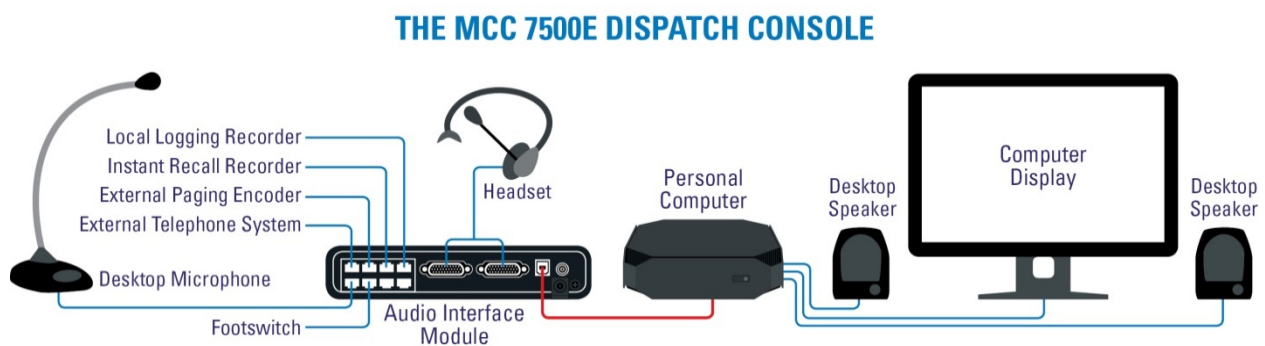


Figure 1-3: MCC 7500E Dispatch Position supports multiple accessories.

Audio Interface Module (AIM)

The USB Audio Interface Module (AIM) acts as an interface between analog devices and the dispatch position and as a general purpose input/output module. The USB AIM supports audio routing between the dispatcher and Motorola Solutions standard peripherals. The USB AIM connects to the MCC 7500E dispatch position with a USB cable.

Personal Computer (PC)

The personal computer included with the dispatch position is Windows-based and certified by Motorola Solutions.

Computer Display – Customer Provided

The dispatch position will use a Computer Display provided by ESC.

Enhanced Integrated Instant Recall Recorder (IRR)

The Enhanced IRR is seamlessly integrated with the dispatch position's software, allowing audio and call data from any radio or telephony resource to be recorded and easily played back. Call data includes PTT IDs, name of resource, start time and date, and stop time and date. Two analog inputs are available for use with recording audio from external devices.

Desktop Speakers

Two audio speakers have been included with each dispatch position and can be configured to transmit audio from a specific talkgroup or set of talkgroups. Each speaker is a self-contained unit, with individual volume controls, and can be placed on a desktop or mounted on a rack or computer display.

Headset Jack

The dispatch position supports up to two headset jacks, both push-to-talk (PTT) and non-PTT-enabled, for simultaneous use by the dispatcher and a supervisor. The headset jack contains two volume controls for the separate adjustment of received radio and telephone audio.

Headset

The proposed headset consists of two elements. The headset base includes an audio amplifier, a Push-to-Talk switch, and a long cord that connects to the dispatch position. The headset top consists of the earpiece and microphone as well as a short cable that connects to the headset base.

Footswitch

Each dispatch position includes a dual pedal footswitch that controls general transmit and monitor functions.



1.5.2 APX NEXT radio solution

APX NEXT is Motorola Solutions' next-generation P25 platforms purpose-built for first responders to access and act on information while maintaining their focus in critical situations. With natural and accessible touch interface, best-in-class audio optimized for high-noise environments, and extended coverage through broadband connectivity, APX NEXT delivers actionable intelligence to the point of engagement for personnel to stay connected and in control wherever the mission takes them.

Equipped with broadband, LTE, WiFi, Bluetooth 5.0, and GPS capabilities, APX NEXT brings future-ready applications, services, and best-in-class connectivity to the field and control room. The APX NEXT platform's cloud-based provisioning system will allow your agency to quickly procure, provision, and update the APX NEXT fleet, reducing the downtime needed to get devices into the field and saving your support staff valuable time.



Key benefits and advanced capabilities of the APX NEXT device include the following:

SmartTouch Experience – Easier operation with a redefined touch UI, centered around a new 3.6" impact resistant touch display and shallow menu hierarchy that offer more information at a glance and quicker engagement with critical applications. This cleaner and more intuitive visual layout increases the usability of the APX NEXT radio and helps your users find the information they need without pause or distraction.

Ruggedized, Ergonomic Design – Increased personnel safety and efficiency with an improved T-Grip ergonomic design, full-color top display, and tactile knobs for efficient use in emergency situations. Patented touch technology enables for reliable gloved use, while also making the screen immune to false actuations from water, snow, ice, or debris. The APX Next device meets the same MIL standards for ruggedization achieved by our APX platform radios.

Interoperability – Supports all public safety frequency bands (7/800 MHz, VHF, UHF) for full interoperability across radio systems with minimal intervention by the radio user.

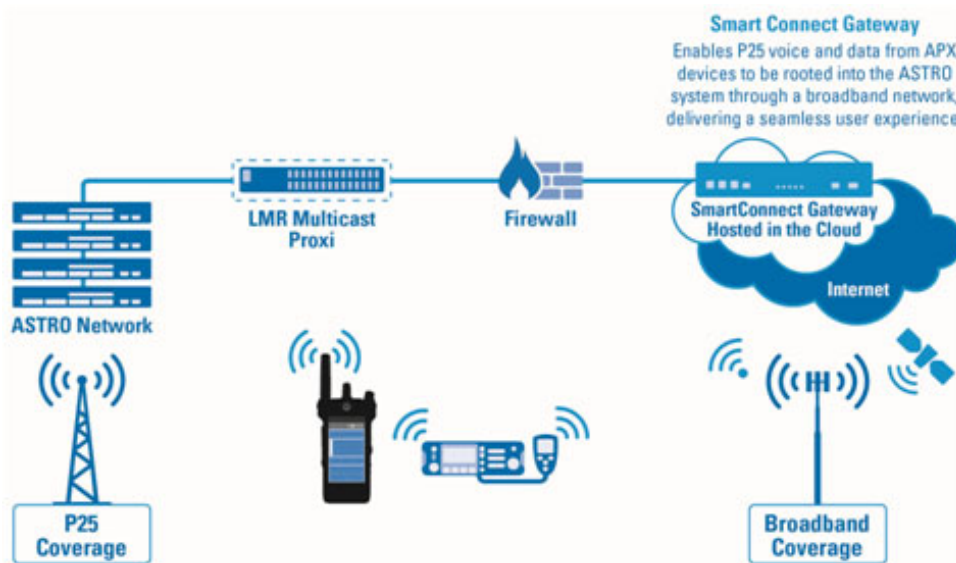
Easy Fleet Management – Easier and quicker radio provisioning, remote updates, and streamlined management for support staff, delivering greater awareness of your APX NEXT fleet. Using Motorola Solutions' cloud-based RadioCentral (RC) programming, APX NEXT supports faster provisioning and deployment to get devices in the hands of responders and out into the field.

Across all aspects of the radio experience — deployment, operation, maintenance, and evolution — APX NEXT brings critical advancements to usability and performance. This platform brings streamlined interfaces, accelerated workflows, and mission-critical reliability

to your agency's operation, while the focus that responders, dispatchers, and technicians need to stay safe and effective is protected.

1.5.2.1 SmartConnect Application Service

First responders need to know that they are covered and supported with critical intelligence no matter where the mission takes them. Leveraging APX NEXT and supported devices, SmartConnect keeps users connected and maintains critical LMR features through a broadband connection. By seamlessly switching between P25 LMR and LTE cellular networks, SmartConnect extends reliable PTT communications as radio users roam onto supported broadband networks. Authentication, status, talkgroups, and encryption are all preserved automatically, without interruptions or resets to ensure that end users continue to have access to the critical features they need in emergency situations.



APX NEXT Network Elements of SmartConnect

SmartConnect allows users to retain most P25 radio features when out of range of LMR, including the following:

- Agency Groups.
- Dynamic Regrouping.
- Call Alert.
- Emergency Call & Alarm.
- FDMA/TDMA to/from LMR System.
- Group Call Clear/Encrypted.
- Group Regrouping.
- Multigroup.
- PTT ID.
- Priority Monitor Scan.
- Radio Authentication.
- Radio Check.
- Radio Inhibit/Uninhibit.
- Radio Interrupt/Console Takeover.
- Status Update.



- ViQi Virtual Partner via LMR network.

The SmartConnect Application Service is proposed as a subscription-based model to optimize budget and scale to meet evolving needs.

SmartConnect is included for 3 years. Additional years can be purchased annually.

1.5.2.2 SmartLocate Application Service

The APX NEXT SmartLocate application sends accurate GPS location information of field personnel over a broadband network, enabling dispatchers to track units more frequently and improve resource deployment. With Dynamic Mode, SmartLocate can dynamically switch from LTE to P25 to continue sending location reports, without requiring the user to change inputs. This fallback capability provides an extra layer of reliability and enhances location tracking to build an effective operating picture as situations evolve. The use of broadband increases the frequency of location reporting beyond an LMR system to allow for a higher number of users without LMR infrastructure capacity limitations.

SmartLocate also enhances location information accuracy using nearby cell-towers and WiFi access points. This leads to more accurate APX NEXT radio unit tracking and improved location performance when a user moves indoors or enters marginal conditions (deep street canyons, forested areas).

SmartLocate is seamlessly integrated with CommandCentral Aware and features location triggers such as time, distance, push-to-talk (PTT), emergency, and accelerated cadence during emergency.

The SmartLocate Application Service is proposed as a subscription-based model that optimizes budget and scales to meet evolving needs. SmartLocate provides enhanced capabilities to existing CommandCentral Aware application investments. Access to CommandCentral Aware is not included with the SmartLocate subscription. Dynamic Mode requires IMW and a cloud connector on the P25 system.

SmartLocate is included for 3 years. Additional years can be purchased annually.

1.5.2.2.1 CommandCentral Aware Mapping Application

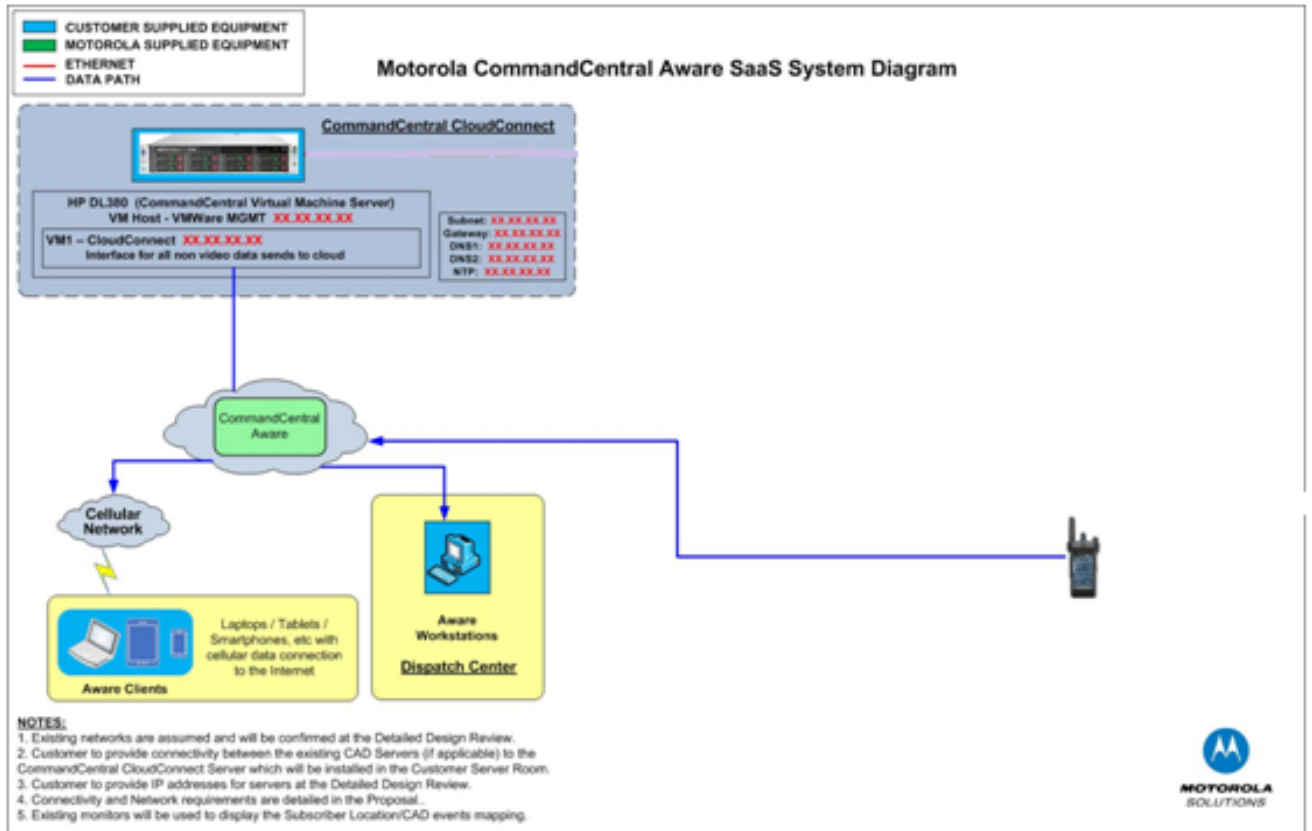
CommandCentral Aware is Motorola Solutions' software platform for enhanced situational awareness. Its capabilities include connecting to disparate systems and data sources for camera feeds, incident information, alerts etc into a single interface for the dispatcher. As a cloud-based platform, Aware users can take advantage of new capabilities as they are developed, without an intrusive upgrade experience.

Specifically for Evergreen State College, Motorola is proposed the use of Aware as a APX NEXT GPS location mapping application.

APX NEXT SmartLocate Integration

The APX NEXT SmartLocate feature provides dispatchers with accurate location data over a broadband network, enabling better tracking of field personnel and improved situational awareness. By leveraging the broadband network and CommandCentral Aware capabilities, SmartLocate can quickly send GPS coordinate updates and location information from the field to dispatchers to create a more effective operating picture of any situation. This gives dispatchers a greater ability to manage incidents and efficiently dispatch available units with confidence that resources are allocated where necessary. The use of broadband increases

the frequency of location reporting beyond an LMR system, improving location accuracy and allowing for a higher number of users without LMR infrastructure capacity limitations. The CommandCentral Aware tool set features location triggers that include time, distance, push-to-talk (PTT), emergency, and accelerated cadence during emergency.



1-1 CommandCentral Aware Diagram

1.5.3 APX 8500 Mobile Radio

The APX 8500 is Motorola Solutions' first all- band P25 mobile radio, created specifically for mission-critical first responders, who need to communicate across all frequency bands using the same device. It is a 4-in-1 radio that offers four RF bands and multi-mode system access. The APX 8500 enables radio users to communicate across 700 MHz, 800MHz, VHF and UHF Bands 1 and 2. Designed with mission- critical technology, the APX 8500 amplifies a radio user with the ability to keep the community safer than ever before.



With four RF bands and multi-mode system access, the APX 8500 knows no limits when it comes to interoperability. Some of its standard features and benefits are identified below:

- All-Band Interoperability – The APX 8500 offers four-band multi-mode interoperability with systems in 700 MHz, 800 MHz, VHF, and UHF frequency bands.



- Multiple Control Head Options – The APX 8500 mobile radio can be controlled by multiple control heads, with four different wired locations. There are five control heads available for the APX 8500: the O2 Rugged Control Head, O3 Handheld Control Head, O5 Standard Control Head, O7 Enhanced Control Head, and O9 Integrated Control Head. Dual control head support is offered for the O2, O5, and O7 control heads.
- Easy to Install – The APX 8500's Mid-Power Model has been designed to fit into any existing Motorola XTL footprint, so no further installation is necessary. The High-Power Model has been designed with a trunion design that secures the mobile while enabling it to be removed without also removing connecting cables.
- Meet Radio Users' Needs – The APX 8500 is compatible with the following optional advanced features and data applications: Programming over Project 25 (POP25), Text Messaging, Over the Air Rekeying (OTAR), 12 character RF ID asset tracking, Tactical OTAR Siren and Light Interface Module, and Enhanced Encryption Software Options.

1.5.4 APX All-Band Console

The APX All-Band Console provides a low-cost, mid-power wireless dispatch solution as an ideal complement to a modern P25 dispatch center. Equipped with leading edge P25 Phase 2 TDMA technology and multi-band interoperability, the APX All-Band Console can also be used as an emergency backup station when infrastructure is offline, or for wireless access to different system types for increased interoperability between agencies. **This proposal includes the combining and antenna systems for the consoles as well.**



APX All-Band Console

The APX All-Band Console's P25 operation and compatibility with legacy systems ensures that communications are clear, continuous, and coordinated across multiple users, agencies, and systems. The durable robust metal housing provides durability and allows for easy servicing, while the integrated front panel numeric keypad allows fast access to radio controls. In addition, optional features and benefits of the APX All-Band Console include:

- **Optional Multi-Band Operation in One Radio** – The APX All-Band Console delivers the convenience of three radios in one while maintaining APCO TIA receiver specifications. With the APX All-Band, personnel can use one console to communicate and provide dispatch operations across multiple digital and analog networks that operate in any three of the following frequency bands: 700 MHz, 800 MHz, VHF, and UHF (R1/R2).
- **Meets Radio Users' Needs** – The APX All-Band Console is compatible with the following optional advanced features and data applications: Programming over Project 25 (POP25), Text Messaging, Over the Air Rekeying (OTAR), and Enhanced Encryption Software Options. It is also capable of Extended Dispatch Operation including: Emergency Alarm ACK Encode, Radio Inhibit/ Uninhibit Encode, Radio Monitor Encode, Radio Check Encode, Status Query Encode, Status Query Response Decode, Status Update Decode, and Message Update Decode.

1.6 ASSUMPTIONS

Motorola has made several assumptions in preparing this proposal, which are noted below. In order to provide a firm quote, Motorola will need to verify all assumptions or seek alternate solutions in the case of invalid assumptions.

- All existing sites or equipment locations will have sufficient space available for the system described as required/specified by R56.
- All existing sites or equipment locations will have adequate electrical power (and backup power, if necessary) in the proper phase and voltage and site grounding to support the requirements of the system described.
- Any site/location upgrades, modifications or licensing are the responsibility of ESC.
- All required approved local, State or Federal, FCC/FAA, and any other permits as may be required for the installation and operation of the proposed equipment are the responsibility of ESC.
- Any required system interconnections not specifically outlined here will be provided by ESC. These may include dedicated phone circuits, microwave links, Ethernet links or other types of connectivity.
- VPN remote access is required for Motorola Solutions deployment personnel to configure the system and for Customer Support to conduct diagnostics
- Customer will provide Internet access to CommandCentral Aware server(s). This includes software licenses and media and installation support from the Customer's IT personnel. Connectivity and design requirements can be provided during Design Review phase of implementation.
- Customer will provide devices such as workstations, tablets, and smartphones with Internet access in order to use the proposed CommandCentral Aware solution. Chrome Browser is recommended for optimal performance. CommandCentral Aware workstations to support MS Windows 10 Enterprise. Customer will provide Antivirus software for the CommandCentral Aware client. Hardware specifications can be provided, upon request.
- Customer must provide Motorola Solutions access with administrative rights to Active Directory for the purpose of installation/configuration and support of CommandCentral solution.
- Any applicable frequencies and FCC/FAA licensing will be the responsibility of ESC.
- Any necessary demarcation points are defined as the Motorola Solutions provided equipment. This includes demarcation for the following services:
 - 120VAC/ -48DC Power & Circuits
 - Backup Power
 - Grounding
 - Communication Circuits and backhaul links between sites
- No coverage guarantee is included or implied for this proposal.



- Motorola Solutions is not responsible for interference caused or received by the Motorola Solutions provided equipment except for interference that is directly caused by the Motorola Solutions provided transmitter(s) to the Motorola Solutions provided receiver(s). Should ESC system experience interference, Motorola Solutions can be contracted to investigate the source and recommend solutions to mitigate the issue.
- ESC is responsible for providing an appropriate antenna mounting structure and coax/cable pathways to the equipment room racks. Motorola Solutions has also assumed a standard over the ground coax installation.
- All existing structures will have adequate space and size to support the antenna network requirements of the system described.
- Any tower stress and loading analysis or tower upgrade requirements are the responsibility of ESC.



SECTION 2

EQUIPMENT LIST

2.1 DISPATCH EQUIPMENT:

BLOCK	QTY	NOMENCLATURE	DESCRIPTION
LICENSE	1	SQM01SUM0323	ASTRO MASTER SITE
LICENSE	1	CA03517AC	ADD: CORE EXPANSION
LICENSE	1	UA00156AA	ADD: MCC7500 CONSOLE LICENSES (QTY
OP_POS	1	B1948	MCC 7500E DISPATCH POSITION LICENSE
OP_POS	3	UA00653AA	ADD: BASIC CONSOLE OPERATION
OP_POS	3	UA00654AA	ADD: ASTRO 25 TRUNKING OPERATION
OP_POS	3	UA00655AA	ADD: ADVANCED CONVENTIONAL OPERATIO
OP_POS	3	UA00659AA	ADD: ADP/AES/DES-OFB ENCRYPTION
OP_POS	3	UA00658AA	ADD: SECURE OPERATION
OP_POS	3	UA00652AA	ADD: 160 RADIO RESOURCES LICENSE
OP_POS	3	UA00661AA	ADD: ENHANCED IRR
OP_POS	1	UA00254AA	ADD: PRX 7000 PROXY SW LICENSE (1-1
OP_POSIT	1	B1949	MCC 7500E SOFTWARE DVD
OP_POSIT	1	TT3492	Z2 G4 MINI WORKSTATION
OP_POSIT	6	B1952	SPEAKER, DESKTOP, USB
OP_POSIT	6	CA03405AA	ADD: POWER SUPPLY WITH DC CORD
OP_POSIT	6	CA03406AA	ADD: AC LINE CORD, NORTH AMERICA
OP_POSIT	6	CA03412AA	ADD: USB CABLE, TYPE C TO TYPE C, 4
OP_POSIT	3	B1941	USB AUDIO INTERFACE MODULE
OP_POSIT	3	B1951	MICROPHONE, DESKTOP, USB
OP_POSIT	3	CA03412AA	ADD: USB CABLE, TYPE C TO TYPE C, 4
OP_POSIT	6	B1913	MCC SERIES HEADSET JACK
OP_POSIT	3	RLN6098	HDST MODULE BASE W/PTT, 15 FT CBL
OP_POSIT	3	DSTWIN6328A	PROVIDES ONE DUAL PEDAL FOOTSWITCH
OP_POSIT	3	NPI_001431	MCAFFEE AV CLIENT **REFER TO SYSTEM



BLOCK	QTY	NOMENCLATURE	DESCRIPTION
OP_POSIT	3	DSUSB31000S	STARTECH USB 3.0 TO GIGABIT ETHERNE
OP_POSIT	1	NPI_001432	WINDOWS SUPP FULL/TRANS CONFIG **RE
OP_POSIT	1	T8639	JUNIPER FIREWALL APPLIANCE
OP_POSIT	2	TT3721	ZBOOK 15 G6 NON RETURNABLE
PROXY	1	BVN6079	PRX 7000 PROXY APPLICATION SW DVD
SWITCH	2	CLN1868	2930F 24-PORT SWITCH
SWITCH	2	CLN1866	FRU: 1M DAC CABLE
ROUTER	2	T8492	SITE ROUTER & FIREWALL- AC
ROUTER	2	CA03445AA	ADD: MISSION CRITICAL HARDENING
ROUTER	2	CA03448AA	ADD: STATEFUL FIREWALL
AUX_IO	1	F4543	SITE MANAGER BASIC
AUX_IO	1	VA00874	ADD: AUX I-O SERV FW CURR ASTRO REL
AUX_IO	1	V266	ADD: 90VAC TO 260VAC PS TO SM
AUX_IO	3	V592	AAD TERM BLCK & CONN WI
GCP8000	1	T7038	GCP 8000 SITE CONTROLLER
GCP8000	1	CA00303AA	ADD: QTY (1) SITE CONTROLLER
GCP8000	1	CA01136AA	MCC 7500 CONVEN SITE OPER
GCP8000	1	X153AW	ADD: RACK MOUNT HARDWARE
GCP8000	1	CA03678AA	ADD: ASTRO SYSTEM RELEASE 2021.1
CCGW	1	SQM01SUM0205	GGM 8000 GATEWAY
CCGW	1	CA01616AA	ADD: AC POWER
CCGW	1	CA02086AA	ADD: HIGH DENSITY ENH CONV GATEWAY
AIS	1	B1905	MCC 7500 ASTRO 25 SOFTWARE
AIS	1	B1933	MOTOROLA VOICE PROCESSOR MODULE
AIS	1	CA00288AB	ADD: MCC 7500 ARCHIVING INTERFACE S
AIS	1	CA00245AA	ADD: ADP ALGORITHM
AIS	1	CA00140AA	ADD: AC LINE CORD, NORTH AMERICAN
AIS	1	CA00147AF	ADD: MCC 7500 SECURE OPERATION
AIS	1	NPI_001431	MCAFFEE AV CLIENT **REFER TO SYSTEM
AIS	1	TT3492	Z2 G4 MINI WORKSTATION
CEN	1	CLN1868	2930F 24-PORT SWITCH

BLOCK	QTY	NOMENCLATURE	DESCRIPTION
CEN	1	CLN1866	FRU: 1M DAC CABLE
LOG_REC	1	TT3285	SINGLE ASTRO RECORDER BASE BUNDLE
LOG_REC	15	TT06305AA	ADD: ASTRO RECORDING CHANNEL
LOG_REC	1	TT06274AA	ADD: IP LOGGING RECORDER FOR USE ON
LOG_REC	15	DQTT06303AA	SEE NICE QUOTE Q25519
LOG_REC	1	DDN2663	NICE INFORM 9 CHANNEL FLAG
LOG_REC	1	DDN2521	MS SQL 2016 64 BIT SERVER CLIENT AC
LOG_REC	3	DDN2522	MS SQL 2016 64 BIT USER CLIENT ACCE
LOG_REC	1	DDN9748	19 INCH BLACK SHELF
LOG_REC	1	TT3492	Z2 G4 MINI WORKSTATION
LOG_REC	1	DSTG191B	TECH GLOBAL EVOLUTION SERIES 19INCH
LOG_REC	1	NPI_001431	MCAFFEE AV CLIENT **REFER TO SYSTEM
LOG_REC	1	NPI_001432	WINDOWS SUPP FULL/TRANS CONFIG **RE
LOG_REC	1	B1952	SPEAKER, DESKTOP, USB
LOG_REC	1	CA03413AA	ADD: USB CABLE, TYPE A TO TYPE C, 4
RACK	2	DS1101990	SPD, SHIELDED RJ-45 JACK, SINGLE LI
RACK	2	DSTSJADP	RACK MOUNT GROUND BAR, 19 IN FOR TS
RACK	1	TRN7343	SEVEN AND A HALF FOOT RACK
RACK	3	DS11011188	PDU, 120/240 SPLIT PH OR N+1 REDUND
RACK	10	DS3750295	BREAKER, 5 AMP, CB UL 489 LISTED FO
RACK	10	DS3750296	BREAKER, 10 AMP, CB UL 489 LISTED F
RACK	10	DS3750297	BREAKER, 15 AMP, CB UL 489 LISTED F
RACK	2	DSRMP615A	SPD, TYPE 3, 120V RACK MOUNT, 15A P
SPARES	1	SQM01SUM0205	GGM 8000 GATEWAY
SPARES	1	CA01616AA	ADD: AC POWER
SPARES	1	CA02086AA	ADD: HIGH DENSITY ENH CONV GATEWAY
SPARES	1	T8492	SITE ROUTER & FIREWALL- AC
SPARES	1	CA03445AA	ADD: MISSION CRITICAL HARDENING
SPARES	1	CA03448AA	ADD: STATEFUL FIREWALL
SPARES	1	B1941	USB AUDIO INTERFACE MODULE

BLOCK	QTY	NOMENCLATURE	DESCRIPTION
SPARES	1	B1952	SPEAKER, DESKTOP, USB
SPARES	1	CA03405AA	ADD: POWER SUPPLY WITH DC CORD
SPARES	1	CA03406AA	ADD: AC LINE CORD, NORTH AMERICA
SPARES	1	CA03412AA	ADD: USB CABLE, TYPE C TO TYPE C, 4
SPARES	1	B1951	MICROPHONE, DESKTOP, USB
SPARES	1	CA03412AA	ADD: USB CABLE, TYPE C TO TYPE C, 4
SPARES	1	B1913	MCC SERIES HEADSET JACK
SPARES	1	CLN1868	2930F 24-PORT SWITCH
SPARES	1	CLN1866	FRU: 1M DAC CABLE
NETWORK	1	DSMW3HE06791AA	SAR-8 SHELF V2
NETWORK	2	DSMW3HE02774AB	CONTROL SWITCH MODULE V2 (CSMV2) 48
NETWORK	1	DSMW3HE02784MA	SAR RELEASE 9.0 BASIC OS LICENSE
NETWORK	1	DSMW3HE06792EA	FAN MODULE (SAR-8 SHELF V2) EXT TEM
NETWORK	2	DSMW3HE11473AK	PMC CARD W/ 4 GIG-E SFP BUNDLE (1)
NETWORK	2	DSMW3HE05837BA	7705 AC POWER CONVERTER PIGTAIL - O
NETWORK	2	DSMW3HE05838AA	250W 120/240V AC POWER CONVERTER
NMS	18	DSMW3HE11801DA	NFM-P 19 STD LICENSE POINT
MW	1	DQAVIATNA200722	AVIAT QUOTE NA200722-57635 \$65403
UPPERJUMPR	15	DSLDF450ACABLE	CABLE: 1/2" LDF HELIAX POLY JKT PER
UPPERJUMPR	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN
UPPERJUMPR	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2
JUMPER	2	TDN9289	CABLE WRAP WEATHERPROOFING
MAINLINE	200	DSLDF450ACABLE	CABLE: 1/2" LDF HELIAX POLY JKT PER
MAINLINE	2	DDN1091	L4TDF-PSA 7-16 DIN FEMALE PS FOR 1/
MAINLINE	5	DSSG1212B2U	SG12-12B2U, SUREGROUND 1/2", 48"
MAINLINE	1	DSL4SGRIP	L4SGRIP SUPPORT HOIST GRIP 1/2" LDF
ANTACC	7	DS43211A	BUTTERFLY HANGER FOR 1/2 IN OR 3/8
SURGE	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH P
LOWERJUMPR	25	DSLDF450ACABLE	CABLE: 1/2" LDF HELIAX POLY JKT PER
LOWERJUMPR	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN
LOWERJUMPR	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2

BLOCK	QTY	NOMENCLATURE	DESCRIPTION
UPPERJUMPR	15	DSLDF450ACABLE	CABLE: 1/2" LDF HELIAX POLY JKT PER
UPPERJUMPR	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN
UPPERJUMPR	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2
JUMPER	2	TDN9289	CABLE WRAP WEATHERPROOFING
MAINLINE	200	DSLDF450ACABLE	CABLE: 1/2" LDF HELIAX POLY JKT PER
MAINLINE	2	DDN1091	L4TDF-PSA 7-16 DIN FEMALE PS FOR 1/
MAINLINE	5	DSSG1212B2U	SG12-12B2U, SUREGROUND 1/2", 48"
MAINLINE	1	DSL4SGRIP	L4SGRIP SUPPORT HOIST GRIP 1/2" LDF
ANTACC	7	DS43211A	BUTTERFLY HANGER FOR 1/2 IN OR 3/8
SURGE	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH P
LOWERJUMPR	25	DSLDF450ACABLE	CABLE: 1/2" LDF HELIAX POLY JKT PER
LOWERJUMPR	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN
LOWERJUMPR	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2
ANTENNA	1	DSBA4041DIN	OMNI, EXPOSED DIPOLE ARRAY, 3 DBD,
ANTENNA	1	DSCC80703	OMNI, CORPORATE COLLINEAR, 3 DBD, 7
RFDS	2	H1926	MULTIPLEXER QMA APX CONSOLETTA
RFDS	2	DSCS0496040531	SHORT HAUL CONTROL STATION COMBINER

2.2 SUBSCRIBER EQUIPMENT:

BLOCK	QTY	NOMENCLATURE	DESCRIPTION
APX NEXT	13	H55TGT9PW8AN	APX NEXT; ALL-BAND MODEL 4.5 PORTABLE
APX NEXT	13	BD00001AA	ADD: CORE BUNDLE
APX NEXT	13	H38DA	ADD: SMARTZONE OPERATION
APX NEXT	13	Q806CH	ADD: ASTRO DIGITAL CAI OPERATION
APX NEXT	13	Q361CD	ADD: P25 9600 BAUD TRUNKING
APX NEXT	13	QA09028AA	ADD: VIQI VC RADIO OPERATION
APX NEXT	13	QA03399AK	ADD: ENHANCED DATA
APX NEXT	13	Q387CB	ADD: MULTICAST VOTING SCAN

BLOCK	QTY	NOMENCLATURE	DESCRIPTION
APX NEXT	13	QA00580BA	ADD: TDMA OPERATION
APX NEXT	13	QA09001AM	ADD: WIFI CAPABILITY
APX NEXT	13	BD00010AA	ADD: SECURITY BUNDLE
APX NEXT	13	QA01767BL	ADD: P25 LINK LAYER AUTHENTICATION
APX NEXT	13	Q498BN	ENH: ASTRO 25 OTAR
APX NEXT	13	H797DW	ENH: DVP-XL ENCRYPTION AND ADP
APX NEXT	13	Q15AU	ADD: AES/DES-XL/DES-OFB ENCRYPTION AND ADP
APX NEXT	13	NNTN9216A	BATTERY PACK,IMPRES
APX NEXT	13	QA00380AA	ALT: HARD LEATHER
APX NEXT	13	SSV01P01685B	SMART LOCATE
APX NEXT	13	NNTN9115A	CHARGER, MULTI-UNIT,
APX NEXT	13	PMMN4123A	AUDIO ACCESSORY- REMOTE SPEAKER
APX8500	1	M37TSS9PW1 N	APX8500 ALL BAND MP MOBILE
APX8500	1	G67EH	ADD: REMOTE MOUNT E5 MP
APX8500	1	GA01517	DEL: NO J600 ADAPTER CABLE NEEDED
APX8500	1	W22	ADD: STD PALM MICROPHONE APX
APX8500	1	B18	ADD: AUXILIARY SPKR 7.5 WATT
APX8500	1	G298	ENH: ASTRO 25 OTAR W/ MULTIKEY
APX8500	1	G309	ADD:USB DATA INTFC CABLE-TRK
APX8500	1	G361	ENH: P25 TRUNKING SOFTWARE APX
APX8500	1	G444	ADD: APX CONTROL HEAD SOFTWARE
APX8500	1	G51	ENH: SMARTZONE OPERATION APX
APX8500	1	G806	ENH: ASTRO DIGITAL CAI OP APX
APX8500	1	G843	ADD: AES ENCRYPTION APX AND ADP
APX8500	1	GA00249AE	ADD: 3Y ESSENTIAL ACCIDENTAL DAMAGE
APX8500	1	GA00250	ADD: WIFI/GNSS FLEXIBLE CABLE LMR195
APX8500	1	GA00580	ADD: TDMA OPERATION APX
APX8500	1	GA01513	ADD: ALL BAND MOBILE ANTENNA (7/8/V/U)
APX8500	1	GA01630	ADD: SMARTCONNECT
APX8500	1	GA01670	ADD: APX E5 CONTROL HEAD

BLOCK	QTY	NOMENCLATURE	DESCRIPTION
APX8500	1	GA05509	DEL: DELETE UHF BAND
APX8500	1	GA09001	ADD: WI-FI CAPABILITY
Consolette	2	L37TSS9PW1 N	ALL BAND CONSOLETTTE
Consolette	2	CA01598	ADD: AC LINE CORD US
Consolette	2	G361	ENH: P25 TRUNKING SOFTWARE APX
Consolette	2	G444	ADD: APX CONTROL HEAD SOFTWARE
Consolette	2	G51	ENH: SMARTZONE OPERATION APX
Consolette	2	G806	ENH: ASTRO DIGITAL CAI OP APX
Consolette	2	G843	ADD: AES ENCRYPTION APX AND ADP
Consolette	2	GA00249AB	ADD: 3Y ESSENTIAL ACCIDENTAL DAMAGE
Consolette	2	GA00469	ENH: EXTENDED DISPATCH APX CONSOLETTTE
Consolette	2	GA00580	ADD: TDMA OPERATION APX
Consolette	2	GA05509	DEL: DELETE UHF BAND
Consolette	2	GA09001	ADD: WI-FI CAPABILITY CONSOLETTTE
Consolette	2	L998	ADD: LIMITED FRONT PANEL W/CLOCK/VU
Consolette	2	HKN6233C	APX CONSOLETTTE RACK MOUNT KIT

IMPLEMENTATION PLAN

3.1 DISPATCH CENTER STATEMENT OF WORK

Motorola Solutions will install and configure the proposed equipment. The following table describes the tasks involved with installation and configuration.

Tasks	Motorola Solutions	Customer
PROJECT INITIATION		
Contract Finalization and Team Creation		
Execute contract and distribute contract documents.	X	X
Assign a Project Manager as a single point of contact.	X	X
Assign resources.	X	X
Schedule project kickoff meeting.	X	X
Deliverable: Signed contract, defined project team, and scheduled project kickoff meeting.		
Project Administration		
Ensure that project team members attend all meetings relevant to their role on the project.	X	X
Set up the project in the Motorola Solutions information system.	X	
Record and distribute project status meeting minutes.	X	
Maintain responsibility for third-party services contracted by Motorola Solutions.	X	
Complete assigned project tasks according to the project schedule.	X	X
Submit project milestone completion documents.	X	
Upon completion of tasks, approve project milestone completion documents.		X
Conduct all project work Monday thru Friday, 7:30 a.m. to 5:00 p.m.).	X	
Deliverable: Completed and approved project milestones throughout the project.		
Project Kickoff		
Introduce team, review roles, and decision authority.	X	X
Present project scope and objectives.	X	
Review SOW responsibilities and project schedule.	X	X
Schedule Design Review.	X	X
Deliverable: Completed project kickoff and scheduled Design Review.		



Tasks	Motorola Solutions	Customer
Design Review		
Review the Customer's operational requirements.	X	X
Present the system design and operational requirements for the solution.	X	
Present installation plan.	X	
Present preliminary cutover plan and methods to document final cutover process.	X	
Present configuration and details of sites required by system design.	X	
Validate that Customer sites can accommodate proposed equipment.	X	X
Provide approvals required to add equipment to proposed existing sites.		X
Review safety, security, and site access procedures.	X	
Present equipment layout plans and system design drawings.	X	
Provide backhaul performance specifications and demarcation points.	X	
Provide heat load and power requirements for new equipment.	X	
Provide information on existing system interfaces.		X
Assume liability and responsibility for proving all information necessary for complete installation.		X
Assume responsibility for issues outside of Motorola Solutions' control.		X
Review and update design documents, including System Description, Statement of Work, Project Schedule, and Acceptance Test Plan, based on Design Review agreements.	X	
Provide minimum acceptable performance specifications for customer provided hardware, software, LAN, WAN and internet connectivity.	X	
Execute Change Order in accordance with all material changes to the Contract resulting from the Design Review.	X	
Deliverable: Finalized design documentation based upon "frozen" design, along with any relevant Change Order documentation.		
SITE PREPARATION AND DEVELOPMENT		
Site Access		
Provide site owners/managers with written notice to provide entry to sites identified in the project design documentation.		X
Obtain site licensing and permitting, including site lease/ownership, zoning, permits, regulatory approvals, easements, power, and telco connections.		X
Deliverable: Access, permitting, and licensing necessary to install system equipment at each site.		
Site Planning		
Provide necessary buildings, equipment shelters, and towers for installation of system equipment.		X

Tasks	Motorola Solutions	Customer
Provide the R56 requirements for space, power, grounding, HVAC, and connectivity requirements at each site.	X	
Provide adequate electrical power in proper phase and voltage at sites.		X
Confirm that there is adequate utility service to support the new equipment and ancillary equipment.		X
Modify towers or other structures, or relocate sites in the system, to ensure that they are capable of supporting proposed and future antenna loads.		X
Conduct site walks to collect pertinent information (e.g. location of telco, power, structures, etc.)	X	
Ensure that each site meets the R56 standards for space, grounding, power, HVAC, and connectivity requirements.		X
Ensure that required rack space is available for installation of the new equipment.	X	X
Deliverable: Information and permitting requirements completed at each site.		
General Facility Improvements		
Provide adequate HVAC, grounding, lighting, cable routing, and surge protection based upon Motorola Solutions' Standards and Guidelines for Communication Sites (R56)		X
Ensure the resolution of environmental and hazardous material issues at each site including, but not limited to, asbestos, structural integrity (tower, rooftop, water tank, etc.), and other building risks.		X
Ensure that electrical service will accommodate installation of system equipment, including isolation transformers, circuit breakers, surge protectors, and cabling.		X
Provide obstruction-free area for the cable run between the demarcation point and system equipment.		X
Provide structure penetrations (wall or roof) for transmission equipment (e.g. antennas, microwave radios, etc.).		X
Supply interior building cable trays, raceways, conduits, and wire supports.		X
Deliverable: Sites meet physical requirements for equipment installation.		
SYSTEM INSTALLATION		
Equipment Order and Manufacturing		
Create equipment order and reconcile to contract.	X	
Manufacture Motorola Solutions-provided equipment necessary for system based on equipment order.	X	
Procure non-Motorola Solutions equipment necessary for the system.	X	
Deliverable: Equipment procured and ready for shipment.		
System Staging		
Provide information on existing system interfaces, room layouts, or other information necessary for the assembly to meet field conditions.		X
Set up and rack the solution equipment on a site-by-site basis, as it will be configured in the field at each of the sites.	X	



Tasks	Motorola Solutions	Customer
Cut and label the cables with to/from information to specify interconnection for field installation and future servicing needs.	X	
Complete the cabling/connecting of the subsystems to each other ("connectorization" of the subsystems).	X	
Assemble required subsystems to assure system functionality.	X	
Power up, load application parameters, program, and test all staged equipment.	X	
Confirm system configuration and software compatibility with the existing system.	X	
Inventory the equipment with serial numbers and installation references.	X	
Review and approve proposed Factory Acceptance Test Plan.		X
Deliverable: System staged and ready for shipment.		
Equipment Shipment and Storage		
Provide secure location for solution equipment.		X
Pack and ship solution equipment to the identified, or site locations.	X	
Receive solution equipment.		X
Inventory solution equipment.	X	
Deliverable: Solution equipment received and ready for installation		
General Installation		
Deliver solution equipment to installation location.	X	
Coordinate receipt of and inventory solution equipment with designated contact.	X	
Install all proposed fixed equipment as outlined in the System Description based upon the agreed-upon floor plans, connecting audio, control, and radio transmission cables to connect equipment to the power panels or receptacles, and audio/control line connection points. Installation performed in accordance with R56 standards and state/local codes.	X	
Provide system interconnections that are not specifically outlined in the system design.		X
Install and terminate all network cables between site routers and network demarcation points, including microwave, leased lines, and Ethernet.	X	
Ensure that Type 1 and Type 2 AC suppression is installed to protect installed equipment.		X
Connect installed equipment to the provided ground system.	X	
Label equipment, racks, and cables.	X	
Perform preliminary audit of installed equipment to ensure compliance with requirements and R56 standards.	X	
Note any required changes to the installation for inclusion in the "as-built" system documentation.	X	

Tasks	Motorola Solutions	Customer
Remove, transport, and dispose of old equipment.		X
Deliverable: Equipment installed.		
Antenna and Transmission Line Installation		
Install antennas and MW dishes, including supplying and installing new side arm mounts, as well as microwave PCN/licensing services.	X	
Install transmission lines required for system.	X	
Provide structure penetrations for transmission equipment (e.g. antennas & microwave line.).		X
Install microwave waveguide and lines, as applicable.	X	
Perform sweep tests on transmission lines.	X	
Provide and install attachment hardware for supporting transmission lines on antenna support structure.	X	
Supply and install ground buss bar at the bottom of each antenna support structure.	X	
Deliverable: Antenna and Transmission Line installed.		
Console Installation and Configuration		
Identify circuits for connection to console and a demarcation point located within 25 feet of the console interface.		X
Connect console to circuit demarcation points.	X	
Install PC workstation w/ keyboard and mouse, and monitor.	X	
Install purchased peripheral console equipment in accordance with R56 standards and state/local codes.	X	
Develop templates for console programming.	X	
Perform console programming and configuration.	X	
Deliverable: Console equipment installation completed.		
Control Station Installation and Configuration		
Provide the locations of control stations.		X
Survey mounting locations and develop control station installation plan.	X	
Provide adequate space, grounding, and power for the control station installation.		X
Properly connectorize and ground the cabling, which will be run to the outdoor antenna location using the least obtrusive method.	X	
Provide an elevated antenna mounting location, and adequate feed-line routing and support.		X
Install line (not greater than 100 feet in length) and antenna system (connectors, coax grounding kit, antenna, and surge protection).	X	
Install RF local control stations identified in the equipment list.	X	



Tasks	Motorola Solutions	Customer
Perform control station programming.	X	
Deliverable: Control station equipment installation completed.		
Logging Equipment Installation and Configuration		
Supply logging equipment.	X	
Provide interface to logging equipment.	X	
Deliverable: Logging equipment installation completed.		
Develop Console and User Radio Fleetmap		
Review and determine modifications to existing fleetmap.		X
Review fleetmapping requirements with Customer, including user ID and talkgroup structures.	X	
Provide advisory input during fleetmap development.	X	
Develop templates.	X	
Participate in a meeting to finalize any changes among user groups.	X	X
Review and approve fleetmap templates.		X
Program the approved templates into a radio-programming template tool.	X	
Program sample radios with approved templates and deliver for evaluation by Customer.	X	
Program approved templates into console.		X
Evaluate sample radios and provide feedback.		X
Approve templates.		X
Deliverable: Fleetmap plan completed and approved by Customer.		
Mobile Radio Installation and Programming		
Develop and approve prototype templates for each type of mobile installation.	X	
Test features and functionalities of the mobile templates.	X	
Program the mobile radios identified in the equipment list in accordance with the programming templates, client software, and fleetmap. A "one-time only" programming is included in the project pricing.	X	
Provide adequate number of vehicles for installations according to the project/installation schedule.		X
Install all the mobiles in the vehicles, as identified in the equipment list, and according to the installation schedule.	X	
Permanently mount the antennas on each vehicle according to the approved prototype, appropriate for the vehicle type. Install the antennas close to the same location as the existing antennas, where practical, in vehicles that already have	X	

Tasks	Motorola Solutions	Customer
antennas installed. If applicable, plug the old antenna hole with an appropriate rubber plug.		
Install the antennas on the roof, where practical, on the new antenna installations. If mobile antenna cannot be installed on the roof, determine an alternative location.	X	X
Remove the existing mobiles from the vehicle at the time of installation of the new radios	X	
Prior to subscriber flash upgrade, perform all appropriate preventative maintenance on the subscriber radios, including calibration and tuning to ensure the radios are operating within manufacturer's specifications.		X
Include radio flashing process.	X	
Deliverable: Mobile radios installed and accepted		
Portable Radio Programming and Distribution		
Pass all features and functionalities of the portable radio template.	X	
Program test portable radios with each template version and activate them on the system.	X	
Program the portable radios identified in the equipment list in accordance with the programming templates, client software, and fleetmap. A "one-time only" programming is included in the project pricing.	X	
Deliver portable radios to authorized Customer personnel and inventory upon receipt.	X	
Acknowledge receipt of portable radios and accessories and verify proper operation of a sampling of delivered portable radios.		X
Distribute portable radios to end users.	X	
Deliverable: Portable radios accepted and distributed.		
SYSTEM OPTIMIZATION AND TESTING		
Electromagnetic Interference (EMI) Analysis		
Perform EMI analysis for the Motorola Solutions-supplied equipment. Note: Motorola Solutions is only responsible for interference caused by Motorola Solutions-provided transmitters to the Motorola Solutions-provided receivers. Should the proposed equipment experience interference, Motorola Solutions can be contracted to investigate the source and recommend solutions to mitigate the issue.	X	
Resolve any interference caused by equipment not supplied by Motorola Solutions.		X
Deliverable: EMI analysis completed.		
Solution Optimization		
Verify that all equipment is operating properly and that all electrical and signal levels are set accurately.	X	
Verify that all audio and data levels are at factory settings.	X	

Tasks	Motorola Solutions	Customer
Verify communication interfaces between devices for proper operation.	X	
Ensure that functionality meets manufacturers' specifications and complies with the final configuration established during design review or system staging.	X	
Deliverable: Completion of System Optimization.		
Functional Acceptance Testing		
Verify the operational functionality and features of the solution supplied by Motorola Solutions, as contracted.	X	
Witness the functional testing.		X
Document all issues that arise during the acceptance tests.	X	
If any major task for the system as contractually described fails during the Customer acceptance testing or beneficial use, repeat that particular task after Motorola Solutions determines that corrective action has been taken.	X	
Resolve any minor task failures before Final System Acceptance.	X	
Document the results of the acceptance tests and present for review.	X	
Review and approve final acceptance test results.		X
Evaluate wear-ability of Si device. Provide Feedback to customer on options	X	
Verify the operational functionality and features of the Si500 supplied by Motorola Solutions, as contracted.	X	
If any major task as contractually described fails, repeat that particular task after Motorola Solutions determines that corrective action has been taken.	X	
Document all issues that arise during the acceptance tests.	X	
Document the results of the acceptance tests and present to the Customer for review.	X	
Resolve any minor task failures before Final System Acceptance.	X	
Deliverable: Completion of functional testing and approval by Customer.		
PROJECT TRANSITION		
Training		
Finalize schedule for training coursework.	X	
Provide training facility.		X
Ensure that the training participants fulfill course prerequisites.		X
Conduct the training classes outlined in the Training Plan.	X	
Attend proposed training classes.		X
Deliverable: Training coursework completed.		

Tasks	Motorola Solutions	Customer
Cutover		
Finalize Cutover Plan.	X	X
Calibrate and tune existing mobile and portable radios to ensure good working order.		X
Provide Motorola Solutions with user radio information for input into the system database and activation, as required.		X
Provide programming of user radios and related services (i.e. template building, re-tuning, testing and installations), as needed, during cutover period.		X
Conduct cutover meeting with relevant personnel to address both how to mitigate technical and communication problem impacts to the users during cutover and during the general operation of the system.	X	
Notify the personnel affected by the cutover of the date and time planned for cutover.		X
Provide ongoing communication with users regarding the project and schedule.	X	X
Cut over users and ensure that user radios are operating on system.		X
Resolve punchlist items, documented during the Acceptance Testing phase, in order to meet all the criteria for final system acceptance.	X	
Assist Motorola Solutions with resolution of identified punchlist items by providing support, such as access to the sites, equipment and system, and approval of the resolved punchlist items.		X
Deliverable: Migration to new system completed, and punchlist items resolved.		
Transition to Warranty		
Review the items necessary for transitioning the project to warranty support and service.	X	
Motorola Solutions to provide services during year 1 warranty which align with the proposed services.	X	
Provide a Customer Support Plan detailing the warranty support associated with the contract equipment.	X	
Participate in the Transition Service/Project Transition Certificate (PTC) process.		X
Deliverable: Service information delivered and approved by Customer		
Finalize Documentation and System Acceptance		
Provide manufacturer's installation material, part list and other related material to Customer upon project completion.	X	



Tasks	Motorola Solutions	Customer
Provide an electronic as-built system manual on CD or other Customer preferred electronic media. The documentation will include the following: <ul style="list-style-type: none"> - Site Block Diagrams. - Site Floor Plans. - Site Equipment Rack Configurations. - Antenna Network Drawings for RF Sites (where applicable). - ATP Test Checklists. - Functional Acceptance Test Plan Test Sheets and Results. - Equipment Inventory List. - Console Programming Template (where applicable). - Maintenance Manuals (where applicable). - Technical Service Manuals (where applicable). Drawings will be delivered in Adobe PDF format.	X	
Receive and approve documentation.		X
Execute Final Project Acceptance.	X	X
Deliverable: All required documents are provided and approved. Final Project Acceptance.		

3.2 SMARTCONNECT STATEMENT OF WORK

3.2.1 Overview

The Statement of Work defines the principal activities and responsibilities of Motorola Solutions and the Customer during SmartConnect deployment. The deployment process is a collaborative effort between Customer system administrators, subject matter experts, and the Motorola Solutions deployment team. Deployments involve the following steps:

Step	Description
Project Initiation	Formal project kickoff and planning sessions
Domain and Device Setup	Provision ASTRO subscribers on the cloud platform
SmartConnect Gateway Setup	Enable connection between ASTRO system and Cloud
ASTRO Preparation	Assure ASTRO system has the correct version and components
ASTRO System Configuration	Load and Configure software for SmartConnect
Demonstration	Demonstrate SmartConnect operation

Step	Description
Training	SmartConnect operational and administrator training
Project Finalization	Delivery of as-built documentation and hand over to support

These project steps are logical groupings of related activities required to complete the project. Each step includes tasks and deliverables both Motorola Solutions and the Customer are responsible to complete. These are described in detail within the Statement of Work.

Motorola Solutions' project manager will use the Statement of Work to guide the deployment process and coordinate the activities of all Motorola Solutions resources and teams. The project manager will also work closely with the Customer's project manager to clearly communicate the required deployment activities and schedule tasks involving Customer resources.

3.2.2 Project Roles

Motorola Solutions Project Manager

The Motorola Solutions Project Manager is the single point of contact with the Customer Project Manager and is responsible for scheduling and coordinating Motorola Solutions resources and task completion. The Motorola Solutions Project Manager assures the delivery of contracted components in accordance with the project schedule and is responsible for the transition of the Customer to Motorola Solutions Customer Support post deployment.

Motorola Solutions ASTRO Field Engineer

Installs and configures the ASTRO software components of the system. Configures ASTRO network components to provide connectivity to the cloud platform.

Motorola Solutions Support

Motorola Solutions Support organization provides varying levels of service up to and including technical support services. Following project finalization, ongoing service will be provided by Motorola Solutions Support in accordance with the Customer support plan.

Customer Project Manager

The Customer Project Manager is responsible for scheduling and coordinating Customer/agency resources and task completion. The Customer Project Manager works collaboratively with the Motorola Solutions PM to assure completion of Customer tasks in accordance with the project schedule.

Customer System Administrator(s)

Responsible for SmartConnect User and radio subscriber provisioning via CommandCentral Admin and ongoing coordination with Motorola Solutions System Support.

Customer Network Administrator

Responsible for network and firewall configuration. Works with ASTRO Field Engineer to provide and verify network connectivity between the ASTRO system and the cloud platform.

3.2.3 Project Documentation

The following documents are delivered during the deployment process. Some are standard product documentation and others are project specific and are produced during the project.

Product Documentation

CommandCentral System Administration Guide. The Administration Guide includes information about the CommandCentral Admin tool, User provisioning, and other system administration tasks.

Operational Demonstration Script. The Operational Demonstration Script provides a customer-specific procedure for validating system configuration and operation. It references the customer specifics detailed in the Configuration Document.

Project Documentation

SmartConnect Configuration Document. Describes the SmartConnect configuration including LMP parameters, config changes to the UNC, a backhaul capacity report, Internet connection information for the Internetworking firewall and CommandCentral Admin parameters. It is created during the project, used to configure and validate the application and network configurations, and finalized to serve as project as-built documentation. Provided to both the Customer and the Motorola Solutions Support Team.

3.2.4 Initiation

Project initiation occurs after procurement of SmartConnect deployment services and notice to proceed is received. During this phase, the Motorola Solutions and Customer project managers are assigned, assemble their teams, and establish a working relationship. The managers jointly review the project plan, deliverables, and schedule. Each manager coordinates preparatory tasks that serve as a foundation for specific deployment activities.

Motorola Solutions Responsibilities

1. Schedule a kick-off call between Customer and Motorola Solutions project managers
2. Establish a communications plan
3. Review project work plan, schedule, and resources
4. Provide standard product documentation
5. CommandCentral System Administration Guide
6. CommandCentral Network Connectivity Guide
7. SmartConnect User Guide

Customer Responsibilities

1. The customer project manager coordinates with the agency(s) and identifies the subject matter experts, system administrators, and network administrators that will participate in the project and complete Customer tasks.
2. Review the Solution Description and prerequisites with the customer project team. Assure that all required components are in place or initiate procurement.
3. Schedule agency personnel time to participate in the deployment process.

Completion Criteria

Complete when Motorola Solutions and Customer project teams are identified and

deployment tasks are assigned and scheduled.

3.2.5 Data Collection and Planning Session

Motorola Solutions will conduct a remote working session with the customer System Administrators and agency user representatives to provide an overview of SmartConnect operation and collect provisioning data. This activity is performed via teleconference.

Motorola Solutions Responsibilities

1. Conduct a remote, one to two hour, planning session with representatives of each agency using SmartConnect.
2. Review SmartConnect functionality and configuration options.
3. Document each agency's configuration, admin users, initial subscribers and users.

Customer Responsibilities

1. Schedule planning session with representatives of each agency.
2. Provide Administrator, User, Subscriber, and Group information for provisioning.

Completion Criteria

Planning sessions completed.

3.2.6 Domain and Device Setup

The Radio Subscribers must be provisioned within the CommandCentral Cloud Platform using the Command Central Admin tool. Motorola Solutions will provision the Customer's current inventory of APX NEXT subscribers. The Customer will assume responsibility to provision all subsequently procured APX NEXT devices.

Motorola Solutions Responsibilities

1. If a SmartConnect agency has not been previously established for the ASTRO system, use the CommandCentral Admin tool to establish the Customer Domain within the CommandCentral cloud platform. This activity will be initiated during the order process.
2. Use the CommandCentral Admin tool to provision SmartConnect based on the information collected during the Data Collection and Planning Session activity:
3. Setup Command Central administration and user passwords
4. Provision radio subscriber devices (radio serial number and ASTRO Unit ID). All subscriber devices on an ASTRO system are provisioned by a single CC Admin agency account. This may be performed individually or by importing the device information from a .csv file.

Customer Responsibilities

1. Identify System Administrator(s)
2. Assure all System Administrators complete the CommandCentral Admin training
3. Use the CommandCentral Admin tool to provision all APX NEXT subscribers procured after the completion of the SmartConnect enablement project.

Completion Criteria

All agencies, users and devices are provisioned.



3.2.7 SmartConnect Gateway Configuration

The SmartConnect Gateway enables the connection between the Customer's ASTRO system and the SmartConnect cloud services and broadband service. The SmartConnect Gateway must be configured to accept a connection from the ASTRO system's LMP proxy.

Motorola Solutions Responsibilities

1. Enable SmartConnect Gateway service.
2. Generate the passphrase for the LMPs using CCAAdmin.

Customer Responsibilities

1. None

Completion Criteria

SmartConnect Gateway connection enabled.

3.2.8 ASTRO Infrastructure Preparation

Operation of SmartConnect requires a minimum ASTRO infrastructure software version and specific hardware components. These elements are not included with SmartConnect and must be in place prior to SmartConnect deployment. SmartConnect requires the following ASTRO infrastructure version and equipment:

- ASTRO version: 7.17 or later
- Internetworking Firewall hardware and software (shared component)
- Suitable Server (VMS01/VMS02 or VMS 07)

Motorola Solutions Responsibilities

1. Review the current ASTRO system and document the availability and configuration of the components required for SmartConnect deployment.
2. Identify any software upgrades or additional equipment required to support SmartConnect.

Completion Criteria

Customers ASTRO infrastructure is operational with the required software version and equipment required for SmartConnect deployment.

3.2.9 ASTRO System Configuration

SmartConnect specific software components and network configurations must be added to the ASTRO System. Motorola Solutions will install and configure these items during the SmartConnect deployment.

Motorola Solutions Responsibilities

1. Install LMR Multicast Proxy (LMP) VMs on the zone core servers. Enter CommandCentral Admin generated passphrase during the installation.
2. Cable and configure the transport (core LAN switch, DMZ switch, DMZ firewall,



- internetworking firewall) using TNCT.
3. Verify connectivity with SmartConnect Cloud Gateway via Internetworking Firewall.
 4. Configure NM with pseudo-site for Backup PTT using a UNC configlet for each Zone Controller and ATR in the target zone.
 5. Assess the number of Talk Groups and Calls to determine the required backhaul capacity. Provide backhaul capacity requirements to Customer admin.
 6. Coordinate and schedule ASTRO component software installation to minimize the impact on production operation.

Customer Responsibilities

1. Provide dedicated internet connection for Internetworking Firewall. Assure that the network connection meets the following service level:
 - a. The internet connection between ASTRO system (LMP) and the SmartConnect Gateway in the cloud requires a base bandwidth of 25Kbps plus a bandwidth of 20k bits per second per group call. NOTE: If the SmartConnect Gateway is configured as “requested site” for a group in the ASTRO system, all calls on that group are routed to the SmartConnect Gateway independent whether radios have affiliated to the group or not in the broadband domain. The configuration as “requested site” ensures that the radio will be offered calls from scanned groups, but it also increases the load on the connection between the LMP and the SmartConnect Gateway.
 - b. 1/1 Mbps symmetric Internet connection is required for 36 simultaneous calls (for release prior to 2019.2).
 - c. 5/5 Mbps symmetric Internet connection is required for 200 simultaneous calls.(for release 2019.2 and onwards)
 - d. Availability > 99.99%. A lower performance will decrease the SmartConnect feature reliability proportionality.
 - e. Packet loss less than 0.5%. A higher packet loss will lower the reliability and the audio quality.
 - f. Average delay introduced by the Internet Service Provider less than 20 ms.
 - g. Average jitter introduced on the Internet Service Provider is less than 10 ms.

Completion Criteria

Customer ASTRO infrastructure is operational with the required software versions and configured to support SmartConnect operation.

3.2.10 Subscriber Provisioning

APX subscribers must be provisioned on the customer’s ASTRO system prior to operation. Subscriber provisioning must include specific parameters to enable SmartConnect operation.

Motorola Solutions Responsibilities

1. Provide SmartConnect provisioning parameters (FQDN for SmartConnect GW, ports)
2. Provision one APX subscriber to validate the parameters.
3. Demonstrate the provisioning process and required parameters to customer System Administrator.
4. Assure that all APX and APX NEXT subscriber firmware is updated to Release 20 or later.

5. Assure that APX and APX NEXT subscribers have been previously provisioned on the ASTRO system.
6. Assure that all APX NEXT subscribers have a current SmartProgramming application service subscription.
7. Assure that APX NEXT subscribers' code plug configurations have been provisioned in RadioCentral and that the APX NEXT Subscribers have been programmed.
8. Download and install the latest version of the RadioCentral programming client.
9. Provision balance of APX NEXT subscribers for SmartConnect using the RadioCentral client.
10. Provision balance of APX subscribers for SmartConnect using Radio Management or CPS software.
11. Update the provisioning parameters of any existing subscribers that will utilize SmartConnect capability.

Completion Criteria

All subscribers covered by a SmartConnect feature subscription are provisioned with SmartConnect parameters.

3.2.11 Operational Demonstration

After the solution deployment, Motorola Solutions will provide an operational demonstration to the customer project manager, system administrator, and end user representatives.

Motorola Solutions Responsibilities

1. Provide the Operational Demonstration Script
2. Demonstrate SmartConnect operation.

Customer Responsibilities

1. Participate in SmartConnect demonstration.

Completion Criteria

Complete after successful demonstration of SmartConnect operation.

3.2.12 SmartConnect training

SmartConnect Administrator and User training classes are available online. Access to online SmartConnect training is provided by Motorola Solutions Software Enterprise Learning Experience Portal (LXP). This subscription service provides continual access to Motorola's library of online learning content and allows users the benefit of learning at times convenient to them. Content is added and updated on a regular basis to keep information current. Online training enables Users to participate in training at their convenience.

The Customer's LXP Administrators use Panorama, a customer specific instance of the Learning Management System, to add/modify users, run reports, and add/modify groups, and define Learning Paths. Groups are a more granular segmentation of the LXP that are generally utilized to separate learners by function (i.e. dispatchers, call takers, patrol, firefighter). A Learning Path is a collection of courses that follow a logical order, and may or may not enforce linear progress.

Motorola Solutions Responsibilities

1. Setup Panorama and add customer specified LXP administrators.



2. Provide administrators access to learning services.motorolasolutions.com.

Customer Responsibilities

1. Provide Motorola Solutions with names (first and last) and emails of Customer LXP administrators.
2. Assure all System Administrators complete LXP Administrator training. The training covers:
 - a. Adding and maintaining Users
 - b. Adding and maintaining Groups
 - c. Assigning courses and Learning Paths
 - d. Running reports.
 - e. Advise users of the availability of the LXP and SmartConnect training class.
 - f. Add/modify users, run reports and add/modify groups

Completion Criteria

Work is considered complete upon conclusion of Motorola Solutions provided LXP Administrator instruction.

3.2.13 Project Finalization and Handover to Support

Finalization is the process of confirming that all project activities have been completed and project documentation has been delivered. During this activity, Motorola Solutions will transition responsibility for SmartConnect from the Project Manager to the Motorola Solutions support team. The Customer's Project Manager will transition support to the System Administrator(s).

Motorola Solutions Responsibilities

1. Verify project deliverables have been received by the Customer Project Manager
2. Confirm with Customer that SmartConnect is available for Customers beneficial use.
3. Provide the SmartConnect Configuration Document.
4. Conduct a teleconference introducing Customer to Motorola Solutions Support organization. The purpose of the teleconference is to review the SmartConnect support process and obtain contact information with the Customer's assigned system administrator(s) and the Motorola Solutions Support Team
5. Provide on-going support in accordance with the terms and conditions of the support agreement

Customer Responsibilities

1. Provide confirmation of receipt of project deliverables with the Motorola Solutions Project Manager
2. Participate in the support hand over teleconference. Assure that System Administrator(s) understand the support process and have the correct contact information

Completion Criteria

Project finalization is complete upon delivery of the final SmartConnect Configuration Document and the conclusion of the teleconference with Motorola Solutions Support organization.



3.3 SMARTLOCATE STATEMENT OF WORK

3.3.1 Overview

The Statement of Work defines the principal activities and responsibilities of Motorola Solutions and the Customer during SmartLocate deployment. The deployment process is a collaborative effort between Customer system administrators, subject matter experts, and the Motorola Solutions deployment team. Deployments involve the following steps:

Step	Description
Project Initiation	Formal project kickoff and planning sessions
Data Collection & Planning	Aware overview, provisioning planning, and data collection
APX NEXT Provisioning	Configure APX NEXT subscribers for location reporting via LTE
Mapping Configuration	Configure connection to customer's ESRI/GIS system
Agency, User, and Device Setup	Configure agency, users, and devices on Aware cloud platform
Operational Demonstration	Demonstrate SmartLocate with Aware operation
Training	SmartLocate with Aware operational and administrator training
Project Finalization	Delivery of as-built documentation and hand over to support

These project steps are logical groupings of related activities required to complete the project. Each step includes tasks and deliverables that both Motorola Solutions and the Customer are responsible to complete. These are described in detail within the Statement of Work.

Motorola Solutions' project manager will use the Statement of Work to guide the deployment process and coordinate the activities of all Motorola Solutions resources and teams. The project manager will also work closely with the Customer's project manager to clearly communicate the required deployment activities and schedule tasks involving Customer resources.

3.3.2 Project Roles

Motorola Solutions Project Manager

The Motorola Solutions Project Manager is the single point of contact with the Customer Project Manager and is responsible for scheduling and coordinating Motorola Solutions resources and task completion. The Motorola Solutions Project Manager assures the delivery of contracted components in accordance with the project schedule and is

responsible for the transition of the Customer to Motorola Solutions Customer Support post deployment.

Motorola Solutions Cloud Activation Team Solutions Architect (SA)

Provisions CommandCentral Aware and conducts operational demonstration. Provisions initial APX NEXT location device parameters. Validates location reporting via broadband network. Performs SmartLocation demonstration.

Motorola Solutions Support

Motorola Solutions Support organization provides varying levels of service up to and including technical support services. Following project finalization, ongoing service will be provided by Motorola Solutions Support in accordance with the Customer Support Plan.

Customer Project Manager

The Customer Project Manager is responsible for scheduling and coordinating Customer/agency resources and task completion. The Customer Project Manager works collaboratively with the Motorola Solutions PM to assure completion of Customer tasks in accordance with the project schedule.

Customer System Administrator(s)

Responsible for User and radio subscriber provisioning via CommandCentral Admin, ESRI GIS system access and basemap definition, and ongoing coordination with Motorola Solutions Systems Support.

3.3.3 Project Documentation

The following documents are delivered during the deployment process. Some are standard product documentation and others are project specific and are produced during the project.

Product Documentation

CommandCentral System Administration Guide. The Administration Guide includes information about the CommandCentral Admin tool, User provisioning, and other system administration tasks.

Project Documentation

SmartLocate with Aware Configuration Document. Describes the SmartLocate with Aware configuration including APX NEXT provisioning parameters, and CommandCentral Aware configuration. It is created during the project, is used to configure and validate application and network configurations, and finalized to serve as project as-built documentation. Provided to both the Customer and the Motorola Solutions Support Team.

Operational Demonstration Script. The Operational Demonstration Script provides a customer-specific procedure for validating system configuration and operation. It references the customer specifics detailed in the Configuration Document.



3.3.4 Project Initiation

Project initiation occurs after procurement of SmartLocate Enablement and notice to proceed is received. During this phase the Motorola Solutions and Customer project managers are assigned, assemble their teams, and establish a working relationship. The managers jointly review the project plan, deliverables, and schedule. Each manager coordinates preparatory tasks that serve as a foundation for the specific SmartLocate with CommandCentral Aware deployment activities.

Motorola Solutions Responsibilities

1. Schedule a kick-off call between Customer and Motorola Solutions project managers
2. Establish communications plan
3. Review project work plan, schedule, and resources
4. Provide standard product documentation
5. CommandCentral System Administration Guide
6. CommandCentral Network Connectivity Guide
7. User Guide

Customer Responsibilities

1. Customer project manager coordinates with agency(s) and identifies the subject matter experts, system administrators, and network administrators that will participate in the project and complete Customer tasks
2. Review the Solution Description and prerequisites with customer project team. Assure that all required components are in place or initiate their procurement
3. Schedule agency personnel time to participate in the deployment process.

Completion Criteria

Complete when Motorola Solutions and Customer project teams are identified and deployment tasks are assigned and scheduled.

3.3.5 ASTRO Infrastructure Preparation

SmartLocate does not utilize the ASTRO infrastructure so there are no infrastructure software version, ASTRO hardware components, or data capacity requirements.

It is possible to obtain the location of APX subscribers via the ASTRO system and display the location on the Aware client. This type of operation requires additional equipment, software and services including IMW, Cloud Connect, IMW Connector, and an ASTRO data capacity study. These elements are not included with SmartLocate Enablement.

Motorola Solutions Responsibilities

This SmartLocate with CommandCentral Aware project does not include any services related to the implementation of Aware functionality other than APX NEXT location over broadband.

Customer Responsibilities



Determine if any additional Aware functionality is desired and work with Motorola Solutions Sales representative to define the scope and obtain a proposal.

Completion Criteria

Information only.

3.3.6 Data Collection and Planning Session

Motorola Solutions will conduct a remote working session with the customer System Administrators and agency user representatives to provide an overview of Aware operation, collect provisioning data, plan the Aware group and agency configurations. This activity is performed via teleconference.

Motorola Solutions Responsibilities

1. Conduct a remote, one to two hour, planning session with representatives of each agency using SmartLocate.
2. Review CommandCentral Aware functionality and configuration options.
3. Document each agency's configuration, admin users, initial subscribers and users.

Customer Responsibilities

1. Schedule planning session with end users
2. Provide Administrator, User, Subscriber, and Group information for provisioning.

Completion Criteria

Planning sessions completed.

3.3.7 APX NEXT Provisioning

APX NEXT subscribers must be configured to report their GPS location via a LTE network. Subscriber locations are then sent via the broadband network to CommandCentral Aware. Customers are able to monitor the location of APX NEXT devices on the CommandCentral Aware client.

Motorola Solutions Responsibilities

1. Verify that location updates are received from the Customer's provisioned APX NEXT subscribers.
2. Assure that the APX NEXT subscribers are programmed. Motorola Solutions includes Initial Programming support services with the first APX NEXT order.
3. Assure that APX NEXT subscribers have been provisioned on the ASTRO system.
4. Update the APX NEXT Codeplugs with the following SmartLocation parameters.
5. Location Enable - On
6. Location Reporting - Broadband or Broadband Preferred (if Aware Mapping is part of the solution)

Completion Criteria

All APX next subscribers configured to report location.



3.3.8 CommandCentral Aware Geospatial Mapping Configuration

CommandCentral Aware can display Unit location data on a generic base map or on the customer's ESRI map. A single base map layer is included with SmartLocate with Aware. Aware supports multiple map layers which may be added separately.

Motorola Solutions Responsibilities

1. Install and configure the connection to the Customer mapping system, (i.e. ESRI online, ESRI server, or static map layers).
2. Test mapping layers and links in accordance with the system Design Document.

Customer Responsibilities

1. Provide URL and access credentials for customer's ESRI/GIS system.
2. Specify and publish the desired GIS map for use with SmartLocate with Aware.

Completion Criteria

CommandCentral Aware browser client is able to display the Customer's ESRI map.

3.3.9 CommandCentral Aware Agency, User, and Device Setup

The Customer's Agency, Users, and Radio Subscribers must be provisioned within the CommandCentral Cloud Platform using the CommandCentral Admin tool. The provisioning process allows the Agency to define the specific capabilities and permissions of each user. Motorola Solutions will provision the Customer's current inventory of APX NEXT subscribers. The Customer will assume responsibility to provision all subsequently procured APX NEXT devices.

Motorola Solutions Responsibilities

1. Use the CommandCentral Admin tool to establish the Customer and Customer's agency(s) within the CommandCentral cloud platform. This activity will be initiated during the order process.
2. Provision CommandCentral Aware Users, Subscribers, Groups, and layers based on the information collected during the Data Collection and Planning Session activity.
3. Use the CommandCentral Admin tool to provision CommandCentral Aware based on the information collected during the Data Collection and Planning Session activity:
4. Setup Command Central administration and user passwords
5. Provision agency's Users (officers)
6. Provision permissions per User
7. Provision agency's radio subscriber devices
8. Provision User to radio subscriber

Customer Responsibilities

1. Identify System Administrator(s)
2. Assure all System Administrators complete the CommandCentral Admin training
3. Use the CommandCentral Admin tool to provision all APX NEXT subscribers procured after the completion of the SmartLocate enablement project.

Completion Criteria

All agencies, users and APX NEXT subscribers are provisioned.



3.3.10 CommandCentral Aware Client

CommandCentral Aware is a SaaS application that is accessed via a web browser. The Client in this context consists of a workstation and web browser.

Motorola Solutions Responsibilities

Provide URL and System Administrator credentials for accessing the Aware application.

Customer Responsibilities

Provide client workstations, web browsers, and network connectivity suitable for accessing the Aware application.

Completion Criteria

Aware access is available from customer client(s).

3.3.11 Operational Demonstration

After the solution deployment, Motorola Solutions will provide an operational demonstration to the customer project manager, system administrator, and end user representatives. The objective of the functional demonstration is to validate Customer access to CommandCentral Aware via browser client and demonstrate the map display and location updates. This activity is performed via teleconference.

Motorola Solutions Responsibilities

1. Facilitate a teleconference to perform an operational demonstration of the SmartLocate and Aware Mapping solution.
2. Demonstrate the APX NEXT subscriber location is displayed on the CommandCentral Aware web client.
3. Correct any configuration issues impacting access to Aware features, map display, or location updates.

Customer Responsibilities

1. Review and agree to the scope of the demonstration script.
2. Participate in SmartLocate with CommandCentral Aware demonstration.
3. Witness the operational demonstration and acknowledge its completion.
4. Provide Motorola Solutions with any requests for feature enhancements.

Completion Criteria

Complete after successful demonstration of SmartLocate with CommandCentral Aware operation.

3.3.12 CommandCentral Aware training

CommandCentral SmartLocate Administrator and User training classes are available online. Access to online CommandCentral Aware training is provided by Motorola Solutions Software Enterprise Learning Experience Portal (LXP)

<https://learning.motorolasolutions.com>. This subscription service provides continual access to Motorola's library of online learning content and allows users the benefit of learning at times convenient to them. Content is added and updated on a regular basis to keep information current. Online training enables Users to participate in training at their convenience.

PSA4056 - CommandCentral Aware Map View Basics

PSA0015 - CommandCentral Aware End User Training

PSA4122 - CommandCentral Aware Cloud - Customer Administration

Motorola Solutions Responsibilities

1. Provide administrators access to the Learning Experience Portal (LXP).

Customer Responsibilities

1. Provide Motorola Solutions with names (first and last) and emails of Customer LXP administrators.
2. Assure all System Administrators complete LXP Administrator training. The training covers:
 - a. Adding and maintaining Users
 - b. Adding and maintaining Groups
 - c. Assigning courses and Learning Paths
 - d. Running reports.
 - e. Advise users of the availability of the LXP and SmartLocate with CommandCentral Aware class.
 - f. Add/modify users, run reports and add/modify groups

Completion Criteria

Work is considered complete upon conclusion of Motorola Solutions provided LXP Administrator instruction.

3.3.13 Project Finalization and Handover to Support

Finalization is the process of confirming that all project activities have been completed and project documentation has been delivered. During this activity Motorola Solutions transitions responsibility for SmartLocate with CommandCentral Aware from the Project Manager to the Motorola Solutions support team. The Customer's Project Manager transitions support to the System Administrator(s).

Motorola Solutions Responsibilities

1. Verify project deliverables have been received by the Customer Project Manager
2. Confirm with Customer that SmartLocate with Aware is available for Customer beneficial use.
3. Provide the SmartLocate with Aware Configuration Document.



4. Conduct a teleconference introducing Customer to Motorola Solutions Support organization. The purpose of the teleconference is to review the support process and obtain contact information with the Customer's assigned system administrator(s) and the Motorola Solutions Support Team
5. Provide on-going support in accordance with the terms and conditions of the support agreement

Customer Responsibilities

1. Provide confirmation of receipt of project deliverables with the Motorola Solutions Project Manager
2. Participate in the support handover teleconference. Assure that System Administrator(s) understand the support process and have the correct contact information

Completion Criteria

Project finalization is complete upon conclusion of the teleconference with Motorola Solutions Support organization.

3.5 IMPLEMENTATION ASSUMPTIONS

ESC will assume responsibility for the installation and performance of all other equipment and work necessary for completion of this project that is not provided by Motorola Solutions. In general, ESC's responsibilities include the following:

- All work is assumed to be conducted between 8:00 AM and 5:00 PM.
- ESC to obtain and provide zoning approvals, permits, and lease agreements for all of the proposed sites and locations as required
- ESC to provide site acquisition and development, electrical work, HVAC, grounding systems, provisioning of emergency power systems (e.g. backup generators), cable entry panels, wall penetrations and core drilling, and support equipment for cable runs (cable tray, ice-bridge, conduit, etc.)
- ESC to provide storage for the system equipment at the government installation
- Sites do not have any hazardous materials present. Removal of hazardous materials is the responsibility of ESC.

3.6 CHANGE ORDER PROCESS

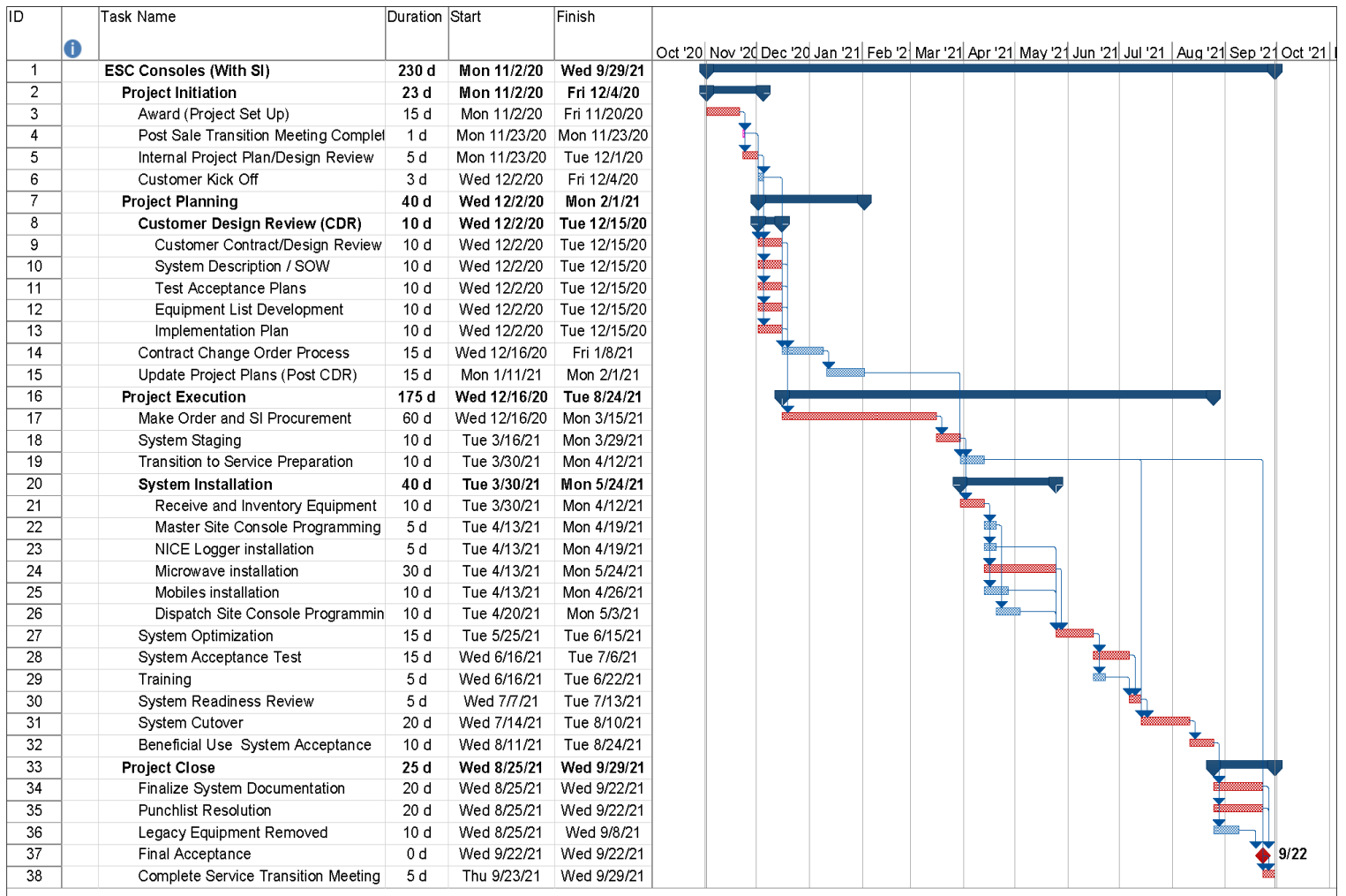
Either Party may request changes within the general scope of this Proposal. If a requested change causes an increase or decrease in the cost or time required to perform this Agreement, the Parties will agree to an equitable adjustment of the Contract Price, Performance Schedule, or both, and will reflect the adjustment in a change order. Neither Party is obligated to perform requested changes unless both Parties execute a written change order.



SECTION 4

ESTIMATED PROJECT SCHEDULE

The estimated time for completion of the project is approximately 11 months from Project Kickoff through Final Project Acceptance. A final project schedule will be developed by Motorola Project Manager based upon mutual agreement between Motorola and ESC during the detailed design review (DDR).



ACCEPTANCE TEST PLAN

System Acceptance of the proposed solution will occur upon successful completion of a Functional Acceptance Test Plan (FATP), which will test the features, functions, and failure modes for the installed equipment in order to verify that the solution operates according to its design. This plan will validate that proposed solution will operate according to its design, and increase the efficiency and accuracy of the final installation activities.

Preliminary tests are described in the following pages.



5.1 MCC 7100/7500 TRUNKED RESOURCES

5.1.1 Instant Transmit

1. DESCRIPTION

The instant transmit switch provides immediate operator access to a channel, independent of its select status (selected or unselected). It provides priority over other dispatcher transmit bars or optional footswitches.

SETUP

RADIO-1 - TALKGROUP 1
CONSOLE-1 – TALKGROUP 1 (Selected),
TALKGROUP 2 (Unselect mode)

VERSION #1.010

2. TEST

- Step 1. Using CONSOLE-1, press the Instant Transmit button on TALKGROUP 1.
- Step 2. Verify that the Transmit indicator is lit.
- Step 3. Verify RADIO-1 can monitor and respond to the call on TALKGROUP 1.
- Step 4. On RADIO-1 change to TALKGROUP 2.
- Step 5. Using CONSOLE-1, press the Instant Transmit button on the TALKGROUP 2 radio resource.
- Step 6. Verify RADIO-1 can monitor and respond to the call on TALKGROUP 2.

Pass____ Fail____

MCC 7100/7500 Trunked Resources

5.1.2 Talkgroup Selection and Call

1. DESCRIPTION

The Talkgroup Call is the primary level of organization for communications on a trunked radio system. Dispatchers with Talkgroup Call capability will be able to communicate with other members of the same talkgroup. This provides the effect of an assigned channel down to the talkgroup level. When a Talkgroup Call is initiated from a subscriber unit, the call is indicated on each dispatch operator position that has a channel control resource associated with the unit's channel/talkgroup.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 2
RADIO-3 - TALKGROUP 1
RADIO-4 - TALKGROUP 2
CONSOLE-1 - TALKGROUP 1
CONSOLE-2 - TALKGROUP 2

VERSION #1.010

2. TEST

- Step 1. Initiate a wide area call from CONSOLE-1 on TALKGROUP 1.
- Step 2. Observe that RADIO-1 and RADIO-3 will be able to monitor the call. Dekey the console and have either radio respond to the call.
- Step 3. Observe that all consoles with TALKGROUP 1 can monitor both sides of the conversation.
- Step 4. Initiate a wide area call from CONSOLE-2 on TALKGROUP 2.
- Step 5. Observe that RADIO-2 and RADIO-4 will be able to monitor the call. Dekey the console and have either radio respond to the call.
- Step 6. Observe that all consoles with TALKGROUP 2 can monitor both sides of the conversation.

Pass____ Fail____



MCC 7100/7500 Trunked Resources

5.1.3 Talkgroup Patch

1. DESCRIPTION

Talkgroup Patch allows a dispatcher to merge several talkgroups together on one voice channel to participate in a single conversation. This can be used for situations involving two or more talkgroups that need to communicate with each other. Using the Patch feature, the console operator can talk and listen to all of the selected talkgroups grouped; in addition, the members of the individual talkgroups can also talk or listen to members of other talkgroups. Patched talkgroups can communicate with the console dispatcher and other members of different talkgroups because of the "supergroup" nature of the Patch feature.

NOTE : If "secure" and "clear" resources are patched together, one repeater for each mode may be assigned per site.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 2
RADIO-3 - TALKGROUP 1
RADIO-4 - TALKGROUP 2
CONSOLE-1 - TALKGROUP 1 and TALKGROUP 2

Note: All 4 Radios must have the same home zone.

VERSION #1.010

2. TEST

- Step 1. Using CONSOLE-1 create a patch between TALKGROUP 1 and TALKGROUP 2.
- Step 2. Initiate a patch call from CONSOLE-1.
- Step 3. Verify RADIO-1, RADIO-2, RADIO-3, and RADIO-4 can monitor the call.
- Step 4. Initiate several calls between the radios and verify successful communication.
- Step 5. Dissolve the patch created in step 1.

Pass____ Fail____

5.2 AUDIO IP LOGGING

5.2.1 Logging Secure Trunking Talkgroup Call

1. DESCRIPTION

This test will demonstrate the Archiving Interface Server (AIS) can be used to log trunking talkgroup call audio for call in a secure transmit mode on a given talkgroup. The audio is archived in a vocoded decrypted format (IMBE for Trunking Talkgroup Call) only when the logging system user requested coded audio to be logged.

SETUP

The AIS at MCC7500 Console site is affiliated to TALKGROUP 1 and has the appropriate secure keys loaded.

RADIO-1 - TALKGROUP 1

RADIO-1 - SITE - SITE 1

CONSOLE-1 - TALKGROUP 1

VERSION #1.020

2. TEST

- Step 1. Initiate PTT from RADIO-1 on TALKGROUP 1 in a secure transmit mode.
- Step 2. Observe that the call audio is being sent to the logging system by the playback application.
- Step 3. If TALKGROUP 1 is marked to receive coded audio verify the coded audio can be played back via the application.
- Step 4. Observe that the events for the TALKGROUP 1 call is logged even if the TALKGROUP 1 is not marked to receive coded audio.

Pass ____ Fail ____



5.3 SMARTCONNECT

5.3.1 SmartConnect - Link Failure - Major Link Failure/Recovery

1. DESCRIPTION

Upon losing connectivity with the Zone Core (i.e., loss of both site control paths), the SmartConnect Gateway continually attempts to re-establish connectivity. In parallel, it also ends all calls in progress and informs subscribers that broadband services are not available.

The subscriber continues to search for other sites and may return to LMR if a viable site is found. If the subscriber remains at the broadband site, once broadband services are restored, the subscriber is alerted accordingly.

SETUP

RADIO-1 – TALKGROUP 1
RADIO-1 – BROADBAND SITE 1

RADIO-2 – TALKGROUP 1
RADIO-2 – BROADBAND SITE 1

CONSOLE-1 - TALKGROUP 1

Notes:

- This ATP assumes a viable LMR site is not present. Remove the antennas from RADIO-1 and RADIO-2 to simulate this condition.

VERSION #1.010

2. TEST

- Step 1. Initiate a Wide Area Call from RADIO-1 on TALKGROUP 1.
- Step 2. Observe that RADIO-2 and CONSOLE-1 are able to receive audio from RADIO-1.
- Step 3. Power down the Internetworking Firewall(s) (e.g., DSR has firewall at primary core and backup core). An alternative method is to simply disconnect the cable from the DMZ Switch to the Internetworking Firewall.
- Step 4. Via UEM, observe that both site Site Control Paths are down and the site is no longer in Wide Area.
- Step 5. On ZoneWatch, verify the call ended. Any further key-up attempts are bonked. Also, RADIO-1 and RADIO-2 display SmartConnect Failure and play alert tones (if configured).
- Step 6. Restore the Internetworking Firewall(s) connection.
- Step 7. Observe that RADIO-1 and RADIO-2 eventually stop displaying the SmartConnect Failure and display the SmartConnect banner again.
- Step 8. Initiate a Wide Area Call from RADIO-1 on TALKGROUP 1.
- Step 9. Observe that RADIO-2 and CONSOLE-1 are able to receive audio from RADIO-1.

Pass____ Fail____

SmartConnect

5.3.2 SmartConnect - Subscriber Mobility - LMR to LTE Switchover

1. DESCRIPTION

Upon losing LMR RF coverage and no other LMR sites are available, a SmartConnect capable radio may automatically roam to a SmartConnect site via WiFi, LTE or Satellite (if available). Whether automatic switching is possible depends on configuration of the “Backup PTT Operation” setting for the personality being used.

A personality may be configured as LMR Only, LMR Preferred or Broadband Only. Radios are provisioned with the “LMR Preferred” setting to facilitate automatic switchover to broadband from LMR. The “LMR Only” setting is used to prevent a radio from roaming to broadband and the “Broadband Only” setting is utilized to facilitate manual switching to a SmartConnect site.

The broadband access type used is dependent on the capabilities/configuration of the radio and the following preferred order: WiFi, LTE and Satellite.

The following test demonstrates automatic switchover between LMR and SmartConnect via LTE.

SETUP

RADIO-1 – TALKGROUP 1”, “LMR Preferred”

RADIO-2 - TALKGROUP 1, “LMR Only”

CONSOLE-1 - TALKGROUP 1

Notes:

- Both radios are LTE capable.
- The radios are either not WiFi capable or they are not configured for WiFi.
- Ensure no other LMR sites are within range.

VERSION #1.010



2. TEST

- Step 1. With RADIO-1 and RADIO-2 on LMR Site 1, initiate a Wide Area Call from RADIO-1 on TALKGROUP 1.
- Step 2. Observe that RADIO-2 and CONSOLE-1 will be able to receive and respond to the call. Dekey RADIO-1.
- Step 3. Remove antennas on RADIO-1 and RADIO-2 to simulate poor LMR coverage.
- Step 4. Observe that RADIO-1 moves to broadband SITE 2 and displays the SmartConnect banner. The radio may briefly display "Out of Range" during this transition
- Step 5. Observe that RADIO-2 continuously displays "Out of Range".
- Step 6. Initiate a Wide Area Call from RADIO-1 on TALKGROUP 1.
- Step 7. Observe that only CONSOLE-1 will be able to receive and respond to the call.
- Step 8. Dekey RADIO-1 and reinstall the antennas on RADIO-1 and RADIO-2.
- Step 9. Observe that RADIO-1 eventually moves back to LMR SITE 1 and no longer displays the SmartConnect banner.
- Note: The transition back to LMR may not occur immediately (depends on RSSI thresholds and how long it was on the broadband site).
- Step 10. Confirm that RADIO-1 and RADIO-2 are able to make calls again on LMR SITE 1.

Pass____ Fail____



SmartConnect

5.3.3 SmartConnect - Subscriber Mobility - Manual Switchover to Broadband

1. DESCRIPTION

Upon losing LMR RF coverage and no other LMR sites are available, a user may choose to manually switch to a SmartConnect site by selecting a personality configured as "Broadband Only".

The broadband access type used is dependent on the capabilities/configuration of the radio and the following preferred order: WiFi, LTE and Satellite.

The following test demonstrates manual switchover between LMR and SmartConnect via WiFi.

SETUP

RADIO-1 – TALKGROUP 1", "LMR Only"
(personality 1)

RADIO-1 – TALKGROUP 1", "Broadband Only"
(personality 2)

RADIO-2 - TALKGROUP 1, "LMR Only"
CONSOLE-1 - TALKGROUP 1

Notes:

- Both radios are configured for WiFi.

VERSION #1.010

2. TEST

- Step 1. With RADIO-1 and RADIO-2 on LMR Site 1, initiate a Wide Area Call from RADIO-1 on TALKGROUP 1.
- Step 2. Observe that RADIO-2 and CONSOLE-1 will be able to receive and respond to the call. Dekey RADIO-1.
- Step 3. Change RADIO-1 to a "Broadband Only" personality for TALKGROUP 1.
- Step 4. Observe that RADIO-1 moves to the broadband SITE 2 and displays the SmartConnect banner. The radio may briefly display "Out of Range" during this transition.
- Step 5. Initiate a Wide Area Call from RADIO-1 on TALKGROUP 1.
- Step 6. Observe that RADIO-2 and CONSOLE-1 are able to receive and respond to the call.
- Step 7. Dekey RADIO-1 and select the "LMR Only" personality.
- Step 8. Observe that RADIO-1 moves back to LMR SITE 1 and no longer displays the SmartConnect banner.
- Step 9. Observe that RADIO-2 and CONSOLE-1 are still able to receive and respond to calls from RADIO-1.

Pass_____ Fail_____



SmartConnect

5.3.4 SmartConnect - Radio Authorization - Radio Fails Authentication

1. DESCRIPTION

This test verifies that a radio that fails authentication does not get access to system services. The authentication failure is notified to the user of the radio. Also, the authentication failure is notified to the infrastructure by alarm on Unified Event Manager (UEM) and zone watch shows the authentication failure. Additionally, historical reports capture that an authentication failure occurred.

SETUP

RADIO-1 - TALKGROUP 1

RADIO-2 - TALKGROUP 1

Notes:

- An authentication key for RADIO-1 is in AuC
- System wide Authentication is Enabled
- RADIO-1 is configured to indicate authentication failure.
- All radios reside on the broadband site for this test.

VERSION #1.010

2. TEST

- Step 1. KVL load a randomly created authentication key into RADIO-1
- Step 2. Cycle power on RADIO-1.
- Step 3. Confirm authentication failure was indicated on RADIO-1, zone watch, and an alarm on UEM.
- Step 4. Key RADIO-1.
- Step 5. Confirm RADIO-1 cannot perform a Talkgroup call with RADIO-2.
- Step 6. Check historical reports for occurrence of authentication failure.

Pass ____ Fail ____



SmartConnect

5.3.5 SmartConnect - Radio Authorization - Radio Successfully Authenticates

1. DESCRIPTION

This test verifies that the radio has performed and passed authentication. The user of the radio is not notified that authentication has been successful, but it is shown on the infrastructure with Zone Watch.

SETUP

RADIO-1 - TALKGROUP 1

RADIO-2 - TALKGROUP 1

Notes:

- No authentication key for RADIO-1 in AuC.
- System wide Authentication is Enabled
- All radios reside on the broadband site for this test.

VERSION #1.010

2. TEST

- Step 1. KVL load a randomly created authentication key into RADIO-1.
- Step 2. Download this authentication key from the KVL to the AuC.
- Step 3. Verify on AuC client that the authentication key was received.
- Step 4. Cycle power on RADIO-1.
- Step 5. Verify on Zone Watch that authentication was performed.
- Step 6. Confirm RADIO-1 can perform a Talkgroup call with RADIO-2.

Pass____ Fail____

5.4 OVER THE AIR REKEYING (OTAR)

5.4.1 Clear Hello

1. DESCRIPTION

The KMF operator can send a message to any radio to confirm that the radio is on the system.

Note: The devices under test must have a valid air address registered with the KMF and must be accessible on the data system.

SETUP

RADIO-1 TALKGROUP 1

RADIO-1 must not be configured for enhanced security mode in either radio programming or the KMF.

VERSION #1.020

2. TEST

- Step 1. Go to the Radio Management page of the KMF
- Step 2. Initiate a Clear Hello operation
- Step 3. Click the 'Clear Hello' button, or right-click and choose 'Clear Hello.'
- Step 4. Go to the Operation Status page of KMF verify that the RADIO-1's Clear Hello operation is shown. The operation is complete when the Operation Status is 100% completed.

Pass____ Fail____

Over The Air Rekeying (OTAR)

5.4.2 Encrypted Hello

1. DESCRIPTION

The KMF operator can send an encrypted message to any radio to confirm that radio is on the system and that its encryption services are functioning.

Note: The devices under test must have a valid air address registered with the KMF and must be accessible on the data system.

SETUP

RADIO-1 - TALKGROUP 1

Note: The radio must be current in the KMF

VERSION #1.020

2. TEST

- Step 1. Go to the Radio Management page of the KMF
- Step 2. Select RADIO-1 from the list.
- Step 3. Initiate an Encrypted Hello operation
- Step 4. Go to the Operation Status page of KMF, verify that RADIO-1's Encrypted Hello operation is shown. The operation is complete when the Operation Status is completed.

Pass____ Fail____

5.5 SIGNOFF CERTIFICATE

By their signatures below, the following witnesses certify they have observed the system Acceptance Test Procedures.

Signatures

WITNESS: _____ Date: _____

Please Print Name: _____

Please Print Title: _____

Initials: _____

WITNESS: _____ Date: _____

Please Print Name: _____

Please Print Title: _____

Initials: _____

WITNESS: _____ Date: _____

Please Print Name: _____

Please Print Title: _____

Initials: _____

SECTION 6

TRAINING PLAN

6.1 TRAINING OVERVIEW

Partnering with Motorola Solutions will enable Evergreen State College to build personnel competency and maximize return on investment.

Effective training ensures successful implementation and use of your communications system by all personnel for the life of the system. The training plan furnished to Evergreen State College is comprised of targeted coursework developed and delivered by our expert instructors. This plan, included below, will effectively provide Evergreen State College’s personnel with a comprehensive understanding of the proposed system and user equipment.

We will collaborate with Evergreen State College to tailor a final training plan to enable Evergreen State College’s organization to operate, configure, and manage the proposed solution effectively and efficiently.

Motorola has included APX NEXT Subscriber training, MCC7500E onsite console training and NICE logger remote training.



6.2 MOTOROLA SOLUTIONS TRAINING

Motorola Solutions provides an expanding portfolio of training delivery methods, tools, and courses to support the training needs of our customers. The figure below shows the elements of our training methodology that qualify us as the leader in the communications training industry.

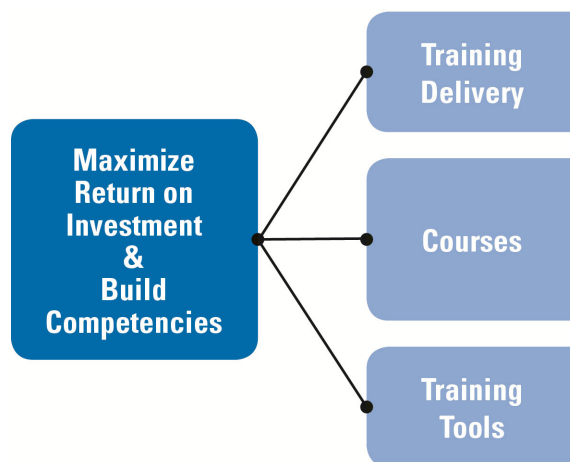


Figure 6-1: Build the competencies of Evergreen State College’s personnel and maximize your return on

investment with Motorola Solutions' expanding portfolio of training delivery methods, tools, and courses.

6.2.1 Training Delivery

Training Methods

Motorola Solutions' training experience and expertise enables our customers to gain the training they need to use during critical times in a variety of methods. As shown in the figure below, we offer four interactive methods of training: Online Self-Paced, Virtual Instructor-Led, Instructor-Led, and our *new* Integrated Training Environment.



Figure 6-2: Motorola Solutions offers a variety of interactive training methods that cater to different learning techniques, allowing more effective ways to give personnel the skills they need.

These training approaches ensure our customers receive the understanding they need for the practical aspects of their jobs.

Delivery Options

Field

Field class delivery is “tailored” to the customer’s specific system. We are providing classes which are not offered as standard “Open Resident” classes at our training facilities. The students benefit from working on their own systems, at their home location and within their schedules.

Motorola Facility

Resident classes are open to all Motorola customers, seating is based on availability, and participant guides and required pre-work when applicable are included in the tuition. These courses are comprehensive and are not tailored to any one customer’s system. Students

benefit from other students' experiences and are allowed to take systems out of service. These courses provide optimal "hands-on" training.

Motorola Facility Closed Sessions-Customer Specific

Special Resident classes are closed sessions for a particular Motorola Solutions customer. The customer is essentially renting the classroom. These courses are tailored to the customer's system as much as possible. The instructor will require the customer's system diagrams prior to the class taking place. The students will receive their ASTRO 25 IV&D manuals on CD-ROM and hard copy participant guides. Class manuals, participant guides, and required pre-work are included in the pricing of the class per student. The students are allowed to take systems out of service, which provides optimal "hands-on" training.

Motorola Solutions Instructors

We have approximately 40 instructor resources distributed across North America. These instructors are available to train customers in our Technical Training Center located in Schaumburg, Illinois, while specific training courses are available at our facility in Plantation, Florida. Training can also be delivered directly on-site at customer locations. All instructors undergo an Instructional Skills and Technical Knowledge Program, which is a globally-recognized training and instructor assessment program.

Consultative Services

Motorola Solutions provides consultative services for our customers, which includes personalized training plans and other training-related services. Our dedicated training consultant team works with our customers and Motorola Solutions account teams to identify and meet the training needs of technical, administrative end users, and other audiences.

6.2.2 Training Courses

Motorola Solutions offers a wide range of training courses to help our customers improve their proficiency with our expanding portfolio and get the most from their training system.

Our specialized courses/curriculums are designed for our customers' role. Whether they are an administrator, technician or user, Motorola Solutions makes sure our customers are equipped with foundational and advanced skills.

General overviews of product and/or solution training offered are listed below:

Foundational Radio and Networking Training

Foundational Radio and Networking training provides new hires or staff from different skilled backgrounds fundamental knowledge. Some of these courses are online/self-paced while others are instructor led. Some topics include: Radio System Basics, Basic Networking, Communication System Concepts, Networking Essentials and Applied Networking. This allows Motorola Solutions to offer training before installation, during installation and after your solution is operational.

ASTRO 25 Infrastructure Training Courses

ASTRO 25 Infrastructure Training provides participants with a full curriculum that will enable them to maintain/service the new solution, and will give them the skills required to manage and operate the solution to obtain its fullest potential and capabilities.

ASTRO 25 Patch Management Training Course

ASTRO 25 Patch Management Training provides ASTRO 25 Land Mobile Radio (LMR) system administrators the information needed to access and patch their radio network infrastructure, update antivirus definitions, and review log files.

MCC Console Training Courses

MCC Console Training provides participants with a curriculum that will enable them to obtain a high-level understanding of the system configuration, general console operation, how to perform basic tasks, operating procedures for specific features, and the knowledge and skills necessary to manage and maintain the system.

APX Mobile and Portable Radio Training Courses

APX Mobile and Portable Radio Training provides participants with an introduction to the radio, the knowledge and skills necessary to perform basic radio operation, common operational tasks, operating procedures for specific features of the radio, and technical programming and maintenance of radios.

Digital Evidence Management Solution (DEMS) Training Courses

Digital Evidence Management Solution Training provides participants with a high-level overview of the DEMS solution. The CommandCentral Vault Field Workshop Solution training and Video Camera training are conducted with a combination of hands-on lab activities, demonstration, and discussion that provide an in-depth learning experience for participants, enabling them to make the most effective use of their solution/device.

MOTOTRBO Training Courses

MOTOTRBO Training provides participants with a full curriculum that will enable them to maintain/service the new solution, and will give them the skills required to manage and operate the solution to obtain its fullest potential and capabilities.

CallWorks Training Courses

CallWorks Training provides participants with an overview of the components and functionality of the main application, operation, troubleshooting, a high-level understanding of the software, and configuration and maintenance of components of the CallWorks solution.

PremierOne Training Courses

PremierOne Training provides participants with sufficient knowledge of the PremierOne solution and its tools, giving them the skills necessary to operate and maintain the PremierOne solution.

LTE Training Courses

LTE Training provides participants a high-level understanding of the Public Safety LTE system and the network elements that comprise the system. Participants will gain knowledge of LTE architecture, signaling, system administration, and applied networking.



WAVE Training Courses

WAVE Training provides participants with an overview of the WAVE solution. It offers a basic understanding of how WAVE delivers a Radio-over-IP solution; describes features, hardware, and software requirements; how to use applications; and provides instruction in designing, integrating, and troubleshooting the WAVE solution.

6.2.3 Training Tools

Training Kits

Training kits are essential suitcase equipment, labs and exercises that apply to some of the ASTRO, MOTOTRBO, WAVE and LTE solutions. These kits are used in addition to equipment, in order to prevent solution downtime while training is conducted. As part of specific on-site classes, shown in Table 6-1, kits are included and shipped to our customers to allow students an in-depth, hands-on experience.

Table 6-1: Field Classes Training Kit Availability

Field Classes Training Kit Availability	
Networking Essentials	Server Virtualization
Applied Systems Networking	WAVE Certified Integration Engineer
Domain Controller	MOTOTRBO™ Systems Applied Networking

Tracking and Evaluation

All customer training is tracked and evaluated. The Project Manager and training team tracks and records all courses completed through the implementation of the project. Surveys are given to trainees to evaluate the trainers. Feedback is given and placed on our customer shared website.

Interactive End User Tool Kit (iEUTK)

The Interactive End User Tool Kit is a knowledge-transfer tool designed to accelerate learning through customizability. Using the iEUTK allows trainers to customize user/operator training to match unique button, feature programming, and displays provided in the system and radio codeplug. These tailored materials are developed by Motorola Solutions trainers using tool kits that allow customer trainers to modify training materials when radio or console features change. Personnel are taught how to maneuver through and tailor the iEUTK screens. The tailored selections are saved to an electronic file that the Motorola Solutions training team provides to the customer.

For a more detailed view of the training Motorola Solutions provides, please see our Product and System Technical Training Course Catalog:
<https://learning.motorolasolutions.com/catalog/56280enus>

6.3 PROPOSED TRAINING FOR EVERGREEN STATE COLLEGE

In order to achieve the training goals identified by Evergreen State College, we propose the following courses.

It is necessary that participants bring their laptop computers for all system administrator and technician classes. Materials will be delivered electronically via USB drives.

6.3.1 Consoles Supervisors & Operators

Course Title	Target Audience	Sessions	Duration	Location	Date	Participants
MCC7500E Console Operator & Admin Training Course #: AST1054 1 training console Ratio: 2 per console (Instructor-led)	Dispatch Supervisor	1	1 day	Olympia, WA	Prior to cutover	1
MCC7500E Console Operator Training Course #: AST1053 1 training console Ratio: 2 per console (Instructor-led)	Dispatch Operators	1 (4 hour) Session	4 hours	Olympia, WA	Prior to cutover	2

6.3.2 Course Descriptions for Evergreen State College

Course descriptions for Evergreen State College are included on the following pages.

6.3.2.1 MCC7500 Console Supervisor

Course Synopsis and Objectives:	<p>This course provides participants with the knowledge and skills to manage and utilize the MCC7500 console administrator functions. Through facilitation and hands-on activities, the participant learns how to customize the console screens.</p> <p>After completing this training course, you will be able to:</p> <ul style="list-style-type: none"> ▪ Understand the menu items and tool bar icons. ▪ Edit folders, multi-select/patch groups, auxiliary input output groups, windows and toolbars. ▪ Add/delete folders.
Delivery Method:	ILT - Instructor-led training
Duration:	4 hours Operator, plus 4 hours Admin
Participants:	Dispatch Supervisors and System Administrators
Class Size:	Based on number of Training Consoles available (2 students per Console)
Prerequisite:	None
Curriculum:	<ul style="list-style-type: none"> ▪ Introduction ▪ Configurations ▪ Folders and Resource Setup ▪ Customizing Folders ▪ Auto Starting the MCC7500 Dispatch Console ▪ Editing Preferences ▪ Configuring the Toolbar ▪ Setting Up Aux IOs ▪ Resource Groups

6.3.2.2 MCC7500 Console Operator

Course Synopsis and Objectives:	<p>This course provides participants with an introduction to the dispatch console, its basic operation and tailored job aids which will be available for assistance in operation. Through facilitation and hands-on activities, the user learns how to perform common tasks associated with the console operation.</p> <p>After completing this training course, you will be able to:</p> <ul style="list-style-type: none"> ▪ Perform basic operational tasks of the dispatch console. ▪ Utilize the provided job aids to perform specific tasks associated with the console. ▪ Understand a high level view of the system configuration. ▪ Understand a high-level overview of the customer system configuration. ▪ Understand general console operation. ▪ Understand proper operating procedures for specific customer features.
Delivery Method:	ILT - Instructor-led training
Duration:	4 hours
Participants:	Dispatch Console Operators, Supervisors, System Administrators, and Support Personnel
Class Size:	Based on number of Training Consoles available (2 students per Console)
Prerequisite:	None
Curriculum:	<ul style="list-style-type: none"> ▪ Overview ▪ Communicating with Radios ▪ Advanced Signaling Features ▪ Resource Groups ▪ Working with Configurations ▪ Working with Aux IOs ▪ Troubleshooting

6.3.2.3 APX NEXT RadioCentral and MyView Overview

AST4004

Course Synopsis and Objectives:	<p>This course will provide an introduction to using the MyView Portal and the RadioCentral Client to manage the basic setup and configuration of the features for your APX NEXT devices.</p> <p>After completing this training course you will be able to:</p> <ul style="list-style-type: none"> ▪ Navigate through the RadioCentral Client to find the editing tools and standard views ▪ Navigate through the MyView Portal to find the editing and administrative tools ▪ Successfully complete the configuration workflows covered in this course
Delivery Method:	OLT – Online Training
Duration:	0.5 hours
Participants:	This course is intended for individuals who need to configure, maintain, and monitor the APX NEXT Radio.
Class Size:	Class Size may vary by region
Prerequisite:	None
Curriculum:	<p>Course Modules:</p> <ul style="list-style-type: none"> ▪ Module 1 Solution Overview ▪ Module 2 MyView Basic Navigation ▪ Module 3 MyView Entitlements View ▪ Module 4 MyView Device Management View ▪ Module 5 MyView Administration View ▪ Module 6 RadioCentral Basic Navigation ▪ Module 7 RadioCentral Managing Groups ▪ Module 8 RadioCentral Managing Sets and Configurations ▪ Module 9 RadioCentral Scheduling Jobs ▪ Module 10 RadioCentral Importing New Licenses ▪ Module 11 RadioCentral Managing Radio Firmware ▪ Module 12 RadioCentral Configuring ViQi ▪ Module 13 RadioCentral Configuring SmartLocate ▪ Module 14 Configuring SmartConnect



6.3.2.4 APX NEXT RadioCentral and MyView Workshop

AST4005

Course Synopsis and Objectives:	<p>This course provides participants with experience in the management of APX NEXT devices using the Radio Central application. Participants will learn configuration settings and feature capabilities, updating configurations to devices, and general management of APX NEXT Devices.</p> <p>After completing this course, the student will be able to:</p> <ul style="list-style-type: none"> ▪ Understand the relationship between MyView And Radio Central and its impact on radio management. ▪ Configure APX NEXT Devices using Radio Central. ▪ Update devices over the air using Radio Central. ▪ Understand impacts of configuration changes to radio operation.
Delivery Method:	VILT (Virtual Instructor-Led Training)
Duration:	12.5 hours
Participants:	System Managers and Technical staff responsible for managing APX NEXT devices.
Class Size:	Up to 12 (Class Size may vary by region)
Prerequisite:	No requisite knowledge required.
Curriculum:	N/A

SECTION 7

SERVICE PLAN

10.1 ADVANCED PLUS SERVICES OVERVIEW

In order to ensure the continuity of ESC's network and reduce system downtime Motorola proposes our Advanced Plus Services offering to ESC. Appropriate for customers who wish to leverage Motorola's experienced personnel to maintain mission-critical communications for their first responders, Advanced Plus Services focuses on monitoring the ASTRO P25 network on an ongoing basis, proactively mitigating potential functionality and security issues, and providing remote support for ESC Technical Staff to provide onsite support.

The Advanced Plus services are proposed for the Console System. Motorola has included Advanced Plus services during warranty period and pricing for 6 years post warranty maintenance period.

During the Warranty Period and during the proposed 6 year post warranty maintenance and lifecycle offers, Motorola Solutions will provide the following services for the Console System. Detailed Statements of Work describing each of these services are available upon request:

- Service Desk.
- Technical Support.
- Network Event Monitoring.
- Onsite Support
- Network Hardware Repair.
- Security Update Services
- Remote Security Patch Installation
- Security Monitoring
- System Spare Equipment

All of the equipment and services provided under this proposal will be warranted in accordance with the warranty provisions of the contract. Concerning post warranty maintenance services, they will be provided for the equipment and services as set forth below.

In addition to the Advanced Services for the Console System, Motorola has included in the maintenance price in the proposal maintenance services for the microwave network, MPLS and the IP logging solution. These services are generally described in separate sections in this document after the Advanced Plus services description. More detailed statements of work for these services will be provided upon request or during negotiations.

The Advanced Plus services will be delivered to ESC through a centralized team within Motorola's Solutions Support Center (SSC), which operates on a 24 x 7 x 365 basis; and our Repair Depot, which will ensure that equipment is repaired to the highest quality standards. The collaboration between these service resources, all of who are experienced in the maintenance of mission-critical networks, will enable a swift analysis of any network issues, an



accurate diagnosis of root causes, and a timely resolution and return to normal network operation. These services are briefly described below. Detailed statements of work for each of the services are available upon request.

10.2 ADVANCED PLUS SERVICES DESCRIPTION

10.2.1 Centralized Service Delivery

Centralized support will be provided by Motorola's support staff, located at our Service Desk and Solutions Support Center (SSC). These experienced personnel will provide direct service and technical support through a combination of Service Desk telephone support, technical consultation and troubleshooting through the SSC, and ongoing network monitoring of ESC's Console System.

Motorola will provide Service Desk response as a single point of contact for all support issues, including communications between ESC, third-party subcontractors and manufacturers, and Motorola. When ESC personnel call for support, the Service Desk will record, track, and update all Service Requests, Change Requests, Dispatch Requests, and Service Incidents using Motorola's Customer Relationship Management (CRM) system. The Service Desk is responsible for documenting ESC's inquiries, requests, concerns, and related tickets; tracking and resolving issues; and ensuring timely communications with all stakeholders based on the nature of the incident.

As tickets are opened by the Service Desk, issues that require specific technical expertise and support will be routed to our Solutions Support Center (SSC) system technologists for Technical Support, who will provide telephone consultation and troubleshooting capabilities to diagnose and resolve infrastructure performance and operational issues.

Motorola's recording, escalating, and reporting process applies ISO 90001 and TL 9000- certified standards to the Technical Support calls from our contracted customers, reflecting our focus on maintaining mission-critical communications for the users of our systems.

The same SSC staff that provides direct telephone support to ESC will also provide Network Event Monitoring to ESC's Console system in real-time, ensuring continuous management of the system's operational functionality. The SSC's technicians will utilize sophisticated tools to remotely monitor the ESC's Console system, often identifying and resolving anomalous events before they might affect user communications.

10.2.2 Field Service Delivery

On-site repairs and network preventative maintenance will be provided by authorized local field services delivery personnel, who will be dispatched from and managed by the Solutions Support Center.



On-Site Support provides local, trained and qualified technicians who will arrive at ESC's location upon a dispatch service call to diagnose and restore the communications network. This involves running diagnostics on the hardware or Field Replacement Unit (FRU) in order to identify defective elements, and replacing those elements with functioning ones. The system technician will respond to ESC's location in order to remedy equipment issues based on the impact of the issue to overall system function.

Annual Preventive Maintenance Service provides proactive, regularly scheduled operational testing and alignment of infrastructure and network components to ensure that they continually meet original manufacturer specifications. Certified field technicians perform hands-on examination and diagnostics of network equipment on a routine and prescribed basis.

10.2.3 Network Hardware Repair

Network Hardware Repair – Motorola's authorized Repair Depot will repair the equipment provided by Motorola, as well as select third-party infrastructure equipment supplied as part of the proposed solution. The Repair Depot will manage the logistics of equipment repair (including shipment and return of repaired equipment), repair Motorola equipment, and coordinate the repair of third-party solution components.

10.2.4 Security Management Operations

Security elements such as anti-virus, firewalls, and Intrusion Detection Systems (IDS) are a good first step, but they are not enough to secure your network. Radio network operators must take additional steps to reduce vulnerabilities to potential attack and protect critical radio network infrastructure.

The proposed Remote Security Patch Installation Service will provide ESC with pre-tested security updates, pre-tested and remotely installed by Motorola on ESC's system. When appropriate, Motorola will make these updates available to outside vendors in order to enable them to test each patch, and will incorporate the results of those third-party tests into the updates before installation on ESC's network. Once an update is fully tested and ready for deployment in ESC's system, Motorola will remotely install it onto the ESC's system, and notify ESC that the patch has been successfully installed. If there are any recommended configuration changes, warnings, or workarounds, Motorola will provide detailed documentation along with the updates on the website.

Security Monitoring provides 24x7x365 monitoring of the radio network's security elements by specialized security technologists with years of experience working with ASTRO 25 mission-critical networks. For highly complex or unusual security events, our technologists have direct and immediate access to Motorola engineers for rapid resolution.



10.2.5 Network Updates

With our proposed Network Updates Service, Motorola Solutions commits to sustain ESC's Console system through a program of software and hardware updates aligned with the ASTRO P25 platform lifecycle. This comprehensive approach to technology sustainment will ensure that ESC has access to the latest available standard features, as well as the opportunity to incorporate optional features through the purchase of hardware and/or software licenses. Updates and expansion of system components will optimize the availability of repair services, and will enable ESC to add RF sites, dispatch positions, network management positions, and other elements to increase capacity and processing capability. Motorola Solutions will minimize any interruption to system operation during each network update, with minimal reliance on ESC's personnel.

10.2.6 Spare Equipment

A complement of Field Replaceable Units and spare parts has been included for various system components. Field Replaceable Units are modules and boards which may be removed from fixed equipment and exchanged with an identical module or board.

Additionally, spares include non-Field Replaceable Units for infrastructure components that can cause a critical failure.

The philosophy in selecting the FRUs/spares is based upon providing parts for items that are critical to system operation and would expedite a repair by allowing the ESC technician to make the repair on site at one time. To the greatest extent possible, common FRU's/spares have been included where the same unit could be used for multiple devices in the sites or system. This spares philosophy is a cost-effective approach for ESC by providing a balance between having a reasonable set of FRUs/spares on hand but not having too many assets sitting idle.

10.3 MICROWAVE NETWORK WARRANTY AND POST WARRANTY MAINTENANCE SERVICES

The proposed offering for the Microwave Subsystem equipment consists of the following specific services during the Warranty Period and 6 years post Warranty services Period:

- Service Desk
- Technical Support.
- Software Subscription Plan for MW
- Advanced Exchange for MW Equipment

The network updates (SUA services) are not included for the MW system. There is no need for any hardware updates for the MW radios and antenna system in



the first 10 to 12 years of the equipment. Software updates are included during warranty and 10 years post warranty maintenance period.

Any one of these changes listed will nullify the warranty on the MW Network:

- Motorola will not be responsible for degraded path performance when such degradation is due to such anomalous propagation conditions as:
 - Long-term loss of fade margin due to antenna decoupling misalignment caused by widely-varying k-factor changes;
 - Long-term loss of fade margin due to atmospheric boundary layering (“ABL”) causing wave front defocusing (beam spreading), signal entrapment (blackout fading), ducting, and other such occurrence.
 - Excessive rain outage rates beyond the published crane and/or chart data used in the calculation;
 - Degradation resulting from certain types of multipath interference attributed to unidentifiable off-path terrain features or structures;
 - Any other technological or atmospheric condition not foreseeable through the exercise of prudent engineering knowledge and judgment.
- Additionally, Motorola will not be responsible for degraded path performance when:
 - Non-Motorola radio equipment is installed on a surveyed path;
 - Motorola radio equipment is not installed by Motorola;
 - Existing antenna and waveguide system is used without test and inspection performed by Motorola.

10.4 MPLS NETWORK

MPLS network is covered during warranty and 6 years post warranty maintenance period.

The proposed services for the MPLS subsystem consist of the following specific services:

- Service Desk.
- Technical Support.
- Onsite Support
- Network Hardware Return for Repair (45 day)
- Software Subscription
- System Spare Equipment

10.5 IP LOGGING SOLUTION

For the IP Logging Solution, Motorola has proposed Warranty, 6 years post warranty maintenance services and 6 years of Solution Updates (SUA). The services offered during warranty and post warranty maintenance services are:

- OnSite Support Services, (<4 hours Response)
- Remote Technical Support, 7x24 for Severity 1 issues and 5x12 (8 AM to 8



PM EST) for all other issues (ESC will allow remote access to the Logging Solution and provide the connectivity)

- Software updates and upgrades within the current major platform revisions/release
- Logging Recorder Software Service Packs and Patches (Hotfixes) are included.
- Hardware Repair and Replacements

Severity definitions

SEVERITY LEVEL	DEFINITION
Severity 1	An Error that has severe impact on business where the Product is inoperable, fails catastrophically, or is causing severe data loss or corruption
Severity 2	An Error that results in some impact on business or operations where the Product may be usable and the performance is significantly degraded
Severity 3	An Error that results in minimal impact on business and operations where the Product may be usable, but there is only a minor impact on performance where one or more functions do not operate optimally

10.6 NETWORK UPDATES STATEMENT OF WORK

10.8.1 Life Cycle Services/SUA II

This Statement of Work (“SOW”) is subject to the terms and conditions of the enclosed Communications System and Services Agreement (“Agreement”). Motorola and ESC may be referred to herein individually as a “Party” or together as “Parties”

10.8.2 Description of Service

Motorola agrees to provide ESC with applicable software and hardware updates and implementation services necessary to maintain their Console system at an exceptional level of support. ASTRO 25 system software and hardware updates improve system functionality/operation and extend the useful life of the network.

This service includes 3rd party and Motorola software as well as select hardware to maintain supportability. All updates are pre-tested and certified in a dedicated ASTRO 25 test lab to ensure that they are compatible and do not interfere with the ASTRO 25 network functionality. System updates may also include feature enhancements. At Motorola’s option, feature enhancements may be offered for purchase.

The software covered under this agreement includes:

- Site controllers
- Routers
- LAN switches
- Servers
- Dispatch consoles



- Logging equipment
- Network security devices such as firewalls and intrusion detection sensors
- Associated peripheral infrastructure software

Motorola will provide certified hardware version updates necessary to refresh the system with an equivalent level of functionality. Any hardware versions and/or replacement hardware required to support new features or those not specifically required to maintain existing functionality are not included. Unless otherwise stated, platform migrations are not included.

If originally provided by Motorola, the following hardware components are eligible hardware for refresh when necessary to maintain the system functionality in place at the time this agreement was executed:

- Servers
- PC Workstations
- Routers
- LAN Switches

If originally provided by Motorola, the following hardware components are eligible for board-level refreshes when necessary to maintain the system functionality in place at the time this agreement was executed. A “board-level refresh” is defined as any Field Replaceable Unit (“FRU”) for the products listed below:

- GCP 8000 Site Controllers
- MCC 7500 Console Operator Positions
- NFM/NFM XC/MOSCAD RTU

The parties agree that this agreement only covers those items expressly stated above. There is no coverage on any additional software or hardware products unless specifically described in this agreement. Motorola may, at its sole discretion, choose to include coverage for other items. Refer to section 10.8.5 for exclusions and limitations.

Motorola will provide implementation services necessary to install the system software and hardware updates. Any implementation services that are not directly required to support the system updates are not included. Unless otherwise stated, implementation services necessary for system expansions, platform migrations, and/or new features or functionality that are implemented concurrent with the system refresh are not included.

Motorola agrees to provide the necessary software design and technical resources necessary to complete system updates.

Motorola will issue Software Maintenance Agreement (“SMA”) bulletins on an annual basis and post them in soft copy on a designated extranet site for ESCaccess. Standard and optional features for a given ASTRO 25 system release are listed in the SMA bulletin.

Coverage Continuity: The parties agree that this agreement requires continuous coverage beginning within (90) days after system acceptance. Beyond (90) days from system acceptance or if payments are discontinued, additional payment(s) will be necessary to cover the period for which coverage was discontinued or delayed. The total of payments for lapses in coverage will not exceed 3 years.



10.8.3 Responsibilities

Motorola responsibilities

- Identify and communicate with ESC the scope of system updates as they become available.
- Work with ESC to schedule applicable system updates.
- Assign program management support required to perform system updates as necessary.
- Assign field installation resources required to perform system updates as necessary.
- Assign centralized engineering resources required to perform system updates as necessary.
- Install system updates.
- Deliver impact and change management training as necessary.
- Perform appropriate system backups.
- Work with ESC to validate that all system maintenance is current.
- Deliver post update implementation training to ESC as needed.
- Validate all system update deliverables are complete.
- Obtain completion sign off from ESC.

10.8.4 ESC Responsibilities

- Contact Motorola to schedule and engage the appropriate Motorola resources.
- ESC will allow the permanent installation of a server which will be connected to Motorola and will be used for system auditing, software uploads, and software update installation.
- Assist in site walks of the system during the system audit when necessary.
- Provide a list of any FRUs and/or spare hardware to be included in the system updates when applicable.
- Purchase any additional software and hardware necessary to implement optional system features or system expansions.
- Provide or purchase labor to implement optional system features or system expansions.
- Participate in impact and change management training as necessary.
- Inform system users of system update and scheduled system downtime if necessary.
- Cooperate with Motorola to provide post update implementation training as needed.
- Provide Motorola with completion sign off.

10.8.5 Exclusions and Limitations

The parties agree that Systems that have non-standard configurations that have not been certified by Motorola Systems Integration Testing are specifically excluded from this agreement unless otherwise agreed in writing by Motorola and included in this SOW.



This agreement does not cover any hardware or software supplied to ESC when purchased directly from a third party, unless specifically included in this SOW.

This agreement does not cover software support for unauthorized modifications or other misuse of the covered software.

Updates for equipment add-ons or expansions during the term of this ASTRO 25 agreement are not included in the coverage of this SOW unless otherwise agreed to in writing by Motorola and ESC.

10.8.6 Special Provisions

The coverage and the parties' responsibilities described in this Statement of Work will automatically terminate if Motorola no longer supports the ASTRO 25 7.x software version in ESC's system or discontinues this agreement; in either case, Motorola will refund to ESC any prepaid fees for services applicable to the terminated period.

10.8.7 High-Speed Connectivity Specifications

Connectivity Requirements

- The minimum supported link between the core and the zone is a full T1
- Any link must realize or a sustained transfer rate of 175 kBps / 1.4 Mbps or better, bidirectional
- Interzone links must be fully operational when present
- Link reliability must satisfy these minimum QoS levels:
 - Port availability must meet or exceed 99.9% (three nines)
 - Round trip network delay must be 100 ms or less between the core and satellite (North America) and 400 ms or less for international links o
 - Packet loss shall be no greater than 0.3%
 - Network jitter shall be no greater than 2 ms
- The network requirements above are based on the SLA provided for Sprint Dedicated IP Services as of April, 2012. It is possible other vendors may not be able to meet this exact SLA, so these cases must be examined on a case-by-case basis.



SECTION 8

PRICING SUMMARY

8.1 PRICING FOR DISPATCH SYSTEM

Description	Pricing
Equipment List Price - Console Site Equipment - APX NEXT Portables & Training - APX 8500 Mobile and All Band Consolettes - Microwave Backhaul - MPLS Router - NICE Logging Recorder	\$737,549
Project Services Project Coordination, Design Review, Equipment ordering and Manufacturing, Equipment Delivery, Installation, Cutover, Functional Testing, Training, Documentation, Warranty Services - 1 Year	\$568,553
Contract Discount	-\$290,362
** Pricing Incentive	-\$87,000
Total	\$928,740
Estimated Taxes (9.2% on Equipment)	\$60,711
Total After Taxes	\$989,451

8.2 SUPPORT AND MAINTENANCE SERVICES

Motorola offers the pricing for 10 years post warranty (years 2-11) Maintenance and SUA II services for Consoles, Microwave, MPLS and NICE recorder in the tables below:

	Year 2	Year 3	Year 4	Year 5	Year 6
Maintenance (Optional)	\$58,868	\$59,350	\$59,847	\$60,358	\$60,886
SUA II and GPS Mapping	\$45,759	\$46,153	\$46,570	\$47,000	\$47,442
Total:	\$104,627	\$105,503	\$106,417	\$107,358	\$108,328
	Year 7	Year 8	Year 9	Year 10	Year 11
Maintenance (Optional)	\$61,429	\$61,599	\$62,589	\$63,212	\$63,855
SUA II and GPS Mapping	\$47,898	\$48,457	\$48,974	\$49,546	\$50,061
Total:	\$109,327	\$110,056	\$111,563	\$112,758	\$113,916

8.3 PAYMENT TERMS

Except for a payment that is due on the Effective Date, Customer will make payments to Motorola within thirty (30) days after the date of each invoice. Customer will make payments when due in the form of a check, cashier's check, or wire transfer drawn on a U.S. financial institution and in accordance with the following milestones.

1. 25% of the Contract Price due upon contract execution (due upon effective date);
2. 60% of the Contract Price due upon shipment of equipment from Staging;
3. 10% of the Contract Price due upon installation of equipment; and
4. 5% of the Contract Price due upon Final Acceptance.

Overdue invoices will bear simple interest at the rate of ten percent (10%) per annum, unless such rate exceeds the maximum allowed by law, in which case it will be reduced to the maximum allowable rate. Motorola reserves the right to make partial shipments of equipment and to request payment upon shipment of such equipment. In addition, Motorola reserves the right to invoice for installations or civil work completed on a site-by-site basis, when applicable.



CONTRACTUAL DOCUMENTATION

To be provided at a later date.

