

DATE: January 2nd, 2025
TO: 911 Emergency Response Advisory Committee
FROM: Cody Shadle, City of Reno Public Safety Dispatch, Director shadlec@reno.gov
THROUGH: N/A
SUBJECT: REQUEST FOR FUNDING FOR CITY OF RENO PUBLIC SAFETY DISPATCH PRIMARY PSAP (Public Safety Answering Point) FOR THREE (3) HARRIS SYMPHONY CONSOLES [For Possible Action] - A review, discussion and possible action to approve, deny or otherwise modify a request to fund the costs associated with the purchase of three (3) Harris Symphony Radio Consoles necessary to replace existing, failing equipment, for a total amount not to exceed \$160,332.00.

SUMMARY

REQUEST FOR FUNDING FOR CITY OF RENO PUBLIC SAFETY DISPATCH PRIMARY PSAP FOR THREE (3) HARRIS SYMPHONY CONSOLES (Public Safety Answering Point) [For Possible Action] - A review, discussion and possible action to approve, deny or otherwise modify a request to fund the costs associated with the purchase of three (3) Harris Symphony Radio Consoles necessary to replace existing, failing equipment, for a total amount not to exceed \$160,332.00.

NRS APPLICABLE: *NRS 244A.7645* Provides approval of costs associated with maintenance, upgrade and replacement of equipment necessary for the operation of the enhanced telephone system.

STAKEHOLDER REVIEW(s)

Stakeholder is a primary Public Safety Answering Points (PSAP) – City of Reno Public Safety Dispatch.

PREVIOUS ACTION&BACKGROUND

On September 23, 2021, the 911 Emergency Response Advisory Committee approved the funding request to purchase three (3) Harris Symphony Consoles for Reno Public Safety Dispatch.

On January 16, 2020, the 911 Emergency Response Advisory Committee approved the funding request to purchase two (4) Harris Symphony Consoles for Sparks Police Department Communication’s Center.

FISCAL IMPACT

The Enhanced 911 Fund is a special revenue fund which receives revenue pursuant to NRS 244A.7643 in the form of telephone surcharges collected to support the emergency reporting system.

RECOMMENDATION

It is recommended that the E911 Emergency Response Advisory Committee approve the request to fund the costs associated with the purchase of three (3) Harris Symphony Radio Consoles necessary to replace existing, failing equipment, for a total amount not to exceed \$160,332.00.

POSSIBLE MOTION

Move that the E911 Emergency Response Advisory Committee approve the request to fund the costs associated with the purchase of three (3) Harris Symphony Radio Consoles necessary to replace existing, failing equipment, for a total amount not to exceed \$160,332.00.

SYMPHONY CONSOLES ADD-ON

CITY OF RENO, NEVADA



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NOVEMBER 25, 2024

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PROPRIETARY INFORMATION: L3Harris Technologies, Inc., through its Communication Systems Segment, complies with all federal, state and local laws, ordinances, rules, and regulations regarding disclosure. However, L3Harris must still protect its trade secrets, intellectual property, and other confidential and competition sensitive business information. The enclosed proposal includes pricing, system design, trade secret and other confidential and competition sensitive information which is labeled as such in the proposal. Disclosure of any portion of this proposal shall be permitted only after the express written consent of L3Harris is provided. After award notification and upon official written request, L3Harris will disclose any proposal information that is no longer considered confidential or competition sensitive.

TABLE OF CONTENTS

Statement of Work

IMPLEMENTATION PLAN

RESPONSIBILITY MATRICES

PROJECT SCHEDULE

Warranty

Pricing

Contractual Documentation

Attachments

FUNCTIONAL ACCEPTANCE TEST PLAN

CONFIDENTIAL INFORMATION

L3Harris Technologies, Inc., through its Communication Systems Segment, complies with all federal, state and local laws, ordinances, rules, and regulations regarding disclosure. However, L3Harris must still protect its trade secrets, intellectual property, and other confidential and competition sensitive business information. The enclosed proposal includes pricing, system design, trade secret and other confidential and competition sensitive information which is labeled as such in the proposal. Disclosure of any portion of this proposal shall be permitted only after the express written consent of L3Harris is provided. After award notification and upon official written request, L3Harris will disclose any proposal information that is no longer considered confidential or competition sensitive.

There are only a few companies in the United States that offer for sale land mobile radio system products and services. There are also just a relatively few number of opportunities each year to sell these products and services. L3Harris' trade secret information and confidential commercial information have economic value by not being generally known to or readily ascertainable by its competitors and other third parties. L3Harris diligently works to maintain and protect the secrecy of this information. Divulging this information will injure L3Harris in future sales opportunities and provide L3Harris' competitors with an unfair economic and competitive advantage in the marketplace. This confidential, trade secret information includes, but is not limited to, pricing information; new and existing product information; coverage prediction information and related methodologies; subcontractor information; customer information; system design information and related methodologies; functional, coverage and other testing information and related methodologies; system implementation information and related methodologies; information related to L3Harris' cutover and migration plan and related methodologies; and information related to warranties, maintenance, and support, including information concerning the life-cycle of L3Harris products.

STATEMENT OF WORK



STATEMENT OF WORK INCLUDES:

- > Implementation Plan
- > Responsibility Matrices
- > Project Schedule

CITY OF RENO, NEVADA | SYMPHONY CONSOLES ADD-ON | NOVEMBER 25, 2024

STATEMENT OF WORK

L3Harris Technologies, Communications Systems Division (L3Harris) is proud to provide The City of Reno a proposal for 3 Symphony console replacements to be installed at the City of Reno Public Safety Dispatch. This equipment will be configured to work on the Nevada Shared Radio System (NSRS) for the City of Reno.

The following equipment, software and services have been included as part of this proposal:



System Components

L3Harris will provide new Symphony dispatch consoles and City of Reno will be responsible for providing adequate backhaul to the dispatch location(s).

Each new console has two key components namely, the console bundle itself and the associated system licensing. Please note console bundles have been configured using the sponsoring members contractual dispatch configuration and any changes have been highlighted below.

Each console bundle / configuration per Washoe County Contract includes the following:

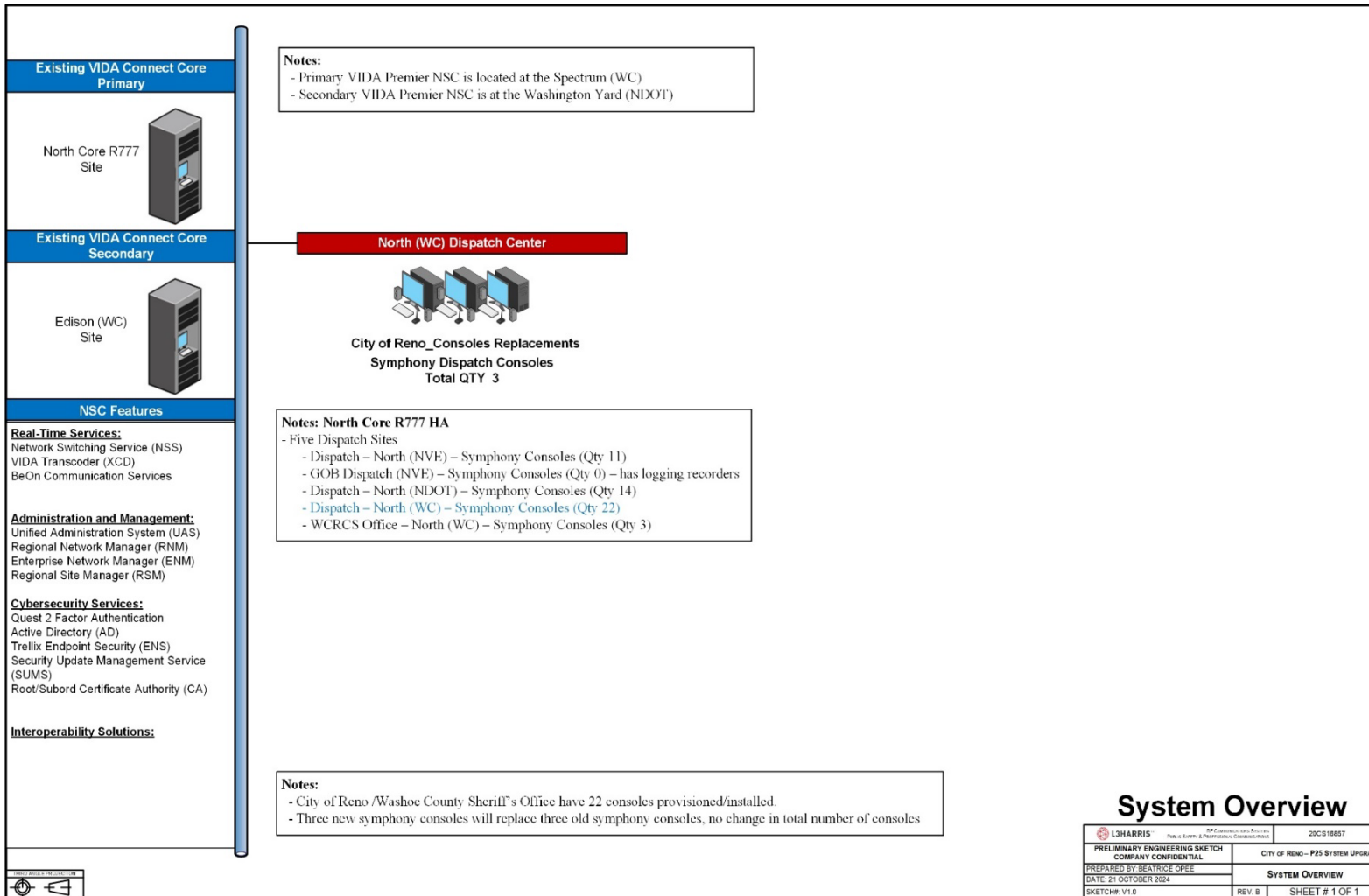
- > Symphony Dispatch Platform:
 - Windows 10 operating system
 - Symphony application software
 - Remote Baton software
 - 23" HD Non-Touchscreen
 - (4) Symphony Nano speakers
 - (1) Mouse
 - (1) 104-key USB keyboard
 - (2) Single USB footswitch
 - (1) Desktop microphone
 - (2) Six-wire jack box
 - (2) Over-the-headset w/solid boom microphone
 - (1) Console UPS 60 Hz Power Supply

- > Each console will be equipped with the Premier license bundle, which includes:
 - Individual Calls (I-Calls)
 - (16) patch definitions
 - (8) patch activations
 - (16) SimulSelect definitions
 - (12) Flex Paths (talk paths)

- Local/Remote Baton
 - Local Full Screen
 - (4) speakers
 - (4) user setups
 - (16) workspace tabs
 - Call Director
 - Embedded web browser
 - Dynamic cross-mute
 - Paging
 - Conventional controls
 - Marker tone
 - Basic SIP telephone services (8 -lines)
 - AES/DES encryption
 - Remote Aux I/O
 - (2) Vocoder license
- > Services including system engineering, project management, site equipment configuration, testing, and shipping. Please reference the Implementation plan for detailed definition of these services.

Block Diagram

Figure 1. Block Diagram



Equipment Description

SYMPHONY DISPATCH CONSOLE

The Symphony Dispatch Console is a full-featured dispatch console with true, IP-secure network connectivity. The Symphony console is L3Harris' latest offering in IP dispatch technology based on the Microsoft Windows operating system. It is the dispatcher's best weapon in the fight against time. Built upon a proven platform, it is simple, organized, and efficient. The screen layout is easy to learn and operate, maximizing productivity while minimizing training time. Large buttons and intuitive, customized layouts make maneuvering through the console functions easy and straightforward. L3Harris dispatch systems are supportive of, and can operate in, a method fully consistent with the NFPA 1221 standards.

A single, logical network connection to a PC replaces the traditional audio switches found in traditional systems. With less equipment and complexity, the Symphony Console is a more robust solution. The core package of the Symphony includes a Central Processing Unit (CPU), monitor, microphone, mouse, and speakers, which can be placed on any standard furniture that has space to accommodate a monitor and the accessories shown in Figure 2. A 23" HD monitor is being offered with this proposal. The Symphony Dispatch Platform (SDP) also supports a complete set of audio accessories, including headsets, microphones, speakers and footswitches. The SDP's industrial grade computer runs the Windows 8.1 operating system, and hosts the Symphony application, which provides the dispatch features with a highly customizable graphical user interface. This allows connectivity on your existing EDACS network.

Figure 2. Symphony Dispatch Console and Accessories



The CPU is utilized to perform the digitization of voice, like Voice over Internet applications. The Symphony console is an integral part of the VIDA network and does not require any "back room" electronics equipment, as required for other systems. This is a great savings in terms of installation cost and space requirements. Because the console is IP based and only requires a network connection to tie into the VIDA network, ad hoc backup dispatch centers can be quickly established as the need dictates.

Also, installed in the SDP is the Symphony Audio Processor (the "Audio Box") which provides the platform for modulating, demodulating, routing and recording dozens of concurrent audio streams. The Audio Box also provides automatic gain or level control of various inputs, equalizing responses from

different combinations of responders and equipment. The wide array of connectors on the SDP simplifies the cabling for the peripheral options at each dispatch position.

The Symphony application supports full P25 functionality to provide the dispatcher with all the features necessary to successfully dispatch on the system. Symphony can control a mix of up to 1024 different talkgroup modules, individual call modules, conventional base station modules, paging modules, I/O modules and specialized request-to-talk and radio status message workflow management modules. Symphony provides an instant recall recorder that can be configured to provide up to 24 hours of call history. The Symphony feature set is highly customizable with the use of value-added feature licenses.

Figure 3 shows a sample of the Symphony console's user interface. The display screen is composed of panels and communications modules that provide dispatchers system status at a glance. The panels appear on every page of the display, and their contents do not change from page to page. Communication modules, on the other hand, are linked to specific pages of the display. Thus, when you switch from page to page, the panels will remain the same and the communication modules will change.

Figure 3. User Display Symphony Dispatch Console



A communication module is the fundamental component for communicating through the console. Each communication module can be individually programmed with a single entity, representing a talk group, a radio unit, a conventional channel, or another console. When an entity is programmed into a module, all audio related to that entity is routed to the console. Modules provide incoming call monitoring and outgoing console-originated call transmissions. On the display screen, rectangular boxes represent the modules. Up to 1,024 communication modules can exist across eight pages of the display.

The Symphony Console comes with several standard features that enable a dispatcher to perform their functions efficiently.

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Figure 4. Symphony Standard Features

FEATURE NAME	FEATURE EXPLANATION
Select and Unselect Modules	Any programmed module can be selected as the select module for direct communications from the dispatcher. Other programmed modules will be the unselect modules.
Emergency	The consoles are equipped to both declare and clear an emergency. When an emergency is declared from a radio unit, there is both an audible and visual indication on the module. The audible indication is in the form of an alert tone. The visual indication involves both changing the color of the module to “red”, as well as the text “EMER” displaying on the module. The console can be set up, so a dispatcher can clear the alarm, to stop the noise and then service the emergency.
Alert Tones	Pulsed, warbled, and alert tones can be transmitted to alert radio units of specific emergency conditions.
Individual Calls (Selective or Unit-to-Unit Calls)	In a trunked radio system, the console is treated like any other unit and has a unit ID. The console can both make and receive I-Calls. The I-Call panel and I-Call Manager panel under the Special Calls menu assist with several features associated with making and receiving I-Calls.
Intercom Call	Allows two-way personal console-to-console communications.
Call History	Displays the last five select and unselect module call history.
Extended Call History	Displays the last hundred select and unselect module calls and other programmed module calls.
Patch	Modules patched together can communicate with one another.
Simulselect	Dispatcher can communicate to the modules simulselected but cannot communicate with one another.
Encrypted Calls	Encrypted calls between the dispatcher and field units are only un-encrypted at the source and destination, ensuring secured communications as the voice packets travel through the radio network.
Cross-mute	Reduces unnecessary receive audio at the local console by preventing transmissions from other consoles from being heard and prevents audio feedback problems when two or more consoles are placed in close proximity and at least one is equipped with speakers.
Call Director Interface	Symphony dispatch console can be connected to an external “Call Director” device for telephone interconnect operations. Using this device, standard telephone lines can be accessed by the dispatcher and either used for standard telephone call operations or patched to radio entities in the radio system.

Features

END-TO-END ENCRYPTION

When using encryption on the new P25 system, the Key Management Facility (KMF) is a virtualized server that provides Symphony with encryption information including encryption keys and bindings between talkgroups and keys. For the consoles in the radio system, the encryption key is stored in the console and all encryption encoding and decoding occurs within the console application.

An encryption button controls the encryption state of each communications module transmit function. The three possible states include:

Figure 5. 1 Encryption Button State Icons



- > Encryption not licensed/unsupported
- > Encryption licensed and transmission is currently unencrypted
- > Encryption licensed and transmission is currently encrypted

When a radio user transmits in encrypted mode, AES encrypted voice packets go out over the radio system and route within the network to specific endpoints (such as a console or logging recorder) for subsequent decryption. This approach provides end-to-end encryption, minimizing the opportunity for the compromise of the secure communication. If a console is loaded with an encryption key, it will decrypt all incoming encrypted audio associated with encrypted talkgroups.

Implementation Plan

L3Harris excels in the multifaceted implementation of mission critical radio communications systems to fulfill the specific needs of our customers and support their vital operations as shown in the successful implementation of more than 150 P25 systems to date.

Upon receiving a purchase order from City of Reno, the L3Harris proposal and implementation teams will review existing NSRS contractual obligations, key milestones, and other important issues.

Upon completion of the project review, the project team’s first installation priority will be to work with City of Reno to coordinate the installation activities.

Figure 6. Consoles Replacement Tasks

TASKS	L3HARRIS	CITY OF RENO	COMMENTS
Provide a layout plan indicating the specific locations where the consoles will be replaced		X	
Provide a schematic that identifies exact ports for the connection of existing routers and switches, which will facilitate the integration with the newly replaced consoles.		X	
Provide Uninterruptible Power Supply (UPS) for each Symphony Console		X	
Provide electrical power (receptacle) and grounding to console position(s)		X	
Install three symphony consoles	X		
Verify that the newly replaced Symphony consoles are properly connected	X		

Figure 7. System Optimization Responsibility Matrix

TASKS	L3HARRIS	CITY OF RENO	COMMENTS
Verify system database is installed and operating correctly	X		
Verify proper Symphony Console operation	X		
Verify proper P25 system functional operation	X		
Verify proper network switching operation	X		

Kick-off Meeting and Preliminary Planning Review

The project manager will initiate the project implementation with a kick-off meeting.

The L3Harris Team will utilize information from the City of Reno to replace the symphony consoles. There is no need for a site survey.

Figure 8. Kick-off Meeting & Planning Review Responsibility Matrix

TASKS	L3HARRIS	CITY OF RENO	COMMENTS
Review Symphony Console upgrade contract requirements	X	X	
Provide a project schedule	X		
Prepare acceptance test plan	X		
Review implementation plan	X		
Approve the implementation plan, project schedule, and acceptance test plan		X	

Equipment Order & Delivery

The project engineer will order all required equipment for delivery to City of Reno. Each piece of equipment (racked or loose) will be crated to ensure safe transportation. L3Harris arranges to ship equipment and materials to a customer-provided storage area near the point of installation where it will be received. At the storage area, the equipment is inventoried, and the material is collected for delivery to the installation sites.

Figure 9. Equipment Order and Delivery Responsibility Matrix

TASKS	L3HARRIS	CITY OF RENO	COMMENTS
Place orders with the factory and key suppliers/vendors	X		
Ship all required equipment to the customer provided location	X		
Provide temporary storage prior to installation		X	
Inventory received equipment and materials	X		
Validate L3Harris inventory		X	
Provide electrical power (receptacle) and grounding to console position(s)		X	
Install console(s) & associated accessories	X		
Configure Consoles	X		

Figure 10. System Optimization Responsibility Matrix

TASKS	L3HARRIS	CITY OF RENO	COMMENTS
Verify proper Symphony Console operation	X		
Verify proper P25 system functional operation	X		

Acceptance Testing

Systems functional acceptance testing will be performed according to the agreed upon acceptance test plan (ATP) and system contract. The project team will notify City of Reno when installation and optimization are complete, and the system is ready for acceptance testing.

The system engineer will provide documentation defining each of the test areas. The ATP procedures contain a short description, test methodology, and a record form for logging results and acceptance signatures for each test. A punch list will document any issues found. The goal of the team will be their quick resolution. Upon satisfactory completion of each testing phase, the project manager will present the system acceptance documentation to City of Reno¹.

Figure 11. Acceptance Testing Responsibility Matrix

TASKS	L3HARRIS	CITY OF RENO	COMMENTS
Execute functional acceptance test procedure	X	X	
Resolve any functional acceptance test issues	X		
Witness functional acceptance test results		X	
Collect & archive system configurations	X		
Provide updated acceptance test documentation	X		
Notify City of Reno that all work is complete, terms satisfied, and issues resolved	X		
Sign letter of system acceptance		X	

Final Acceptance

Upon the completion of equipment cutover, ATP, and submission of the final drawing package, the project manager submits the final system acceptance letter for City of Reno to sign.

¹ Testing for three newly replaced Symphony consoles will utilize the Nevada Shared Radio System (NSRS) Console Acceptance Test Plan (ATP).

Figure 12. Final Acceptance Responsibility Matrix

TASKS	L3HARRIS	CITY OF RENO	COMMENTS
Removal of decommissioned legacy console equipment (if required)		X	
Submit letter of final system acceptance	X		
Provide warranty and contact information	X		
Meet with L3Harris to review warranty contact procedures, system support, and services requirements	X	X	
Sign letter of final system acceptance		X	

Project Schedule

A detailed project schedule will be prepared during the planning phase and presented as part of the Project Kickoff. L3Harris is committed to working with City of Reno throughout the project to identify potential schedule efficiencies in order to reduce the overall project duration.

The proposed schedule includes the following sequence of events:

1. Contract and award to L3Harris by City of Reno
2. Internal handoff from proposal to implementation team
3. L3Harris orders the Console and equipment per the contract to be shipped to the customer location.
4. During the installation, the L3Harris site technician will host a 15-minute plan-of-the-day briefing with the representatives of City of Reno including an access issue, safety issues, etc.
5. L3Harris installs and configures the console equipment.
6. Console testing is conducting per the final acceptance test plan.
7. Program Close out and transfer to aftermarket services
8. One Year Warranty starts at completion of the final acceptance.

Project Schedule

Figure 13. Project Schedule



WARRANTY



CITY OF RENO, NEVADA | SYMPHONY CONSOLES ADD-ON | NOVEMBER 25, 2024



WARRANTY

L3Harris offers an extended two-year warranty, for a total of three-years, to the City of Reno, NV (the City) on all supported infrastructure equipment, extended as appropriate per the NSRS contract. L3Harris is providing Warranty services described as follows:

EQUIPMENT

L3Harris warrants that hardware and installation services furnished by L3Harris will be free from defect in material and workmanship. During the warranty period, if any component of the hardware or portion of the installation services fails, L3Harris will examine the failure and remedy by:

1. Repairing any defective component of the hardware
2. Furnishing any necessary repaired or replacement parts
3. Correcting the faulty installation at no additional cost to the City.

L3Harris will perform, at its discretion, all warranty labor at an L3Harris location. Where L3Harris has determined it is not feasible to ship fixed equipment for repair, we will repair on premise. Standard warranty response times are standard business days, 8:00 a.m. to 5:00 p.m. Eastern. For additional levels of support, premium services are available.

SOFTWARE

During the Warranty, if the L3Harris licensed software does not successfully operate, L3Harris will correct the error or defect free of charge or make available a substitute program.

Warranty provides corrections to software defects and known errors reported to L3Harris' Technical Assistance Center (TAC) during the warranty period at no additional cost to the Customer. The warranty does not include installation of corrections to software defects reported to TAC during the warranty period.

THIRD-PARTY WARRANTIES

Third-party warranties cover third-party original equipment manufacturer (OEM) equipment and services as described in the NSRS contract. Throughout the entire warranty and contracted maintenance periods, L3Harris will act on behalf of the City to coordinate and settle warranty issues with third-party equipment and software companies. As part of the final acceptance, any remainder of warranty from a third-party vendor transfers to the City. If any third-party manufacturer warranty period is greater than one-year, we will recognize that OEM warranty for the specified equipment.

WARRANTY RETURNS PROCESS

The following procedure describes the returns process for equipment under warranty:

1. L3Harris creates a support case number, verifies product part numbers, serial numbers, and reasons for return, and then forwards the approved request for processing.

2. L3Harris reviews the request and provides a return merchandise authorization number (RMA) to the City, along with instructions for return of the equipment.
3. The City ships the equipment back to L3Harris Depot Repair and Return.
4. L3Harris repairs or replaces any equipment free of charge unless there is evidence of abuse or damage beyond the terms of the service.
5. L3Harris ships the repaired or replacement unit back to the City.
6. L3Harris closes the RMA and updates the tracking database.

Requests for repairs out of warranty will require a purchase order unless a service agreement exists. Any repairs out of warranty are subject to a flat-rate, per-unit fee, regardless of fault found with the equipment. If the item for repair does not have a flat-rate fee listed, a time and material charge applies. The turn-around time for equipment repair or replacement is typically ten business days.

STANDARD REPAIR

The Standard Repair service covers the cost to fix covered equipment at L3Harris or other third-party manufacturer's factories. This service is part of our standard warranty and is a premium service during the maintenance periods. The L3Harris Depot Repair and Return facility is ISO 9001:2015, UL, NFPA, and Factory Mutual certified. Certified technicians using state-of-the-art test equipment verify that all repairs meet or exceed prescribed specifications.

DEMAND SERVICES

Demand Services are available when an unexpected event or situation occurs outside the scope of work and requires repairs from L3Harris, its agents, or partners. For Demand Services, the City will receive an invoice on a time and materials basis. Examples may include the following:

- > Installation, updating, upgrading, maintaining, or removing software, hardware, or non-L3Harris infrastructure after initial installation
- > Repair of equipment damaged by vandalism, abuse, neglect, or noncompliance to L3Harris recommended practices, to the extent that neither L3Harris nor any of its agents caused such equipment damage
- > Damages due to acts of God or other uncontrollable events
- > Any other repair or service not outlined in the Scope of Work

PRICING



CITY OF RENO, NEVADA | SYMPHONY CONSOLES ADD-ON | NOVEMBER 25, 2024



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PRICING

L3Harris is pleased to provide the City of Reno with the following firm-fixed price proposal. Pricing is valid for 60 days from submittal date of November 25, 2024. Upon expiration of the pricing validity, L3Harris reserves the right to provide an updated pricing proposal.

DESCRIPTION	QUANTITY	UNIT LIST PRICE	DISCOUNT	UNIT SELL PRICE	TOTAL
DISPATCH CONSOLES					\$146,742.00
Symphony Dispatch Console	3	\$60,550.00	26%	\$44,807.00	\$134,421.00
Symphony Dispatch Console 3 Year Extended Warranty	3	\$5,550.00	26%	\$4,107.00	\$12,321.00
SERVICES					\$13,590.00
Installation	3	\$2,000.00	0%	\$2,000.00	\$6,000.00
Sr. Program Manager (\$300/hr. @ 8hr)	1	\$2,400.00	0%	\$2,400.00	\$2,400.00
Sr. System Engineer (\$300/hr. @ 8hr)	1	\$2,400.00	0%	\$2,400.00	\$2,400.00
System Engineer (\$198.75/hr. @ 8hr)	1	\$1,590.00	0%	\$1,590.00	\$1,590.00
Drafting Technician	1	\$1,200.00	0%	\$1,200.00	\$1,200.00
SUBTOTAL					\$160,332.00
TOTAL PRICE					\$160,332.00

Sales Taxes (if applicable) are not included

CONTRACTUAL DOCUMENTATION



CITY OF RENO, NEVADA | SYMPHONY CONSOLES ADD-ON | NOVEMBER 25, 2024



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CONTRACTUAL DOCUMENTATION

This proposal is made pursuant to the terms and conditions of that certain System Purchase Agreement between Washoe County and Harris Corporation, dated September 27, 2018 as amended (the “SPA”). L3Harris’ proposal is priced in accordance with the SPA, and any changes resulting from contract negotiations may require an updated pricing proposal. Acceptance of this proposal in any form is acceptance of the terms and conditions of the SPA.

ATTACHMENTS



ATTACHMENTS INCLUDES:

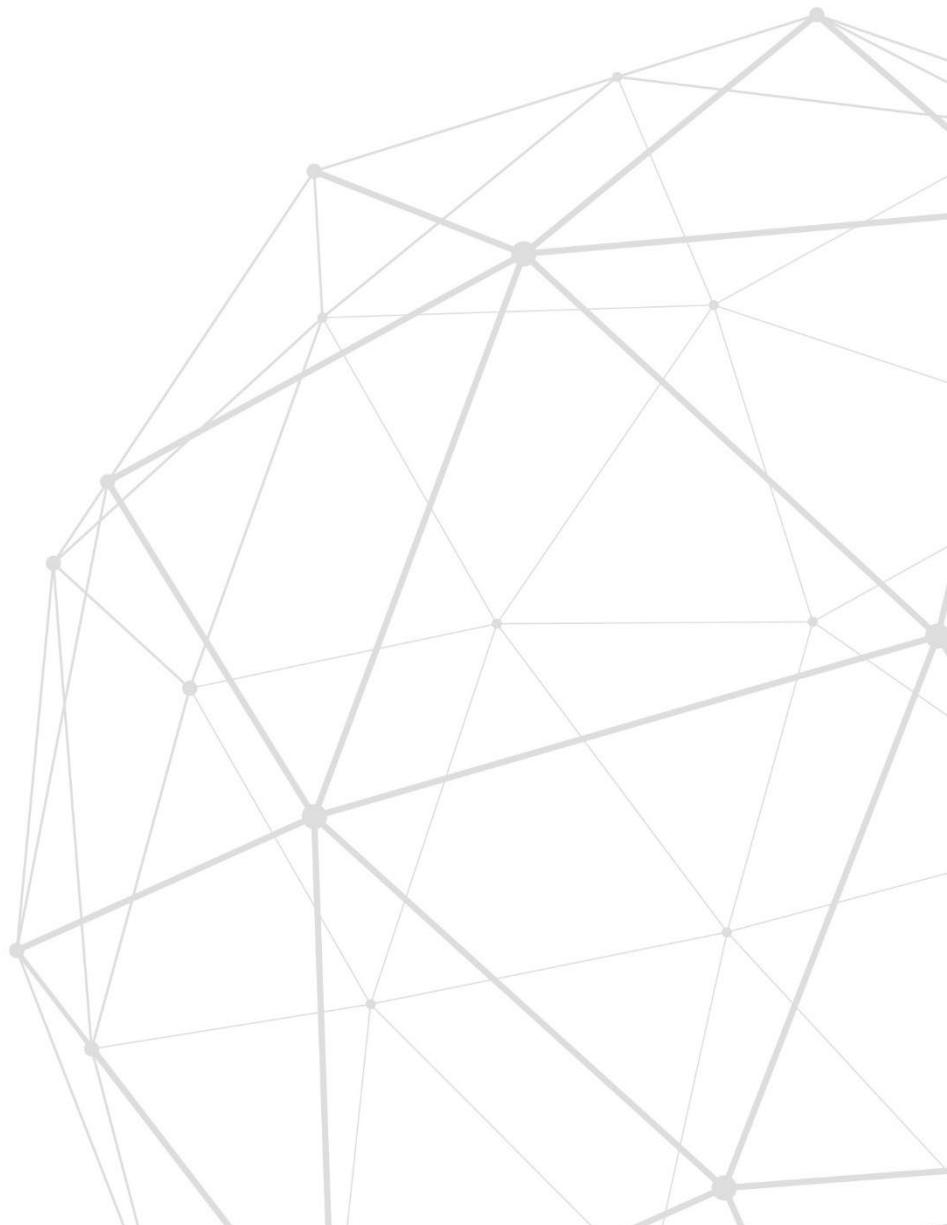
- > Functional Acceptance Test Plan

CITY OF RENO, NEVADA | SYMPHONY CONSOLES ADD-ON | NOVEMBER 25, 2024



ACCEPTANCE TEST PROCEDURES

Console ATP



SYMPHONY CONSOLE FEATURE SET

TRANSMITTING WITH A MICROPHONE

Purpose: Demonstrate Symphony operator can initiate communication with a radio using Symphony select functions and foot pedal.

Expected Results: Confirms Symphony communication with radio

Setup: Radio set to same TG as console

Execution:

1. Press INSTANT TX function (right mouse button) on module with test group.
 - > Verify call is heard on radio.
 - > Verify a ripple effect on 'TX' indicator is displayed.
 - > Verify a channel access tone is heard.
 - > Release the Instant TX key.
2. Click the 'Select' button on the module to make the TG the selected talkgroup.
 - > Verify module for TG is highlighted, indicating it is selected talkgroup.
3. Make a call on TG by pressing PTT foot pedal.
 - > Verify a channel access tone is heard.
 - > Verify halo around the 'TX' indicator is displayed.
 - > Verify call is heard on radio.
 - > Verify audio is heard at radio on talkgroup.
 - > Release foot pedal to end call.
4. Make a call on TG by pressing headset button.
 - > Verify a channel access tone is heard.
 - > Verify halo around 'TX' indicator is displayed.
 - > Verify call is heard on radio.
 - > Verify audio is heard at radio on talkgroup.
 - > Release headset button to end call.
5. Make a call on TG by selecting it with a mouse.
 - > Verify a channel access tone is heard.
 - > Verify halo around 'TX' indicator is displayed.
 - > Verify call is heard on radio.
 - > Verify audio is heard at radio on talkgroup.
 - > Release mouse button to end call.

TEST RESULTS	
Tester:	
Date:	
Result:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

RECEIVING CALLS (UNIT ID DISPLAY, TALKGROUP ID DISPLAY, ALIASING)

Purpose: Confirm Symphony operator can receive communications from a radio, using both TG A and individual calling.

Expected Results: Communications are initiated and received on appropriate speaker (select or unselect) and radio's ID is displayed.

Setup: Symphony has talkgroups A, B, and C configured with TG B selected.

Talkgroup Call

Execution:

1. Key radio and verify
 - > That call is heard at unselect speaker.
 - > Calling radio ID is displayed on module for TG.
 - > A green light ID displayed indicating an incoming call on module TG A.
2. Switch radios talkgroup to TG B and key radio.
 - > Verify call is heard at select speaker.
 - > Verify calling radio ID is displayed on TG B module.
 - > Verify a green light ID displayed indicating an incoming call on module for TG B.

TEST RESULTS	
Tester:	
Date:	
Result:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

EMERGENCY CALL AND EMERGENCY ALARM

Purpose: Confirms Symphony indicates an emergency declared by a radio and can reset and clear emergency.

Expected Results: Symphony indicates and can clear emergency.

Setup: Test requires a test radio capable of generating and clearing an emergency (i.e. supervisor radio).

DESCRIPTION	TG DESCRIPTION
Radio A	TG A

Execution:

1. Using test radio, declare an emergency on TG A.
 - > Verify TG A module turns red,
 - > Verify ID/name of test radio is displayed
 - > Verify emergency alert tone is heard on Symphony.
2. Select triangle with a '!' to access emergency menu.
 - > Verify acknowledge 'Ack' button is red and check box is red.
3. Using radio, transmit on talkgroup
 - > Verify call is received by Symphony.
4. With Symphony, transmit on group with emergency.
 - > Verify test radio receives call and is still in emergency mode.
5. Acknowledge emergency by selecting 'Ack' button
 - > Verify button changes from 'Ack' to clear.
 - > Verify radio and Symphony are still in emergency mode.
6. Clear the emergency by selecting 'Clear X' button
 - > Verify Symphony clears emergency.
 - > Verify radio clears emergency.
7. Transmit on radio.
 - > Verify emergency is cleared and normal group calls have resumed.
8. Select TG A group selected on Symphony, declare an emergency on test group by pressing 'Emer Declare'.
 - > Verify Symphony and radio have same indications as Steps 2 to 4.
9. Acknowledge by hitting 'Ack' in Step 5.
10. Clear emergency with Symphony.

TEST RESULTS			
Tester:			
Date:			
Result:	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	

*SYSTEM WIDE CALL

Purpose: Confirm Symphony can initiate system wide calls.

Expected Results: Symphony can initiate system wide all call.

Setup: Program console modules with 'TG64000 P25' talkgroup

DESCRIPTION	TG DESCRIPTION
Radio A	TDMA Group A
Radio B	TDMA Group B
Radio C	FDMA Group A
Radio D	FDMA Group B

Execution:

1. Press INSTANT TX on 'TG64000' module.
 - > Verify channel access tone is heard,
 - > Verify ripple effect on 'TX' indicator is displayed
 - > Verify call is heard at all radios
 - > Release Instant TX key.
2. Press INSTANT TX on TDMA Group A module.
 - > Verify channel access tone is heard,
 - > Verify ripple effect is displayed
 - > Verify call is heard at Radio A.
 - > Verify Radios B, C, and D do not hear audio.
 - > Release Instant TX key.

TEST RESULTS	
Tester:	
Date:	
Result:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

ALERT TONES

Purpose: Confirm Symphony can initiate alert tones which can be heard at radio.

Expected Results: Tones can be initiated and heard.

Setup: Symphony programmed with TG A.

DESCRIPTION	TG DESCRIPTION
Radio A	TG A

Execution:

1. Make TG A P25 selected talkgroup.
2. Select tones tab on talkgroup module.
3. Select one of three ALERT TONE keys by selecting drop-down list next to orange button.
4. Radio A will receive tone.
5. Test all three alert tones to ensure all alert tones can be heard on radio.
 - > Verify ALERT TONE is received by Radio A and is also heard on Symphony.
6. When ALERT TONE key is released.
 - > Verify tone on Radio A drops.

TEST RESULTS	
Tester:	
Date:	
Result:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

CONSOLE PRE-EMPT

Purpose: Confirm Symphony can pre-empt an ongoing call between radios.

Expected Results: Call started by the radio will be interrupted by the console.

Setup: Symphony programmed with TG: TG64001 P25

DESCRIPTION	TG DESCRIPTION
Radio A	TG A
Radio B	TG A

Execution:

1. Key Radio A on TG A and hold call up. Verify that audio is heard at Radio B and Symphony.
2. Key Symphony on TG A and hold, while continuing to hold call up on Radio A
 - > Verify console pre-empts.
 - > Verify transmit indicator is displayed along with pre-empted caller LID and CALL indicator.
 - > Verify second radio begins to hear Symphony audio and not first radio call.
 - > Verify pre-empted radio audio is still heard on pre-empting console.
3. Un-key first radio.
 - > Verify pre-empted caller LID and CALL indicators are removed, and pre-empted radio audio is no longer heard on pre-empting Symphony.
4. Un-key Symphony.

TEST RESULTS	
Tester:	
Date:	
Result:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

SIMULSELECT

Purpose: Confirms operation of Symphony simulselect feature, which allows multiple talkgroups to be selected for communication simultaneously.

Expected Results: Symphony can select multiple talkgroups and communication is allowed.

Setup: Symphony programmed with TGs A, B, C, and D.

DESCRIPTION	TG DESCRIPTION
Radio A	TG A
Radio B	TG B
Radio C	TG C
Radio D	TG D

Execution:

1. Create simulselect group on 4 test group modules.
2. Place a call from Symphony on simulselect group.
 - > Verify call is heard at all four radios.
3. Place a call from each radio.
 - > Verify only Symphony hears calls.
 - > Verify only radios on the same talkgroup hear each other.
4. Deactivate simulselect group.

TEST RESULTS	
Tester:	
Date:	
Result:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

PATCH

Purpose: Confirms Symphony patch feature creates shared communication between multiple selected talkgroups.

Expected Results: Patched talkgroups can communicate.

DESCRIPTION	TG DESCRIPTION
Radio A	TG A
Radio B	TG B
Radio C	TG C
Radio D	TG D

Execution:

1. Create patch on PATCH 1 with all four groups above.
2. Place a call from newly created patch.
 - > Verify call is heard on all radios.
3. Place a call from each radio.
 - > Verify call is heard on Symphony and each radio.
4. Deactivate patch.

TEST RESULTS	
Tester:	
Date:	
Result:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

CALL HISTORY

Purpose: Confirms a history of calls processed at the Symphony.

Expected Results: History is accessible and valid.

Setup: Test compares programmed module call activity to history scroll lists. Utility page, dispatch menu will be selected. Select either "Select History" or "Unselect History".

Execution:

1. Press 'scroll up' and 'scroll down' buttons to scroll through Unselect Call History list.
 - > Compare these calls with known activity.
2. Press 'scroll up' and 'scroll down' buttons to scroll through Selected Call History list.
 - > Compare these calls with known activity.
3. Press 'Esc' button to exit history scroll mode.
4. To monitor call history on a single group, use 'module history' button on 'module modify' menu.
5. Use 'scroll up' and 'scroll down' buttons to scroll through calls for picked module.
 - > Compare these calls with known activity.

TEST RESULTS	
Tester:	
Date:	
Result:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

GROUP EMERGENCY AND UNIT ALERT WITH SYMPHONY

Purpose: Confirm Symphony receives a group emergency, and an emergency unit alert declared by a radio. Confirm console can acknowledge and clear emergency alarm (unit alert) and acknowledge and clear group emergency.

Expected Results: Symphony Console can indicate emergency alarm (unit alert) and group emergency. Symphony can also clear unit alert & cancel group emergency.

Setup: Radios A & B have “Emergency Alarm” enabled in personalities.

DESCRIPTION	TG DESCRIPTION	TG ID
Radio A	TDMA TG A	64152
Radio B	TDMA TG B	64152


Execution:

1. Select TDMA TG A on the console. On Radio A, declare an emergency on TG B. PTT Radio A to talk to the dispatcher.
 - > Verify Radio B on site 2 receives emergency and hears emergency group call.
2. On Symphony’s TG B Module:
 - > Verify TG B Module has a striped, red background.
 - > Verify TG Smart Button flashes an “emergency icon”, which alternates with TG icon.
 - > Verify Declarer ID is shown in Red on TG Module.
 - > Verify emergency alarm tone and radio emergency group call audio is heard on Symphony.
3. On Symphony’s Sidebar Panel, go to the Emergency Panel:
 - > Verify emergency listed shows TG B, in a mini module, with a red background.
 - > Verify declarer ID is listed, with an “ACK” button and a number ‘1’, for number of group emergencies declared, [listed below TG Mini Module].
 - > Verify below declarer ID, single unit icon and declarer ID is listed, with an “ACK” button.
4. To clear group emergency alarm tone on Symphony emergency sidebar panel, select top “ACK” button next to declarer ID.
 - > Verify group emergency alarm tone is silenced on the console.
 - > Verify group emergency is still displayed on talkgroup module and emergency sidebar panel.
 - > Verify unit alert “ACK” is still displayed below group emergency.
5. On Symphony, select and transmit on TG B.
 - > Verify Radio A and B both receive emergency call.
6. Clear group emergency on Radio A.
 - > Verify console TG module no longer indicates a group emergency.
 - > Verify the group emergency is no longer seen on Radio A and Radio B.
7. PTT on Radio A, to do a group call:
 - > Verify an emergency group call goes to the Symphony on TG B module, and to Radio B.
 - > Verify emergency is also seen in emergency sidebar panel.
 - > (This occurs, since emergency unit alert is still active on TG B.)

8. On Symphony emergency sidebar panel, clear unit alert tone by selecting second “ACK” button next to unit icon and declarer ID. Also, clear group emergency alarm tone on TG B, by selecting first “ACK” button next to declarer ID.
 - > Verify all emergency tones have been silenced.
9. On emergency sidebar panel, clear group emergency by selecting first “Clear” button next to declarer ID. Also, clear unit alert by selecting second “Clear” button next to Unit Icon and declarer ID.
 - > Verify emergency on TG B has been cleared from Symphony, Radio A, and Radio B.
10. PTT on Radio A on TG B, to do a group call.
 - > Verify a group call without an emergency is seen and heard at Symphony and Radio B.

TEST RESULTS	
Tester:	
Date:	
Result:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

Symphony Console Test Notes / Issues

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Symphony Console Test Acceptance

This Functional Test Acceptance Procedure has been fully and successfully completed with all action items resolved.

Customer Representative

L3Harris Technologies Representative

Signature

Signature

Printed Name and Title

Printed Name and Title

Date

Date