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
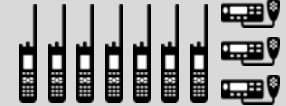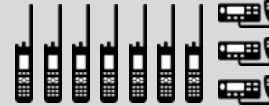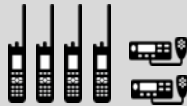
MOTOTRBO SYSTEMS PORTFOLIO

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

*Maximum capacity, based on standardized low traffic call model

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
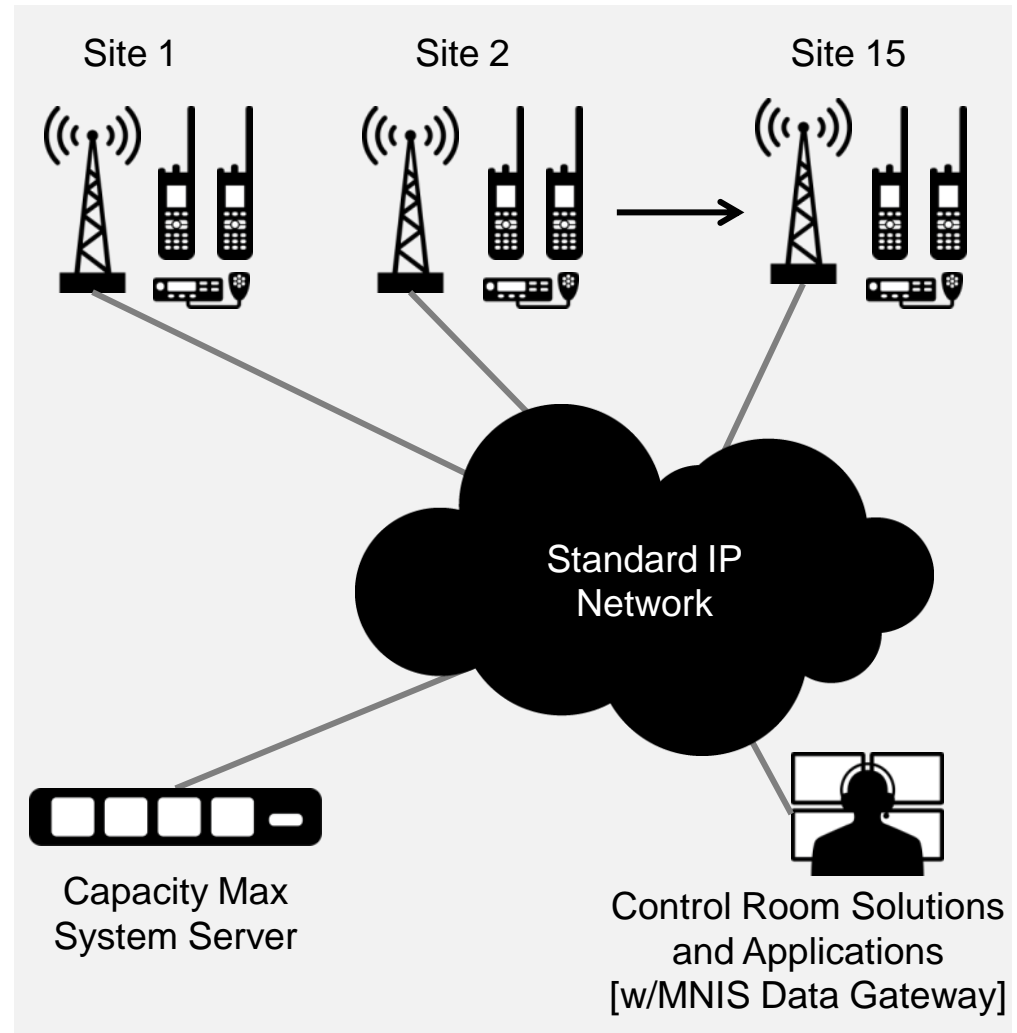
SYSTEM TOPOLOGY

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

Site 1

Site 2

Site 15

Standard IP Network

Capacity Max System Server

Control Room Solutions and Applications [w/MNIS Data Gateway]

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
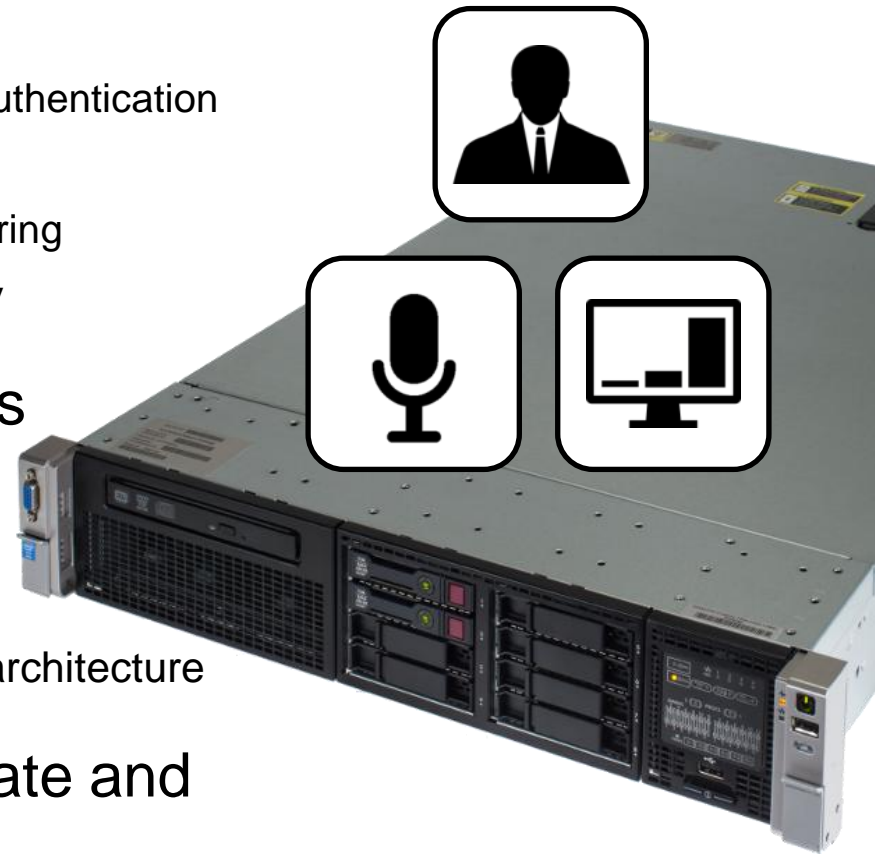
EFFICIENT, LOGICAL ARCHITECTURE

- 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

Voice and Data

Call Control and System Management

Trunking Controller & System Advisor Server
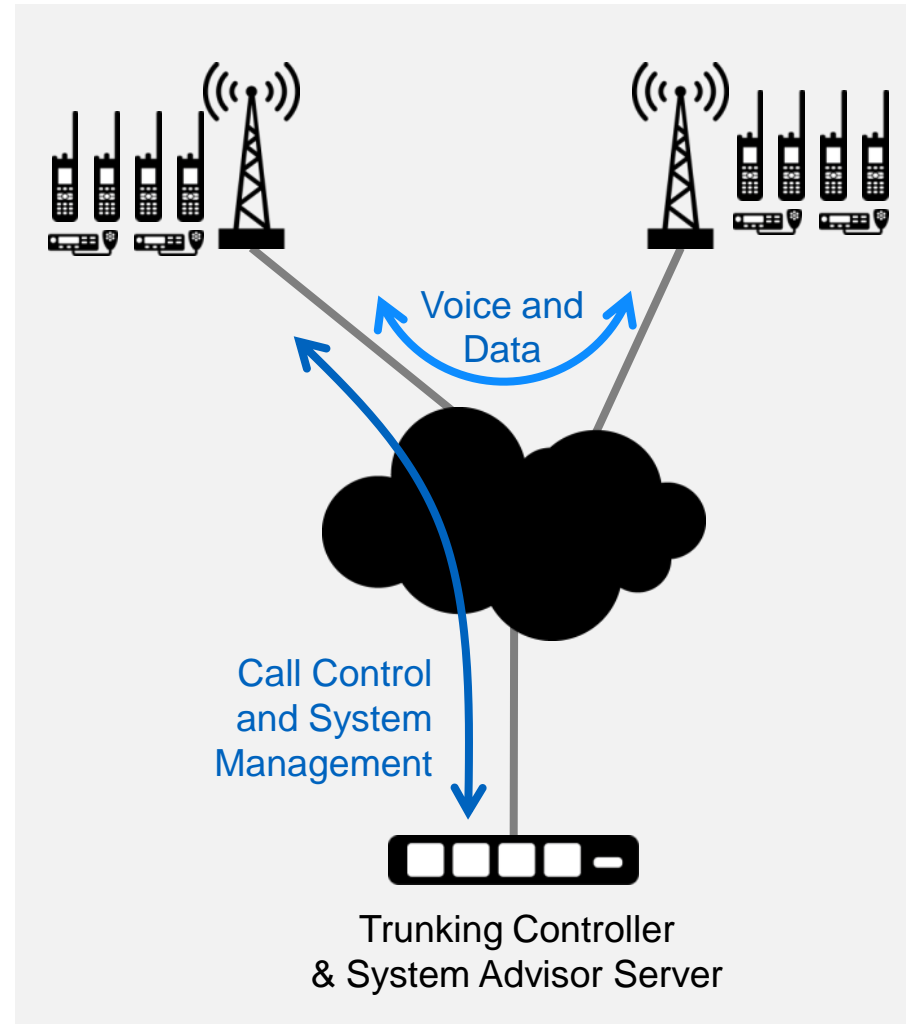
MULTI-LEVEL RESILIENCY

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
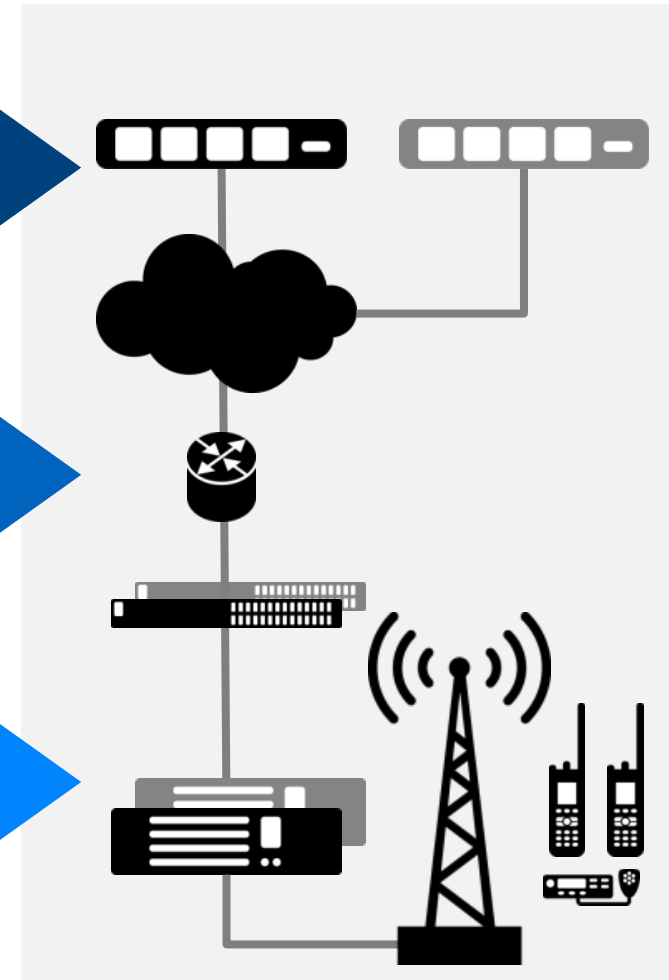
NO SINGLE POINT OF TRUNKING FAILURE

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
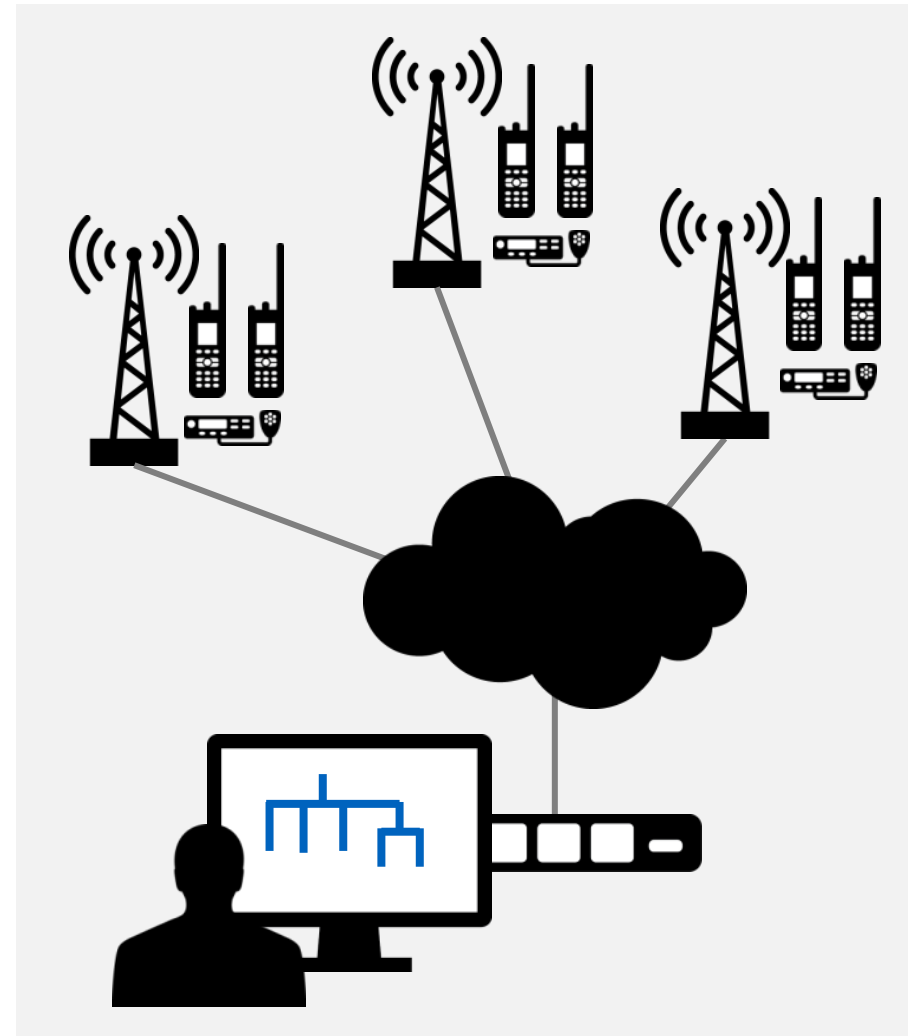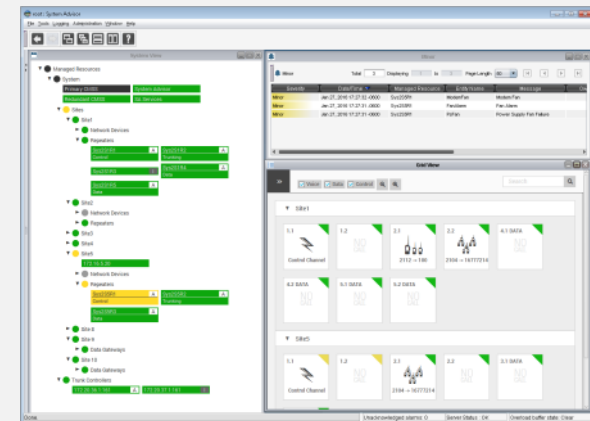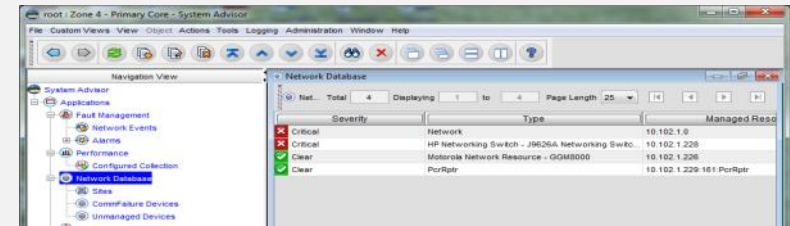
RADIO MANAGEMENT 2.0

- 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
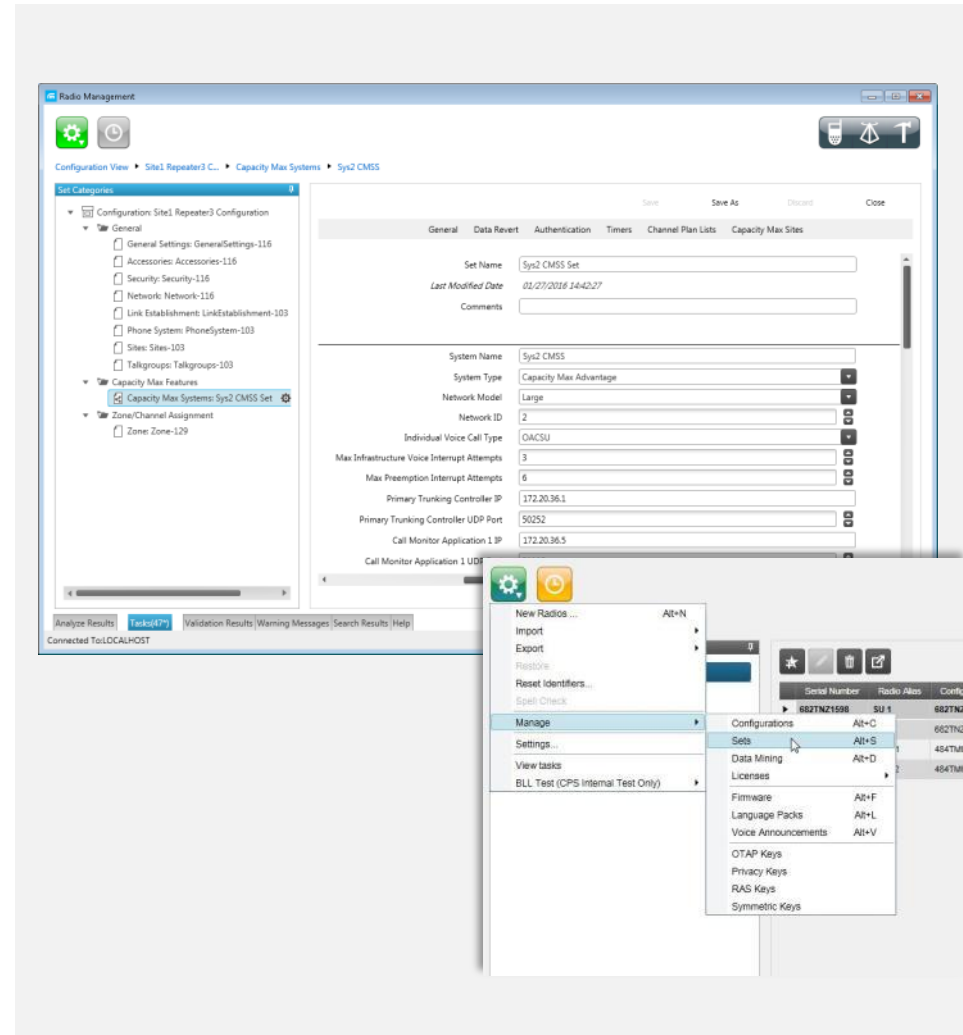
SYSTEM ADVISOR

- ## 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
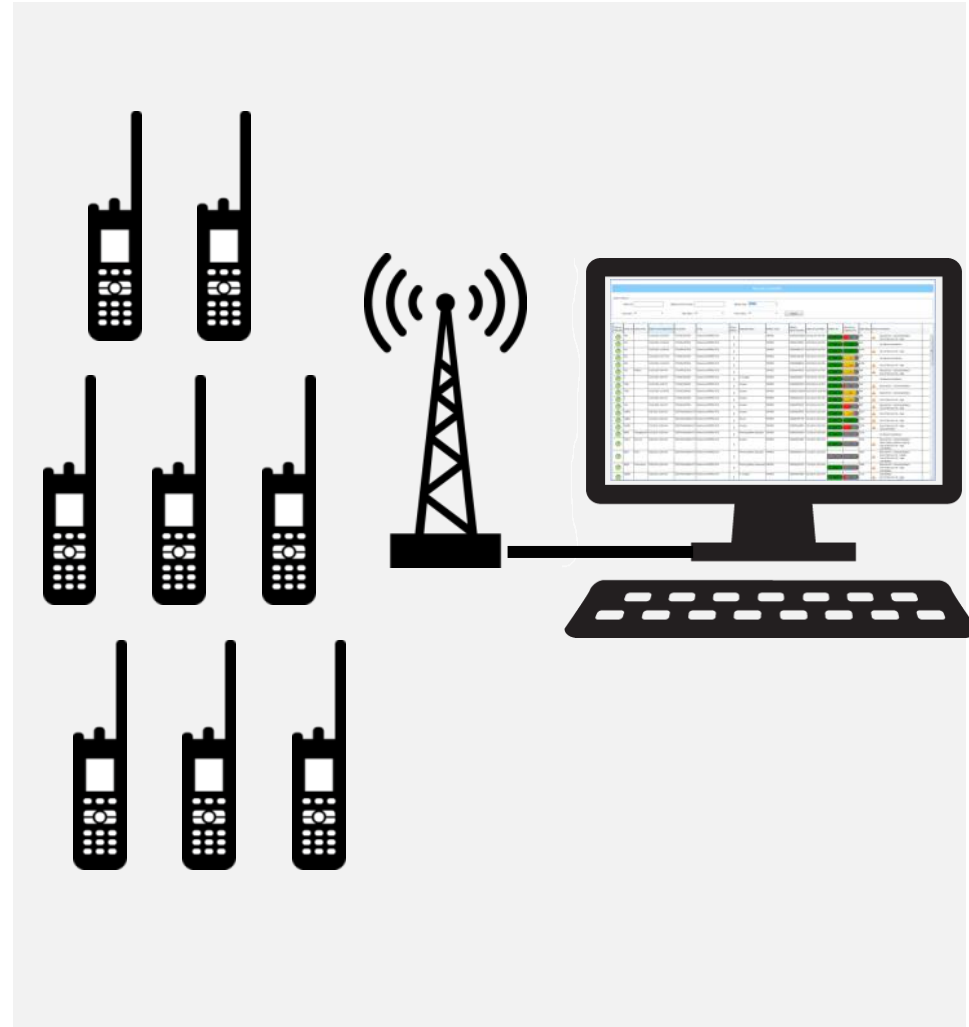
SUPPORTED PRODUCTS

EXISTING MOTOTRBO™ PRODUCTS SOFTWARE UPGRADABLE TO CAPACITY MAX

DP3441/
DP3441e

DP4400
DP4401

DP4600
DP4601

DP4800
DP4801

DP4401 Ex   DP4801 Ex

DP4000/DP4000e SERIES

SL4000/
SL4000e
SERIES

SLR8000

MTR 3000

SLR 5000 Series

DM4400
DM4401

DM4600
DM4601

DM4000
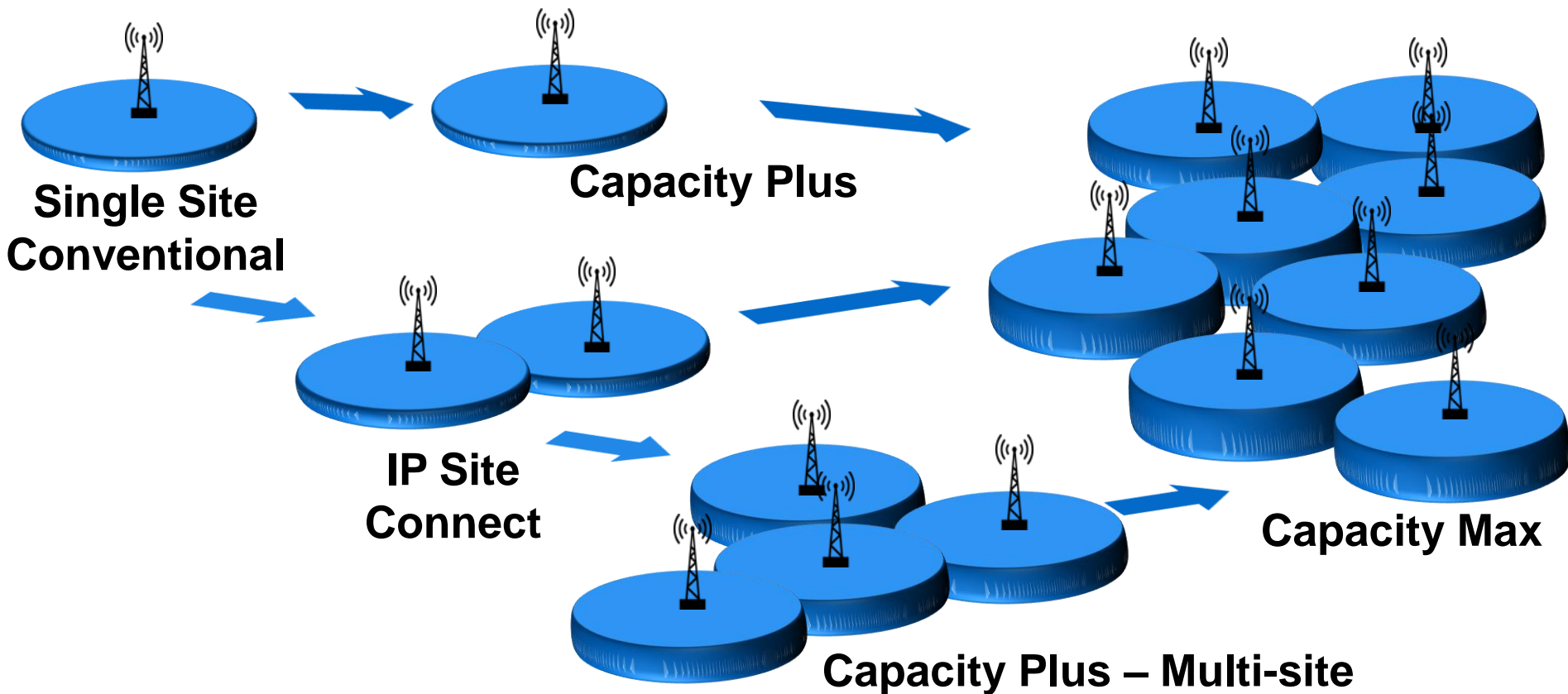HHCH

DM4000/DM4000e SERIES

**DR3000 Series
(NOTE: 32 MB version only)**

SMOOTH MIGRATION

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

Single Site Conventional

Capacity Plus

IP Site Connect

Capacity Plus – Multi-site

Capacity Max

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
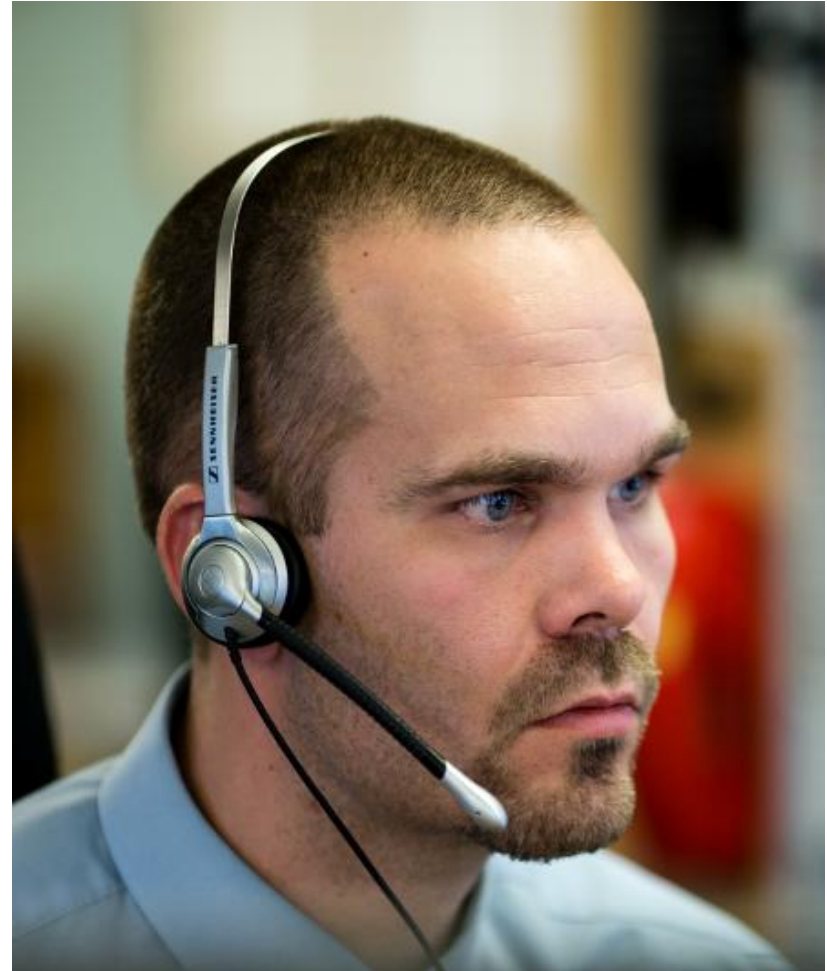
APPLICATIONS

- 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

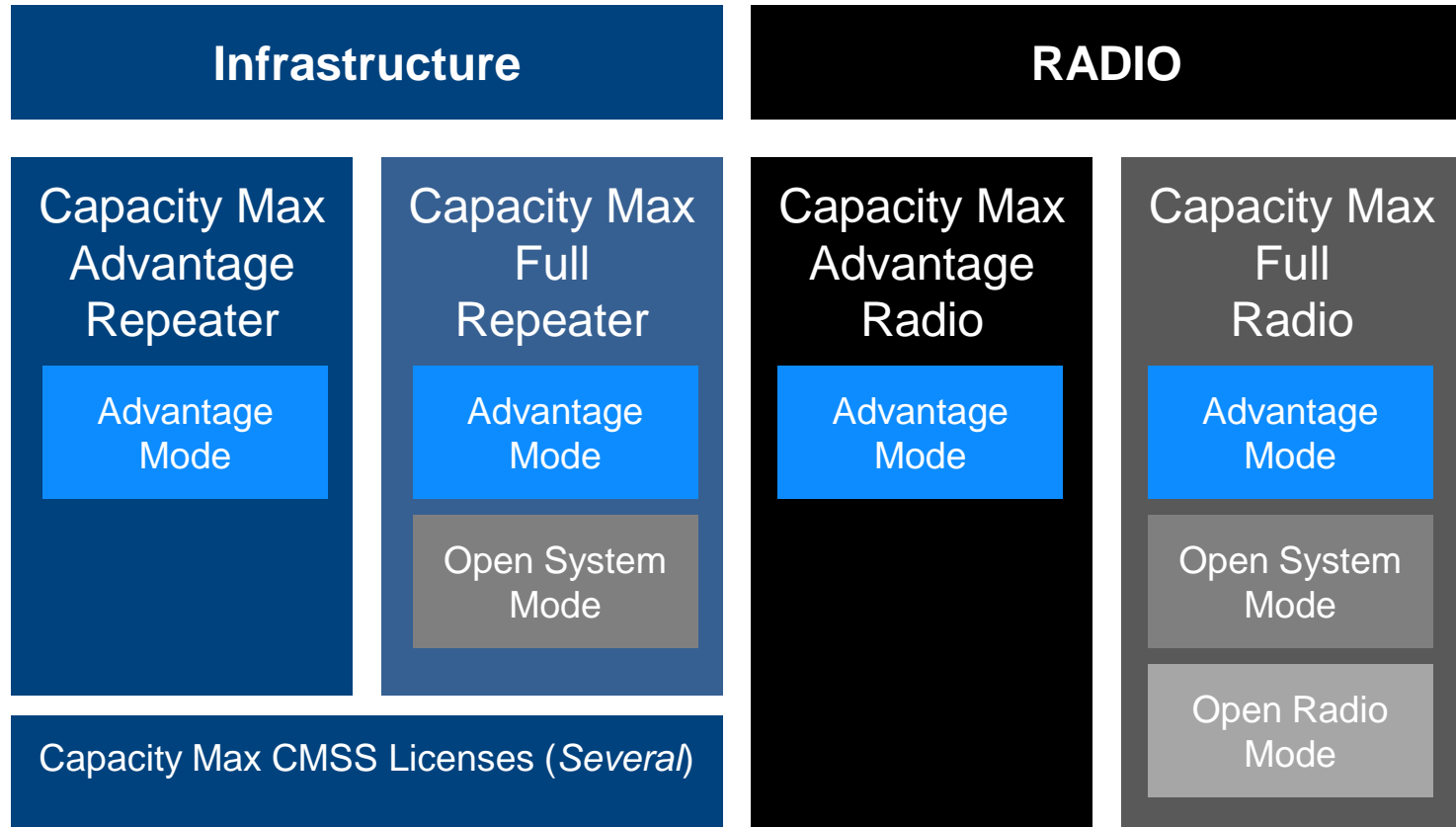| DMR Tier III Core Features	DMR Tier III Additional Features	MOTOTRBO Radio Features	Capacity Max Infrastructure Features	Capacity Max System Features
Defined and included in IOP	Defined but not included in IOP	MOTOTRBO value-add	Capacity Max value-add	Capacity Max value-add
Registration Group Call Private Call Group Broadcast Call Roaming Short Text Message Queue Call Multisite (optional) AES (optional)	All Call Emergency Alert Emergency Call Dispatch Call Telephony Call Packet Data Text Message (Standard) Radio Check Radio Stun/Revive Radio Monitor Key-based Authentication Voice Interrupt Call Pre-emption Mass Registration Late Entry Talkgroup Affiliation	Emergency Call, Voice to Follow Emergency Search Tone Extended Text Messaging Telemetry Over-the-Air Programming Over-the-Air Battery Management Enhanced Roaming User-Selectable Audio Profiles Voice Announcement Text to Speech IMPRES Energy IMPRES Audio Acoustic Feedback Suppressor Trill Enhancement Bluetooth Audio and Data Man Down and Lone Worker ...	Critical Site Assignment Site Restriction Subscriber Access Control All Start Control Channel Repeater Redundancy Call Queue Priority (via SAC) Discreet Listening Enhanced Channel Access Remote Repeater Programming Wireline Application Interface	Enhanced Channel Access Subscriber Authentication Site and Channel Extensibility Site Trunking Enhanced Registration Advanced Late Entry Call Alert High Efficiency GPS Indoor Location Tracking Data Revert ... ...

CAPACITY MAX LICENSING

Infrastructure		RADIO	
Capacity Max Advantage Repeater	**Capacity Max Full Repeater**	**Capacity Max Advantage Radio**	**Capacity Max Full Radio**
Advantage Mode	Advantage Mode	Advantage Mode	Advantage Mode
	Open System Mode		Open System Mode
			Open Radio Mode
Capacity Max CMSS Licenses (*Several*)			

Advantage Mode: MOTOTRBO Capacity Max infrastructure, MOTOTRBO radios
Open System Mode: MOTOTRBO Capacity Max infrastructure, Mixed radios
Open Radio Mode: 3rd party infrastructure, Mixed radios

CAPACITY MAX OPERATING MODES

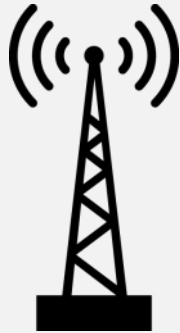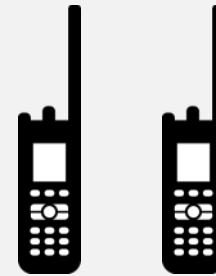|	
Advantage Mode	**Infrastructure**: MOTOTRBO Capacity Max **Radios**: MOTOTRBO
Open System Mode	**Infrastructure**: MOTOTRBO Capacity Max **Radios**: Mixed MOTOTRBO and 3rd-Party
Open Radio Mode	**Infrastructure**: 3rd-Party **Radios**: Mixed MOTOTRBO and 3rd-Party

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 3rd-Party Radio Interoperability

CAPACITY MAX OPEN SYSTEM MODE

Capacity Max Infrastructure
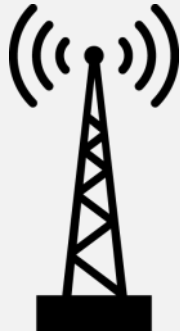
MOTOTRBO + 3rd-Party Radios

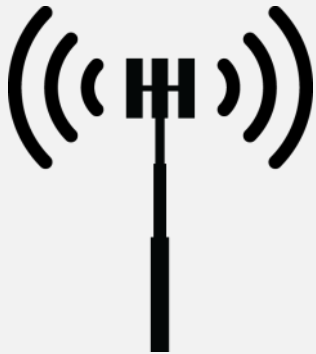| DMR Tier III Core Features | DMR Tier III Additional Features | MOTOTRBO Radio Features | Capacity Max Infrastructure Features | Capacity Max System Features |

(Interoperability guaranteed between MOTOTRBO radios)

(Only available for MOTOTRBO radios, with feature limits)

CAPACITY MAX
OPEN RADIO MODE

3rd-Party Infrastructure	MOTOTRBO + 3rd-Party Radios

DMR Tier III Core Features	DMR Tier III Additional Features	MOTOTRBO Radio Features
DMRA IOP Certified	(*Interoperability may be possible*)	

SERVICE PACKAGES FOR CAPACITY MAX

PACKAGES	ESSENTIAL	ESSENTIAL PLUS
5 YEARS COVERAGE	☑	☑
REMOTE TECHNICAL SUPPORT: 9AM-5PM CET, MON-FRI	☑	☑
NON TECHNICAL TELEPHONE SUPPORT: 9AM-5PM CET, MON-FRI	☑	☑
SOFTWARE RELEASES [1]	☑	☑
INFRASTRUCTURE REPAIR [2]		☑

(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 3rd-party infrastructure and radios