



**MOTOTRBO™**  
**CAPACITY MAX**

# MOTOTRBO CAPACITY MAX



- Next generation trunking solution
- Increased capacity and scalability
- Enhanced performance and feature-set
- Improved management and monitoring
- DMR Tier III Mode of Operation







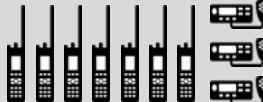
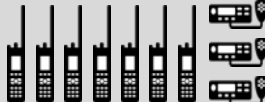


**CAPACITY, COVERAGE AND CONTROL**

# MOTOTRBO SYSTEMS PORTFOLIO



SHIPPING MAY

IP SITE CONNECT	CAPACITY PLUS (Single/Multi-Site)	CAPACITY MAX	CONNECT PLUS
CONVENTIONAL		TRUNKING	
			
			
1 – 15 SITES	1 – 15 SITES	1 – 15 SITES	1 – 250 SITES
UP TO 200 USERS*	UP TO 1600 USERS/SITE*	UP TO 3000 USERS/SITE*	UP TO 3000 USERS/SITE*
BASELINE COVERAGE	COST EFFECTIVE CAPACITY	COVERAGE, CAPACITY AND CONTROL	EXCEPTIONAL COVERAGE

# SUPPORTING STANDARDS



- Motorola Solutions is a strong supporter of industry standards
- We actively participate in all 3 major LMR standards: DMR, TETRA and APCO P25
- Founding member of DMR Association
- MOTOTRBO was first DMR solution compliant with Tier II mode of operation
- MOTOTRBO Capacity Max is compliant with DMR Tier III mode of operation



# SYSTEM TOPOLOGY

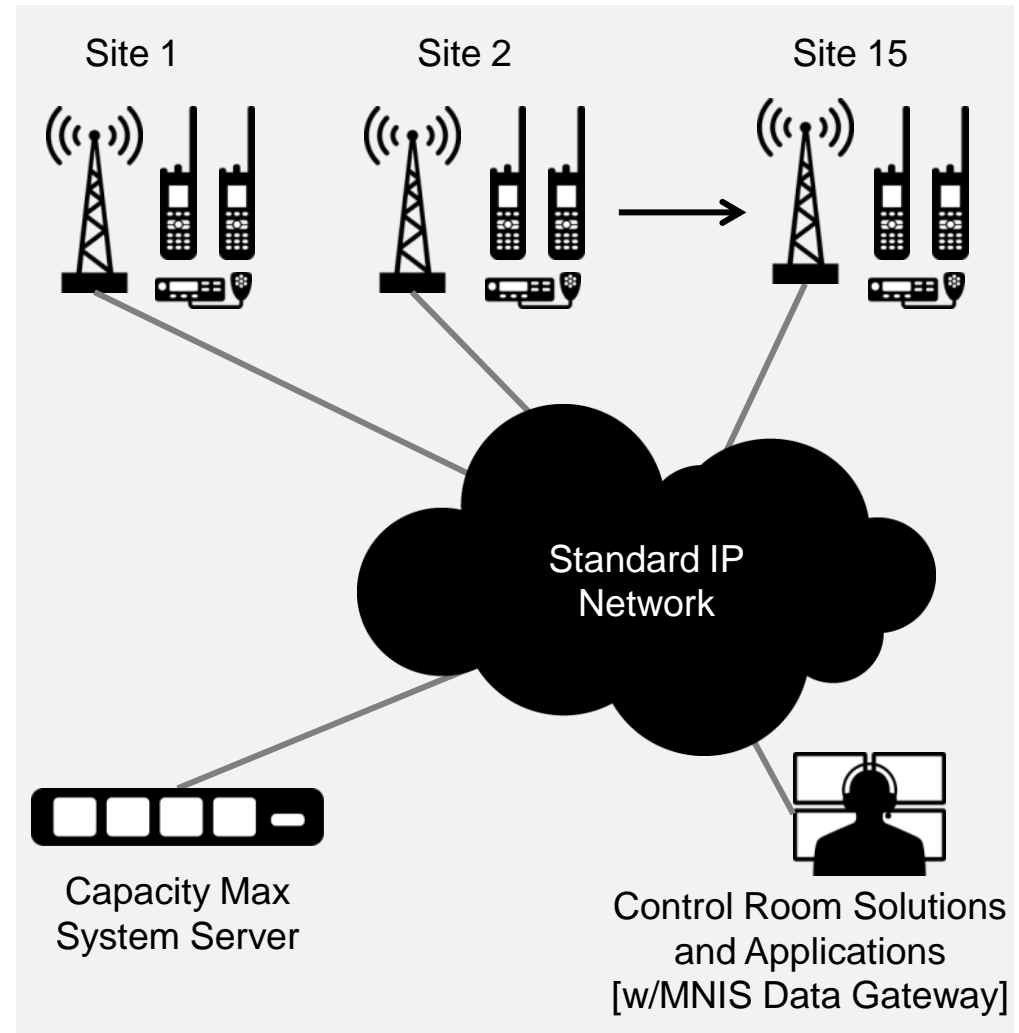


Efficient operation

Flexible deployment

Scalable architecture

- Single system-level server for control and management
- Up to 15 voice and data repeaters/site
- Up to 6 additional data revert repeaters/site
- Centralised gateways for Control Room Solutions and Applications

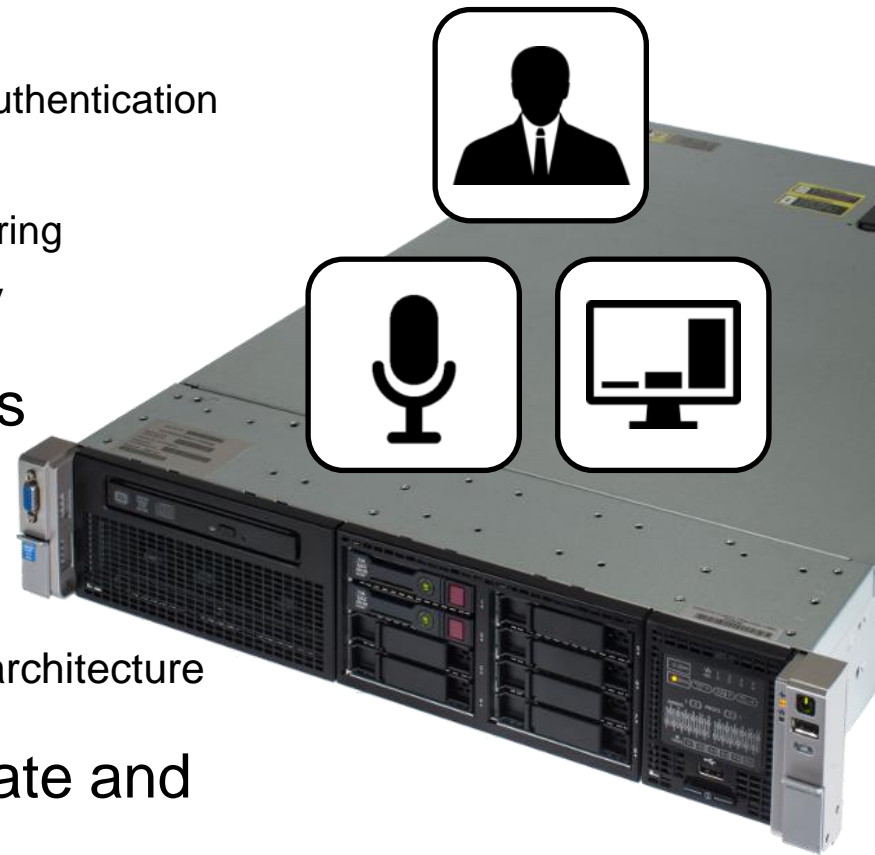


\*Standardised low traffic call model

# CAPACITY MAX SYSTEM SERVER



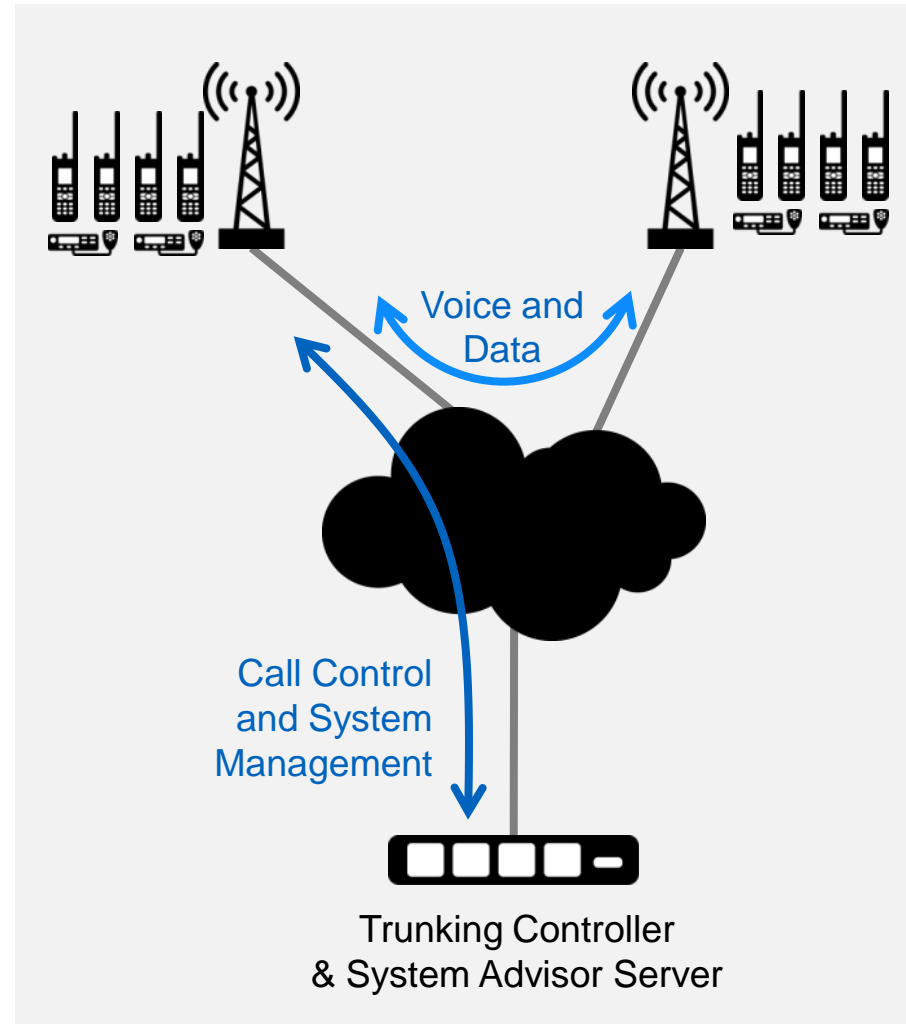
- Contains the system-level functions:
  - Trunking Controller:
    - Resource Mgt, Call Control, Registration, Authentication
  - System Advisor Server
    - System Fault Management and Call Monitoring
  - MNIS Voice/Radio Command (VRC) Gateway
- Supports up to 100 voice talkpaths
  - Expansion servers may be provisioned
- Provides high availability platform
  - Includes dual power supplies and RAID disk architecture
- Includes embedded software update and backup/restore application



# EFFICIENT, LOGICAL ARCHITECTURE



- Centralised control, distributed traffic
  - Reduces bandwidth requirement at the controller site
  - Reduces traffic latency
  - No requirement for individual site controllers
- Easy to deploy, optimise and expand
- Standard IP network
  - No requirement for multicast
  - No requirement for specialized interconnection



# MULTI-LEVEL RESILIENCY



## SERVER RESILIENCY

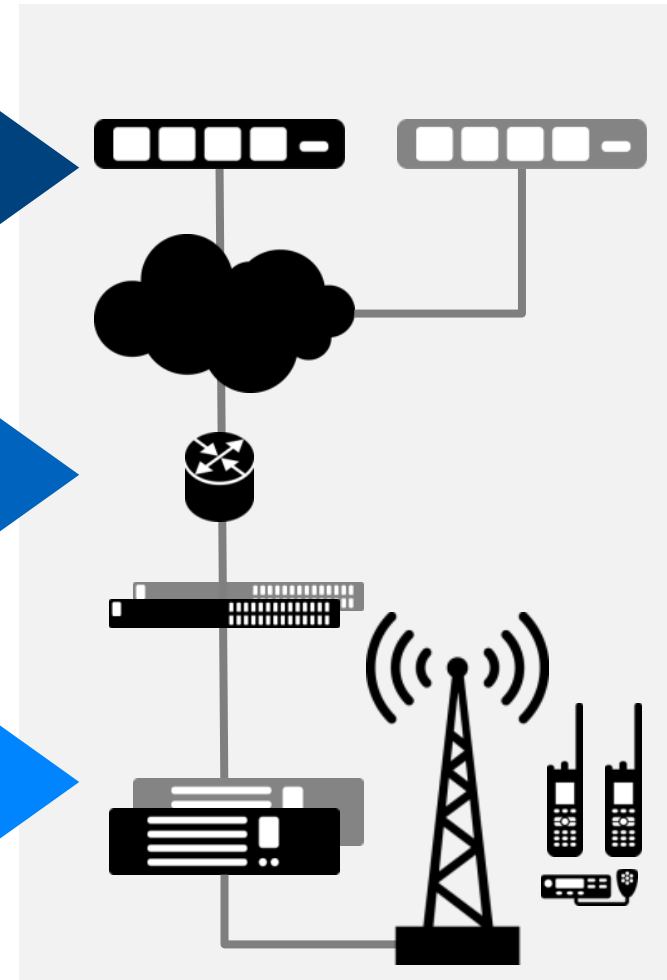
- Optional redundant server, geographically-separated if required
- If no controller is available, sites will function autonomously

## IP SITE NETWORK RESILIENCY

- Optional second switch per site

## SITE REPEATER ROLLOVER

- Control channel will rollover on failure (up to 4 channels)
- Redundant control channel repeater can be provisioned at each site



**NO SINGLE POINT OF TRUNKING FAILURE**



# HIGHLY SECURE



- All subscribers are securely authenticated
  - Physical serial number, ID and key
  - Can configure individual access controls and restrictions
  - Remote disable / re-enable, with location tracking while disabled
- All voice and data traffic within the Capacity Max system is encrypted
  - Radio to Radio
  - Radio to Console (voice)
  - Radio to Telephony Server
  - Radio to Data Gateway (data)
- Architecture includes VPNs and support for firewalls



# HIGH PERFORMANCE



## Capacity Max is optimised for the real world

- Responsive system access
- Robust operation under load
- Efficient mobility across sites
- Urgent calls/audio get through fast



Fast System  
Access Time

Improved Late  
Entry

Enhanced  
Registration

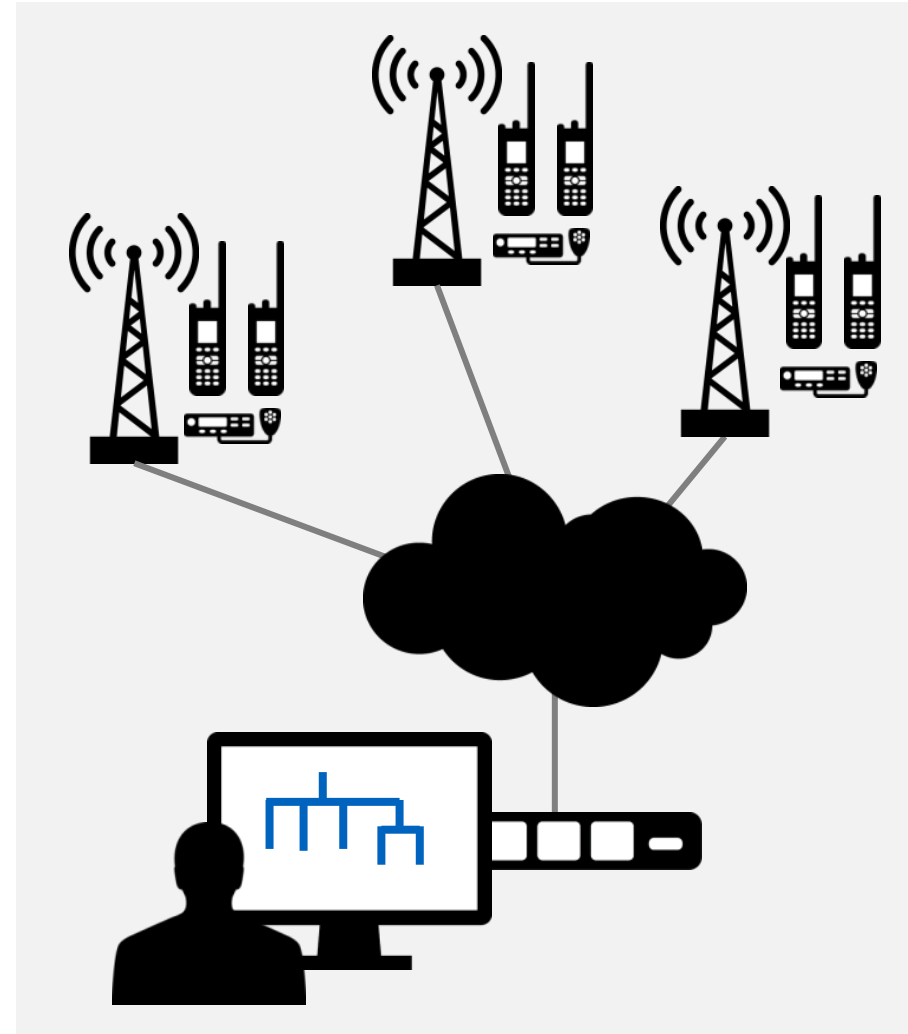
Voice Interrupt  
and Pre-emption

Optimised  
Roaming

# MANAGEMENT AND MONITORING



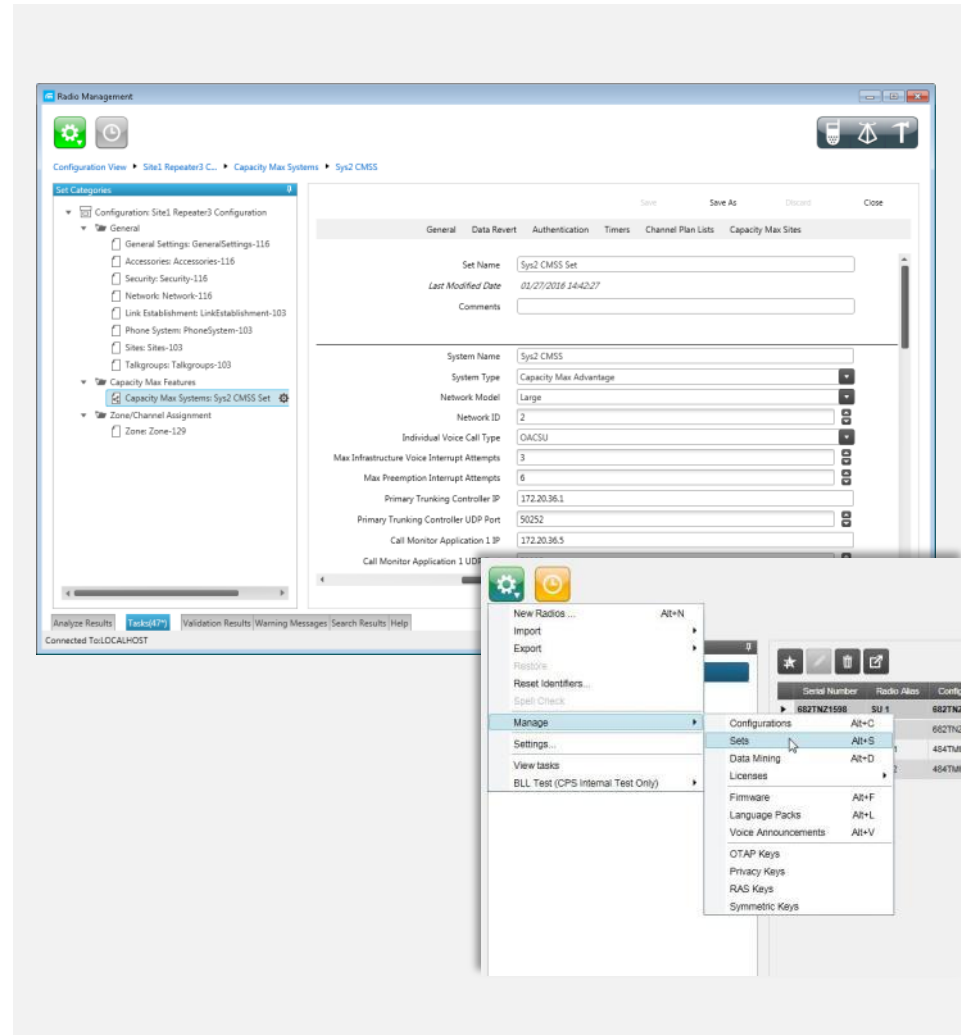
- Centralised Configuration Management
  - **Radio Management 2.0**
  - Logical structure of system, infrastructure, and devices
  - Generates repeater and radio codeplugs
- Centralised Fault / Performance Management
  - **System Advisor**
  - Alarm and event management
  - Real-time call monitoring
- Detailed Performance Management
  - **SmartPTT PLUS**
  - **TRBOnet PLUS**
- Battery Management
  - **IMPRES Over-the-Air Battery Management**
- Infrastructure Management
  - **Repeater Webpage Interface**
  - Provides direct view of repeater status information



# RADIO MANAGEMENT 2.0



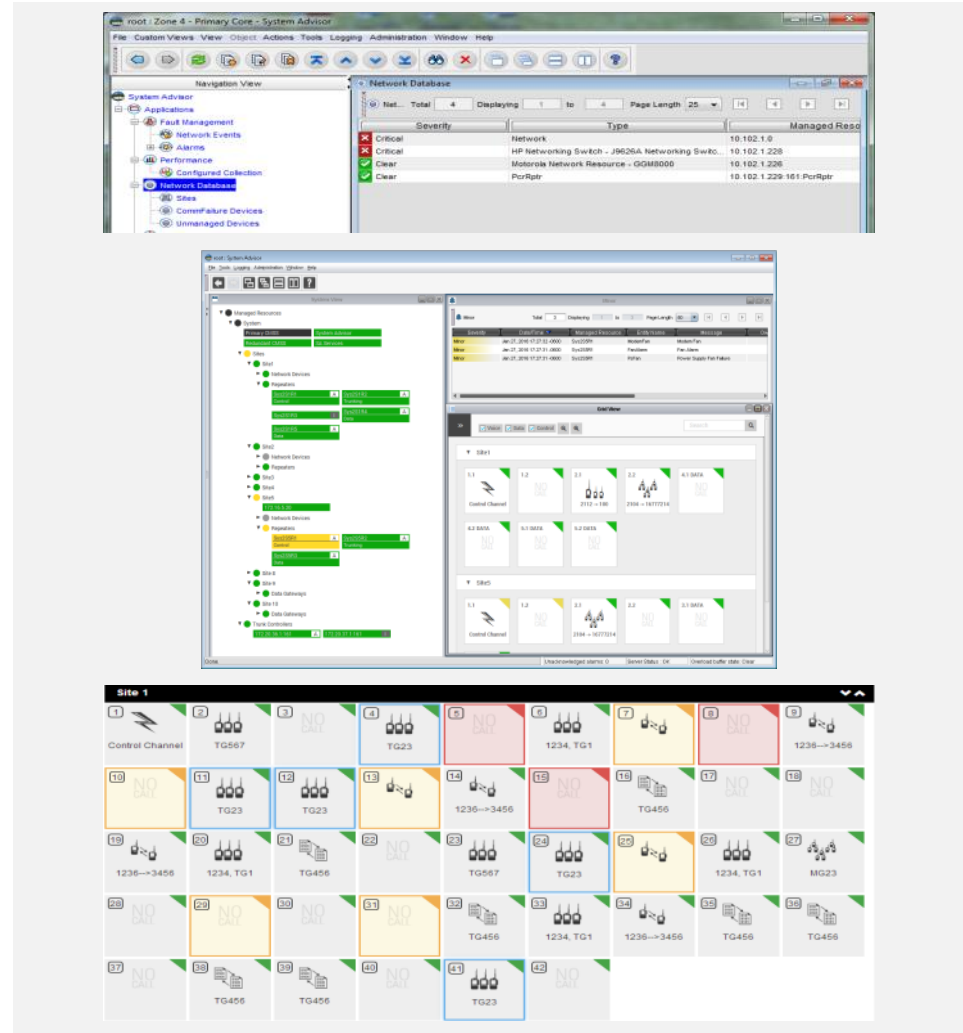
- Professional system configuration management
  - Radio and infrastructure programming, with all information stored in database on a central server for faster, repeatable, low error programming
  - WiFi and/or over-the-air programming for radio no-touch updates and IP-network based programming for repeaters and the CMSS
- Delivers improved capability
  - Configuration of radios, repeaters, gateways, and controllers
  - License management for all features, including those on the CMSS
  - Can partially auto-generate radio and repeater codeplugs



# SYSTEM ADVISOR



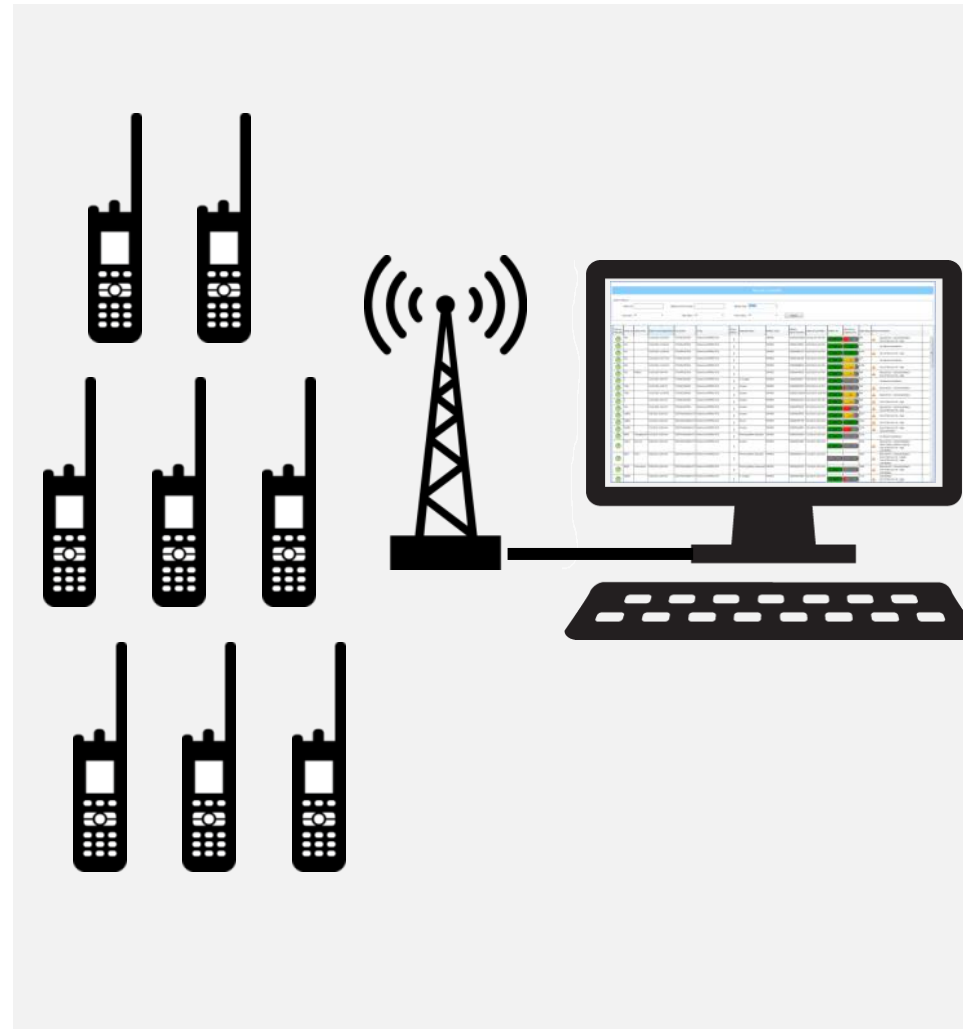
- Comprehensive fault management
  - Optimized for use with radio systems providing intuitive views of system health
  - Provides details status of all devices in the Capacity Max infrastructure
  - Provides multiple views and filters of faults to quickly identify and isolate problems
- Integrated call activity monitor
  - Critical real-time visual monitor of channel utilization
  - Reduces effort required for troubleshooting of performance issues



# IMPRES BATTERY MANAGEMENT



- Collects battery data automatically, even while radios are in use
- Generates long-term records:
  - Battery performance
  - Charge history
  - Reconditioning history
- Allows early prediction of battery end-of-life
- Enhances battery traceability and user accountability



# SUPPORTED PRODUCTS



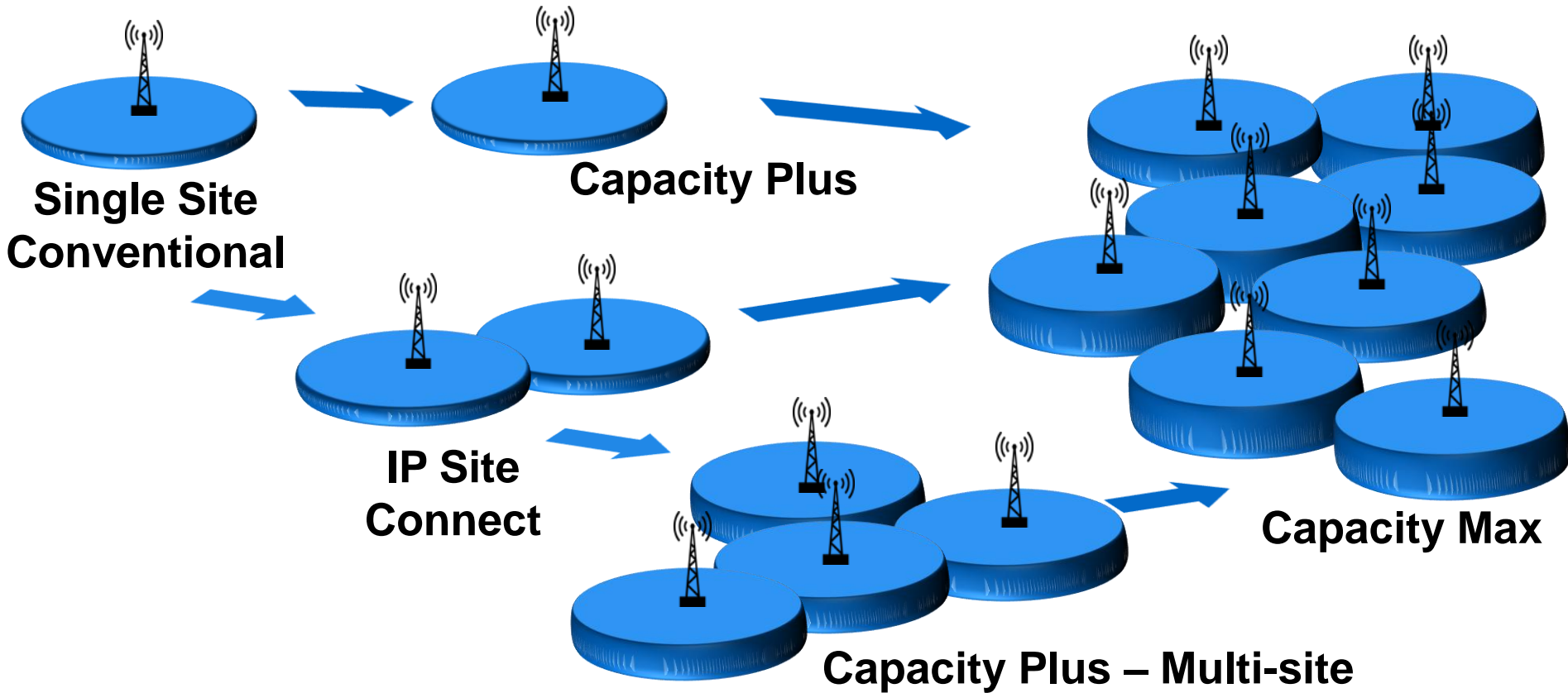
EXISTING MOTOTRBO™ PRODUCTS SOFTWARE UPGRADABLE TO CAPACITY MAX



# SMOOTH MIGRATION



- MOTOTRBO systems are simple and scalable
- Migration to Capacity Max is straightforward
- Your investment is safe





# SYSTEMS COMPARISON - SUMMARY



		IP SITE CONNECT	CAPACITY PLUS (SINGLE/MULTI SITE)	CAPACITY MAX	CONNECT PLUS
Scale	Max Users/Site	200	1600	3000	3000
	Sites	1-15	1-15	1-15	1-250
	Channels/Site (Traffic + Data Revert)	2 + 0	16 + 24 (Max 20)	29 + 12	29
Architecture	System Type	Conventional	Trunking	Trunking	Trunking
	Controller	-	No	Centralised	Per Site
	Controller Redundancy	-	-	Yes	Yes
	Control Channel	No	Rest Channel	Dedicated Channel	Dedicated Channel
Security	Subscriber Access Control	No	No	Yes	Yes
	Subscriber Authentication	RAS	RAS	Yes	Yes
Features	Transmit Interrupt	Yes	Yes	Yes	No
	Remote Monitor	Yes	Yes	Yes	Yes
	Queuing (Levels)	No	No	Yes (10)	Yes (8)
	Radio Enable/Disable (Stun/Revive)	Yes	Yes	Yes	Yes

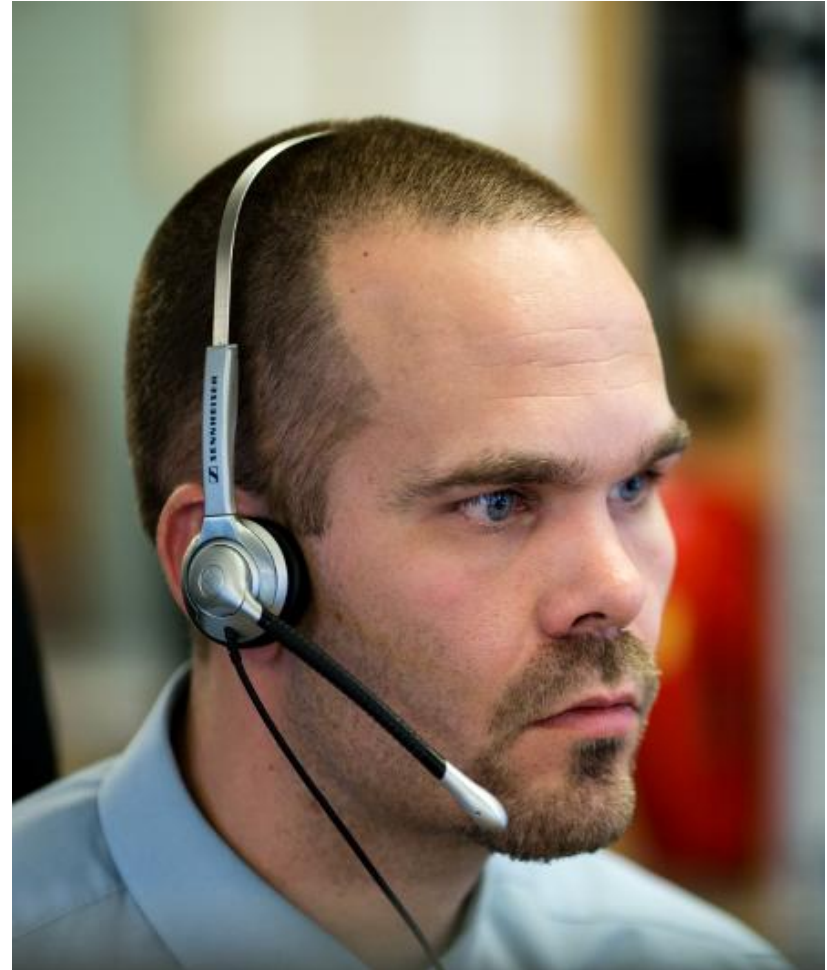


# DISPATCH CONSOLES & TELEPHONY



Capacity Max will support all MOTOTRBO dispatch consoles:

- **SmartPTT PLUS**
  - Advanced wireline solution from Elcomplus LLC
  - Sold and supported by Motorola Solutions
- **TRBOnet PLUS**
  - Advanced wireline solution from Neocom Ltd
  - Sold and supported by Motorola Solutions
- **Telephony using Smart SIP technology**
  - Capacity Max supports centralised SIP telephony via SmartPTT PLUS & TRBOnet PLUS



# APPLICATIONS



- Capacity Max will support the broad range of applications of the MOTOTRBO ADP program
  - Specific details will be communicated in the Applications Catalogue (updated quarterly)
- The WAVE workforce connectivity solution will be supported in an upcoming future release

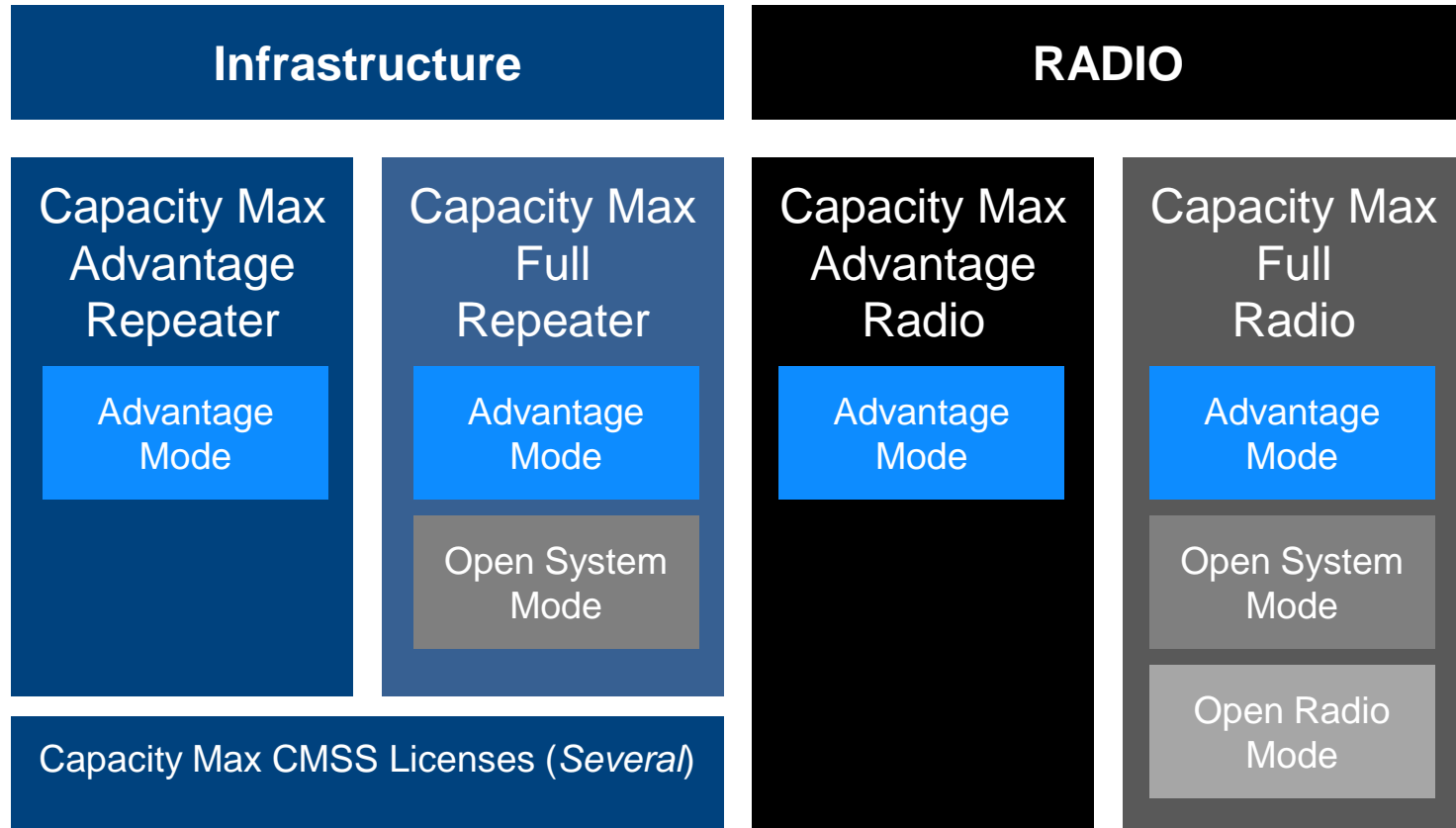


# FEATURE CATEGORIES



DMR Tier III Core Features	DMR Tier III Additional Features	MOTOTRBO Radio Features	Capacity Max Infrastructure Features	Capacity Max System Features
Defined and included in IOP	Defined but not included in IOP	MOTOTRBO value-add	Capacity Max value-add	Capacity Max value-add
<ul style="list-style-type: none"> <li>Registration</li> <li>Group Call</li> <li>Private Call</li> <li>Group Broadcast Call</li> <li>Roaming</li> <li>Short Text Message</li> <li>Queue Call</li>   <li>Multisite (optional)</li> <li>AES (optional)</li> </ul>	<ul style="list-style-type: none"> <li>All Call</li> <li>Emergency Alert</li> <li>Emergency Call</li> <li>Dispatch Call</li> <li>Telephony Call</li> <li>Packet Data</li> <li>Text Message (Standard)</li> <li>Radio Check</li> <li>Radio Stun/Revive</li> <li>Radio Monitor</li> <li>Key-based Authentication</li> <li>Voice Interrupt</li> <li>Call Pre-emption</li> <li>Mass Registration</li> <li>Late Entry</li> <li>Talkgroup Affiliation</li> </ul>	<ul style="list-style-type: none"> <li>Emergency Call, Voice to Follow</li> <li>Emergency Search Tone</li> <li>Extended Text Messaging</li> <li>Telemetry</li> <li>Over-the-Air Programming</li> <li>Over-the-Air Battery Management</li> <li>Enhanced Roaming</li> <li>User-Selectable Audio Profiles</li> <li>Voice Announcement</li> <li>Text to Speech</li> <li>IMPRES Energy</li> <li>IMPRES Audio</li> <li>Acoustic Feedback</li> <li>Suppressor</li> <li>Trill Enhancement</li> <li>Bluetooth Audio and Data</li> <li>Man Down and Lone Worker</li> <li>...</li> </ul>	<ul style="list-style-type: none"> <li>Critical Site Assignment</li> <li>Site Restriction</li> <li>Subscriber Access Control</li> <li>All Start</li> <li>Control Channel Repeater</li> <li>Redundancy</li> <li>Call Queue Priority (via SAC)</li> <li>Discreet Listening</li> <li>Enhanced Channel Access</li> <li>Remote Repeater</li> <li>Programming</li> <li>Wireline Application</li> <li>Interface</li> <li>...</li> <li>...</li> </ul>	<ul style="list-style-type: none"> <li>Enhanced Channel Access</li> <li>Subscriber Authentication</li> <li>Site and Channel</li> <li>Extensibility</li> <li>Site Trunking</li> <li>Enhanced Registration</li> <li>Advanced Late Entry</li> <li>Call Alert</li> <li>High Efficiency GPS</li> <li>Indoor Location Tracking</li> <li>Data Revert</li> <li>...</li> <li>...</li> </ul>

# CAPACITY MAX LICENSING



**Advantage Mode:** MOTOTRBO Capacity Max infrastructure, MOTOTRBO radios  
**Open System Mode:** MOTOTRBO Capacity Max infrastructure, Mixed radios  
**Open Radio Mode:** 3<sup>rd</sup> party infrastructure, Mixed radios

# CAPACITY MAX OPERATING MODES

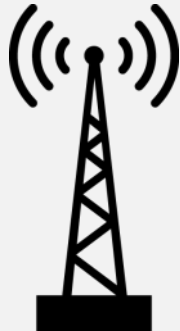


<b>Advantage Mode</b>	<b>Infrastructure: MOTOTRBO Capacity Max Radios: MOTOTRBO</b>
<b>Open System Mode</b>	<b>Infrastructure: MOTOTRBO Capacity Max Radios: Mixed MOTOTRBO and 3<sup>rd</sup>-Party</b>
<b>Open Radio Mode</b>	<b>Infrastructure: 3<sup>rd</sup>-Party Radios: Mixed MOTOTRBO and 3<sup>rd</sup>-Party</b>

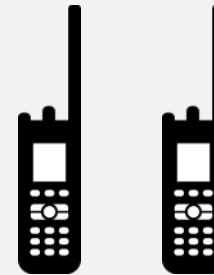
# CAPACITY MAX ADVANTAGE MODE



## Capacity Max Infrastructure



## MOTOTRBO Radios



**DMR Tier III  
Core  
Features**

**DMR Tier III  
Additional  
Features**

**MOTOTRBO  
Radio  
Features**

**Capacity Max  
Infrastructure  
Features**

**Capacity Max  
System  
Features**

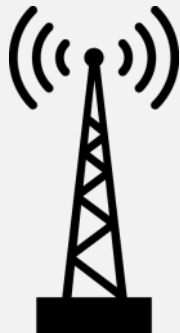
*No 3<sup>rd</sup>-Party Radio  
Interoperability*

# CAPACITY MAX OPEN SYSTEM MODE



Capacity Max Infrastructure

MOTOTRBO + 3<sup>rd</sup>-Party Radios



DMR Tier III  
Core  
Features

DMR Tier III  
Additional  
Features

MOTOTRBO  
Radio  
Features

Capacity Max  
Infrastructure  
Features

Capacity Max  
System  
Features

*(Interoperability guaranteed  
between MOTOTRBO radios)*

*(Only available for MOTOTRBO  
radios, with feature limits)*

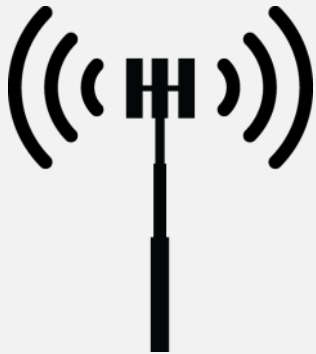


# CAPACITY MAX OPEN RADIO MODE



3<sup>rd</sup>-Party Infrastructure

MOTOTRBO + 3<sup>rd</sup>-Party Radios



**DMR Tier III  
Core  
Features**

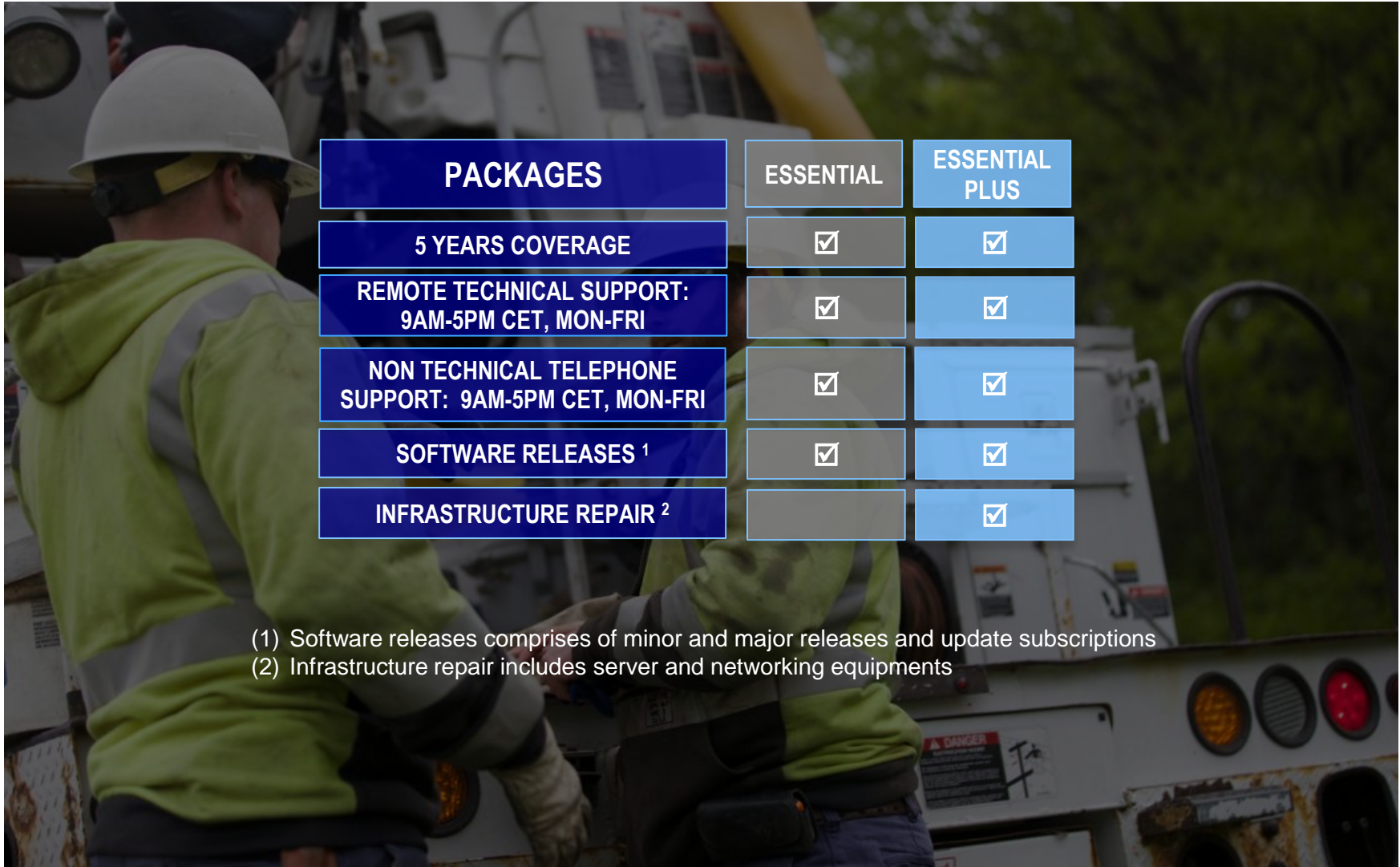
**DMRA IOP  
Certified**

**DMR Tier III  
Additional  
Features**

*(Interoperability  
may be possible)*

**MOTOTRBO  
Radio  
Features**

# SERVICE PACKAGES FOR CAPACITY MAX



PACKAGES	ESSENTIAL	ESSENTIAL PLUS
5 YEARS COVERAGE	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
REMOTE TECHNICAL SUPPORT: 9AM-5PM CET, MON-FRI	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
NON TECHNICAL TELEPHONE SUPPORT: 9AM-5PM CET, MON-FRI	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SOFTWARE RELEASES <sup>1</sup>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
INFRASTRUCTURE REPAIR <sup>2</sup>		<input checked="" type="checkbox"/>

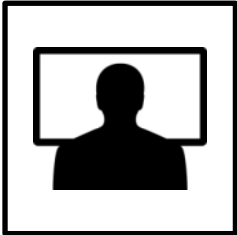
- (1) Software releases comprises of minor and major releases and update subscriptions
- (2) Infrastructure repair includes server and networking equipments

# CAPACITY MAX: SUMMARY



## Next-Generation Trunking Solution

High performance built on real-world experience



## Complete Control

Comprehensive configuration and optimisation



## Smooth Migration and Scalability

Careful integration with MOTOTRBO systems portfolio



## DMR Compliant

Interoperability with 3<sup>rd</sup>-party infrastructure and radios