**MOTOROLA** *SOLUTIONS*

# DIMETRA DISPATCH COMMUNICATIONS SERVER



The DIMETRA Dispatch Communications Server (DCS) enables effective real-time communication that keeps personnel connected and informed when it matters most. The DCS provides the ability to develop specialized control room solutions through the MCC 7500 Application Program Interface (API). Connect and inform your personnel across your DIMETRA system via custom third party interfaces. If you operate in an environment which requires secure and encrypted dispatch communications leverage the Secure Dispatch Communications Server (S-DCS). The S-DCS provides end-to-end encryption for all your voice and data communications across your operations.

Consolidate all of your hardware dispatch components into a single streamlined solution with the DCS. With a single DCS server your dispatch center can have up to ten dispatch positions. With just a single DCS server you benefit from a 90% reduction in the necessary hardware components needed compared to a traditional deployment. This delivers vast reductions in operational expenditures such as the cost of on-going maintenance and enables convenient and cost effective integration capabilities. Additionally the DCS server can be deployed almost anywhere, making it easier and more cost effective to support. The DCS comes in a secured version, S-DCS ideal for security conscious organizations that demand a secure, private, and encrypted dispatch solution.

## SCALE UP YOUR SYSTEM, NOT YOUR COSTS

Many organisations today are looking for ways to consolidate their operations in order to streamline costs and gain efficiencies. The DCS can do just that by helping you keep your dispatch centre's operating expenses down and manageable. Since the DCS requires less purpose-built hardware for you to buy and maintain, your orgainization can achieve a reduction in overall power consumption that is needed to run and operate your system. Additionally, you will have more physical floor space available. With the centralized architecture you reduce overall travel expenses by eliminating the need to send field engineers across a wide area in order to maintain, service, and perform system updates. While the scalable platform lets you grow as much or as little as you need. Simply add a new DCS server and grow your dispatch position by ten without the added time and costs associated with traditional expansions.

## DO MORE WITH WHAT YOU HAVE AVAILABLE

Increase the overall capacity of your dispatch positions enabling them to effectively monitor up to 300 simultaneous talkgroups.

## FLEXIBLE DEPLOYMENT OPTIONS AVAILABLE

With the DCS, you have the added flexibility of deploying it where you want, not where the technology limits you. You can deploy DCS anywhere due to the built in redundancy capability. This enables one remote control room to have a connection to different DCS servers. The DCS can therefore be shared between different control rooms.

## USER LOG IN FLEXIBILITY

The DCS addresses users by their own TETRA address, not by the address of a piece of equipment. Making it possible to call the Console User regardless of where they log in.

## AUDIO YOU CAN RELY ON

The inherent reliability of the DIMETRA system ensures first responders and dispatchers stay connected with best-in-class audio quality. The DCS provides improved audio via fully digital audio over IP. With significant reduction in delays and minimized jitter effects typically associated in analogue conversions, your personnel can always be heard no matter what.

| | END USER | OPERATOR/INTEGRATOR |
|---|:---:|:---:|
| **REDUCED POWER CONSUMPTION** ONLY 1 SERVER PER 10 DISPATCHERS | ✓ | ✓ |
| **INCREASED AVAILABLE FLOOR SPACE** ONLY 1 SERVER PER 10 DISPATCHERS | ✓ | |
| **INCREASED MONITORING CAPACITY** UP TO 300 TALKGROUPS | ✓ | ✓ |
| **SIMPLE INTEGRATION** CONTROL AND AUDIO DELIVERED OVER IP | ✓ | ✓ |
| **MORE ROBUST SECURITY** RNI IN THE MOBILE SWITCHING OFFICE | ✓ | ✓ |
| **USER LOG-IN FLEXIBILITY** USER BASED REGISTRATION | ✓ | |
| **IMPROVED RESILIENCE** REDUNDANCY | ✓ | ✓ |
| **FULLY IP FROM END-TO-END** IMPROVED AUDIO QUALITY | ✓ | ✓ |

## DCS COMPONENTS OVERVIEW

The DCS provides the interface connection between your Integrated Command and Control Subsystem (ICCS) applications with reliance on third-party provided dispatch control rooms and the dispatching functionality that is provided by the DIMETRA IP radio network.

### DCS

The DCS contains one audio gateway and ten call control entities. The DCS provides the audio link between your DIMETRA network and your dispatch control centre. The Call Control Entity (CCE) provides the Application Programming Interface (API) to your external dispatch system. Each DCS subsystem can contain up to ten DCS servers each of which provide support for up to ten clients within your dispatch ecosystem.

The DCS Audio Gateway provides the audio link between your DIMETRA network and your dispatch system. The Call Control Entity (CCE) provides the API to the external dispatch system.

### DCS SWITCH

The DCS switch provides a pair of Ethernet switches that are used to interconnect the various components of a DCS subsystem.

### DCS ROUTER
The DCS router provides a pair of routers that are used to interconnect a DCS subsystem to the core Local Area Network (LAN) switches.

### DCS FIREWALL
The DCS firewall provides the interconnection from the DCS Subsystem to your enterprise network via the demilitarized zone (DMZ) switches and the DCS border routers.

### DCS FAN OUT SWITCH
The DCS fan out switch contains either one or two optional Ethernet switches that are used to provide additional capacity if there are insufficient ports on the DCS Switches.
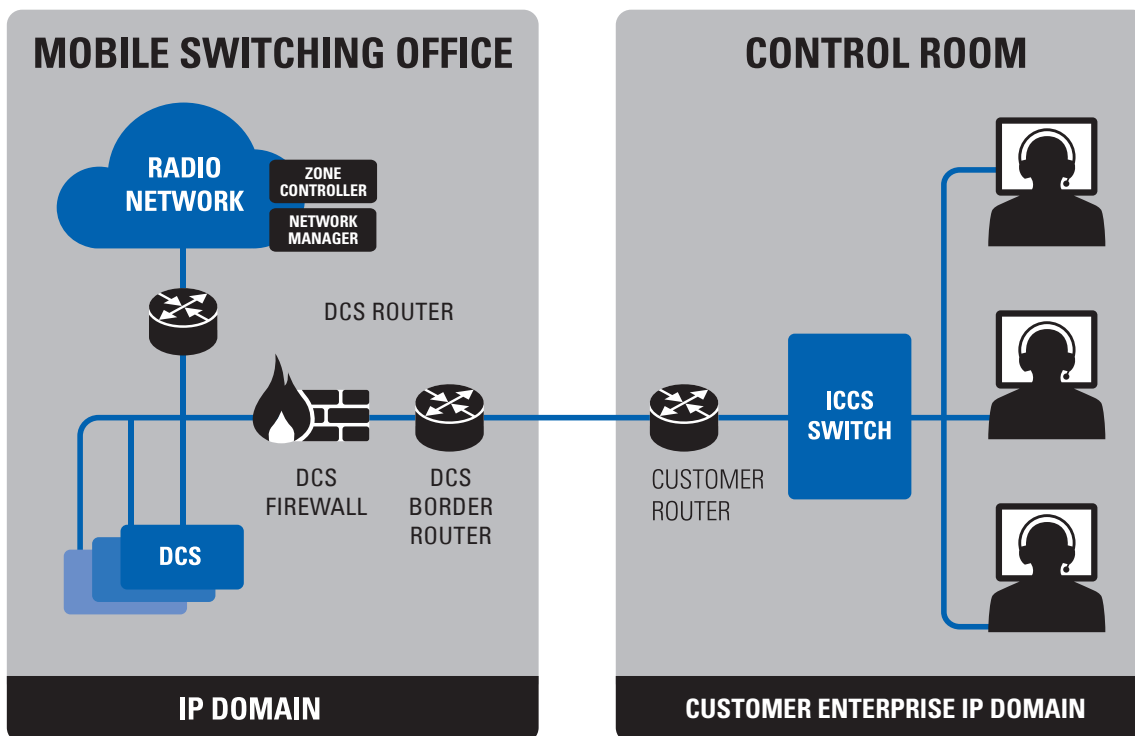
### DCS BORDER ROUTER
The DCS border router provides the DCS connection to your Customer Enterprise Network (CEN). The DCS Border Router can either be provided by Motorola Solutions or be integrated with your third party providers.

### DCS TERMINAL SERVER
The DCS terminal server allows your service personnel to access the DCS subsystem components either via ssh session, or using a serial connection to a terminal port for greater service efficiency. Each DCS subsystem requires the use of one terminal server.

## DCS SYSTEM ARCHITECTURE

### MOBILE SWITCHING OFFICE

RADIO NETWORK

ZONE CONTROLLER

NETWORK MANAGER

DCS ROUTER

DCS FIREWALL

DCS BORDER ROUTER

DCS

**IP DOMAIN**

### CONTROL ROOM

CUSTOMER ROUTER

ICCS SWITCH

**CUSTOMER ENTERPRISE IP DOMAIN**

## S-DCS COMPONENTS OVERVIEW

The S-DCS, like the DCS provides the interface connection between your ICCS applications with reliance on third-party provided dispatch control room and dispatching functionality that is provided by the DIMETRA IP radio network. The communication between the S-DCS and the radio units deployed in the field are private and secured via end-to-end encryption.

### S-DCS

The S-DCS subsystem consists of a Secure Call Control Entity (SCCE) server which is installed on the S-DCS physical server and provides secure encrypted call processing capabilities. Additionally it maintains sessions with the Zone Controller (ZC) and provides the encrypted audio towards the Audio Processing Entity (APE) as well as maintains the API for the ICCS dispatch applications within your network.

### S-DCS AUDIO PROCESSING ENTITY MODULE

The S-DCS Audio Processing Entity (APE) module provides audio interface including; transmit audio, as well as, selected and unselected receive audio for the ICCS via a multiplexer. The APE receives the decrypted audio from the CRYPTR encryption device and is responsible for audio processing. One APE is required per console position within your external dispatch subsystem.

### S-DCS CRYPTR MODULE

The S-DCS CRYPTR module is a standalone device used to perform voice encryption and decryption between the S-DCS subsystem and the external dispatch subsystem. It is required to have one CRYPTR module per one console position within the external dispatch subsystem.

The tamper resistant, CRYPTR encryption unit has integrated physical security that is FIPS 140-2 Level 3 compliant with the National Institute of Standards and Technology (NIST). The ability to centrally manage encryption keys with the Motorola Key Management Facility and re-key quickly and efficiently with Over-the-Ethernet Keying (OTEK).

### S-DCS MULTIPLEXER

The S-DCS multiplexer provides the aggregation of the analogue audio from the APE modules into an E1 interface in order to connect it to the external dispatch subsystem.

### S-DCS TERMINAL SERVER

The S-DCS terminal server allows your service personnel to access the S-DCS subsystem components either via a telnet session or by using a serial connection to a terminal port for greater service efficiency. Each S-DCS subsystem requires the use of one terminal server.

## SECURE DCS SYSTEM ARCHITECTURE
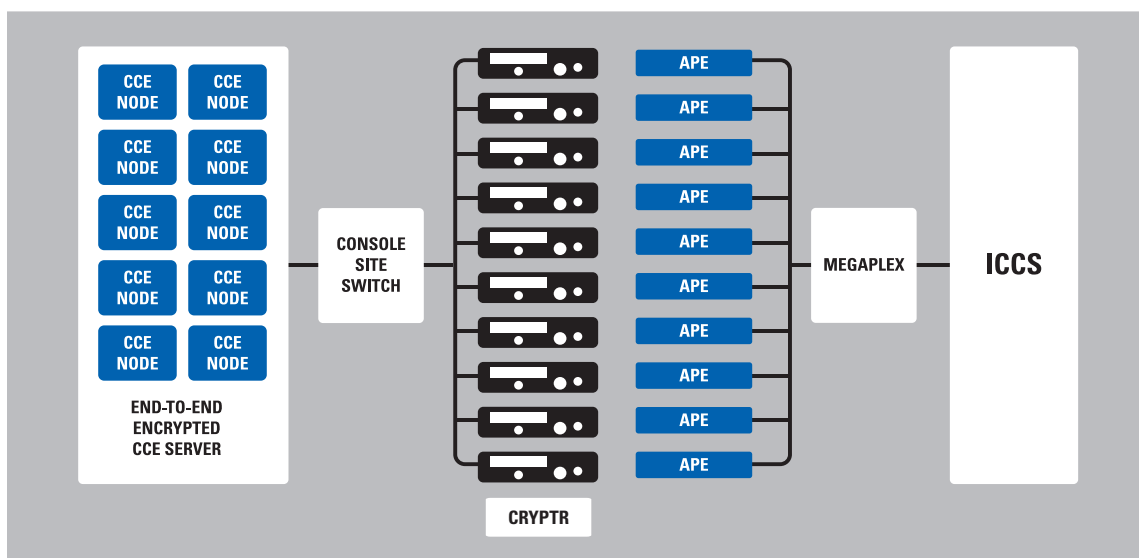
## HP DL360 GEN9 SERVER SPECIFICATIONS

| PARAMETERS | UNIT SPECIFICATIONS |
|---|---|
| LAN Ports (x4) | 10, 100, 1000 Base-T Ethernet, RJ45 |
| Monitor Output, Keyboard and Mouse | SVGA connector, USB connectors |
| AC input voltage | 100 - 240 VAC |
| AC input frequency | 50 - 60 Hz nominal |
| AC input power | Awaiting measured figures for Gen9 (for ref; Gen8 was 130 W) |
| Heat Dissipation | Awaiting measured figures for Gen9 (for ref; Gen8 was 443 BTU/hr (calculated)) |
| Length / Depth | 699 mm |
| Width | 435 mm |
| Height | 43 mm (1 Rack Unit) |
| Weight | 23 kg |
| Operating Temperature | 10 to 30 deg C |

## S6000 ROUTER SPECIFICATIONS

| PARAMETERS | UNIT SPECIFICATIONS |
|---|---|
| LAN Port (x3) | 10 / 100 Mbit/s Ethernet, RJ45 |
| E1 WAN (x12) - on module | CE1 / E1, RJ45 |
| E1 WAN (x4) - on module | CE1 / E1, RJ45 |
| X.21 WAN (x4) - on module | FlexWAN (X.21), 15 pin D connector (on adapter cable) |
| Console Port (service access) | RS232 serial data, 9 pin D connector |
| AC input voltage | 100 - 240 VAC |
| AC input frequency | 50 - 60 Hz nominal |
| AC input power (with modules) | 62 W (measured) |
| Length / Depth | 305 mm |
| Width | 430 mm |
| Height | 43 mm (1 Rack Unit) |
| Weight | 5 kg |
| Operating Temperature | 0 - 50 °C |
| Heat Dissipation | 210 BTU/hr (calculated) |

## HP RP5810 COMPUTER SPECIFICATIONS

| PARAMETERS | UNIT SPECIFICATIONS |
|---|---|
| LAN Port | 10/100/1000 Base-T Ethernet, RJ45 |
| Monitor output | 1 x VGA connector<br>1 x DisplayPort connector |
| Keyboard port | PS/2 connector |
| Mouse port | PS/2 connector |
| AC input voltage | 90 to 264 VAC |
| AC input frequency | 50 / 60 Hz nominal |
| AC input power | 38.6 W @ 230VAC |
| Length / Depth | 379 mm |
| Width | 338 mm |
| Height | 100 mm |
| Weight | 6.84 kg |
| Operating Temperature | 0 to +40 °C |
| Heat Dissipation | 132 BTU/hr |

## GGM 8000 ROUTER SPECIFICATIONS

| PARAMETERS | UNIT SPECIFICATIONS |
|---|---|
| LAN Port (x4) - on router base model | 10 /100/1000 Mbit/s Ethernet, RJ45 |
| WAN Port (x 2) — on router base model | T1 / E1, RJ45 |
| Analogue Port (x4) — on expansion module | 4 wire E&M, RJ1-CX |
| Console Port (service access) | RS232 serial data, 9 pin D connector |
| AC input voltage | 100 - 240 VAC |
| AC input frequency | 50 - 60 Hz nominal |
| AC input power | 47W (measured) |
| Depth | 470 mm |
| Width | 440 mm |
| Height | 43 mm (~1 Rack Unit) |
| Weight | 6 kg |
| Operating Temperature | 0 - 50 °C |
| Heat Dissipation | 161 BTU/hr (calculated) |

## SUPERMICRO SC811TQ-280 COMPUTER SPECIFICATIONS

| PARAMETERS | UNIT SPECIFICATIONS |
|---|---|
| LAN Port (x2) | 10/100/1000 Base-T Ethernet, RJ45 |
| Monitor output, keyboard and mouse | SVGA connector, PS/2 connectors |
| AC input voltage | 100 / 240 VAC nominal |
| AC input frequency | 50 / 60 Hz nominal |
| AC input power | 105 W |
| Length / Depth | 574 mm |
| Width | 426 mm |
| Height | 43 mm (1 U) |
| Weight | 12.7 kg |
| Operating Temperature | +5 to +35 °C |
| Heat Dissipation | 357 BTU/hr |

## 38 RU GENERIC RACK SPECIFICATIONS

| PARAMETERS | UNIT SPECIFICATIONS |
| --- | --- |
| Height: | 1850 mm |
| Width: | 610 mm |
| Depth: | 1010 mm (1100 mm including handles) |
| Weight | Depends on configuration of components; see 'Size, Power and Heat' Guideline |
| Power Requirements: | Depends on configuration of components; see 'Size, Power and Heat' Guideline |
| Operating Temperature: | 18° to 24° C |
| Operating Humidity: | 30% to 55% relative humidity (non-condensing) |
| Environmental protection | IP20 |

## CRYPTR SPECIFICATIONS

| PARAMETERS | UNIT SPECIFICATIONS |
| --- | --- |
| Depth | 92 mm |
| Width | 142 mm |
| Height | 29.5 mm |
| Supply Voltage | 12V dc |
| Supply current | 500mA |
| Weight (including cables) | 300 g |
| CCE Port | 10/100 Base-T Ethernet, RJ45 |
| APE Port | 10/100 Base-T Ethernet, RJ45 (uses cross over cable) |
| Operating Temperature | -30 to +60 °C |
| Heat Dissipation | 24 BTU/hr (calculated) |

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For more information please visit www.motorolasolutions.com/dispatch