

# ASTRO<sup>®</sup>25 Conventional Network

Evolving ASTRO 25 Conventional networks to IP based connectivity – providing a path to additional IP based capabilities



# Executive Summary

As communications technology evolves to give end users ever more powerful operational capabilities, agencies perform a delicate balancing act between the costs and benefits of upgrading their networks. Many factors can change that balance. Today, leaders in the defense and public safety fields are taking action to evolve their networks toward Internet Protocol (IP) technology.

Motorola has a conventional migration path that allows a gradual evolution to an ASTRO 25 Conventional network with IP connectivity. Agencies can gradually expand, upgrade, or replace RF sites, consoles and subscriber devices as funds allow. During the migration period, current system elements co-exist and work with newer IP elements. The result is a flexible hybrid network that continues to leverage prior investments while adding new capabilities.

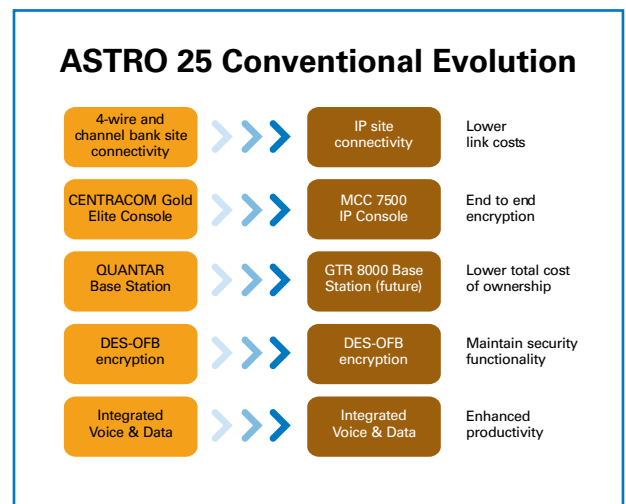
***The ASTRO 25 Conventional network with IP connectivity provides a simple solution architecture that allows agencies to implement voice & data services plus capabilities such as enhanced network management and network security.***

The ASTRO 25 Conventional network with IP connectivity provides a gradual migration path from current ASTRO 25 Conventional networks. Customers can invest in an IP network while maximizing the useful remaining life of existing equipment.

- The ASTRO 25 Conventional solution with IP connectivity fits into the current network infrastructure, working with existing RF sites, dispatch consoles and subscriber equipment.
- Mission critical features such as console priority, user PTT-ID aliases and encryption key management are maintained during the transition to minimize disruptions to dispatcher and user operations.

The migration begins with the deployment of an ASTRO 25 Conventional IP Center which provides the critical call management, switch and transport function, replacing the conventional CEB & AEB. Migrating to an IP based networks means moving

from a circuit-switch to a packet-switch architecture. This provides a hybrid network capable of seamlessly interoperating with existing conventional equipment and IP conventional equipment. Once the ASTRO 25 IP center is in place, you are able to replace existing equipment at your own pace. For example, IP consoles (MCC 7500) and software defined base equipment (G-series) can be added, further enhancing the network.



### **ASTRO 25 IP Center**

The ASTRO 25 IP center provides critical call management operations. It allows agencies to easily add voice services, data services, connectivity service and operational management services. Services could include; conventional, trunked, integrated voice and data plus features such as information assurance, network management and enhanced encryption.

### **Bridging Equipment**

To enable communications between new and existing devices, an ASTRO-TAC comparator and Conventional Gate Ways manage the audio interface between IP and non-IP equipment. If your current ASTRO 25 network includes voting the comparators may already be available in the current system.

### **Dispatch Consoles**

Customers may continue using their existing CENTRACOM® Gold Elite consoles. When it's time to add or replace consoles, MCC 7500 IP Consoles can be deployed, providing:

- Secure end-to-end encryption between operator and subscriber.

- Connectivity between the IP Center and the operator positions, reducing the need to lease expensive T1 lines to connect remote operator positions.
- Core switching equipment that replaces racks of hardware, reducing the backroom space formerly needed to install Central Electronics Banks (CEBs).
- Parallel operation. MCC 7500 IP console and existing CENTRACOM Gold Elite console user interfaces are the same, minimizing user training.

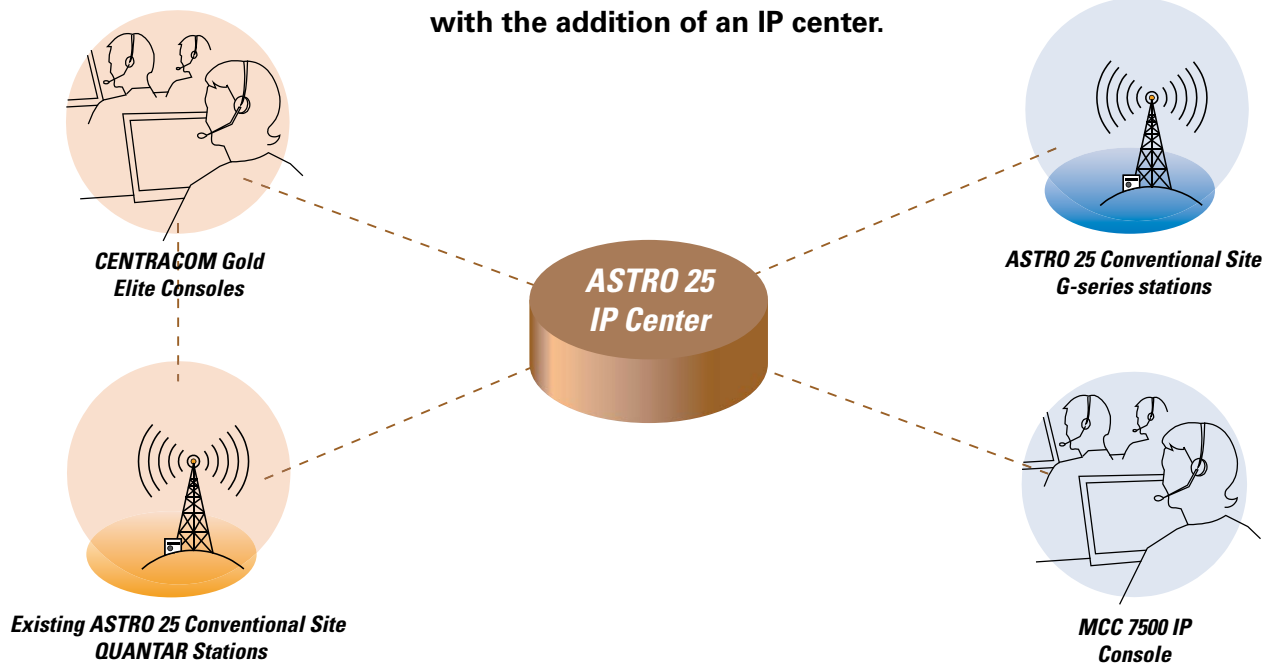
### **Base Station Site Equipment**

ASTRO 25 Conventional with IP connectivity supports existing QUANTAR® base station sites as well as G-series base station sites. The G-series site equipment is software definable providing the flexibility to upgrade in the future as needs change. QUANTAR stations and G-series stations can co-exist at the same RF site. GTR 8000 stations support either IP connectivity or circuit base connectivity providing flexibility to configure systems as needed.



**MCC 7500 Console Operator Position**

## **New & existing ASTRO 25 equipment coexists with the addition of an IP center.**



### ***Integrated Voice & Data***

The same migration strategy applies to integrated voice and data networks, allowing you to continue using current equipment. With ASTRO 25 IV&D, migrating to IP means moving from a circuit-switched to a packet-switched architecture. New IP infrastructure can be gradually added based on a customer defined timeline. The ASTRO 25 IP Center enables ASTRO 25 data capabilities such as:

- *Over-The-Air Rekeying (OTAR)* – end-user devices can be reconfigured automatically without the delays and inconveniences of having users bring their radios in to a shop for manual reprogramming.
- *Location capabilities* – pinpoint the geographic location of subscriber units, enabling agencies to deploy nearby personnel for quick response and to swiftly aid users in need of assistance.
- *Text messaging* – an additional tool for communicating detailed information. Ideal for situations in which verbal communication is unwarranted either because the environment is too loud or users need to operate quietly.
- *POP25 or Programming over P25* – personalities of the fielded subscribers can be easily updated over the air, allowing units to remain in the field while being reprogrammed, saving time and money.

### ***Network Management***

The full featured suite of ASTRO 25 network Management applications allows the customer to monitor, manage, and configure elements across their IP network. System managers can:

- Diagnose faults down to the board level and take malfunctioning equipment out of service from any licensed management terminal
- Generate performance reports to track the status of the system
- Remotely download software updates vital to sustaining system integrity to system components
- Configure infrastructure equipment from a central point

The network management system will allow customers to maximize system availability, better ensure compliance to network security requirements, minimize costly field visits, lowering total cost of ownership and generate the greatest return on investment for their system.

### ***Network Security***

The U.S. Federal Government and military branches now require compliance to security standards for all operational networks. Consequently, IP network infrastructure must comply with FISMA/NIST or DISA standards and receive certification.

Motorola Information Assurance (IA) services help to ensure the security and resiliency of your IP Conventional operations with a range of capabilities including:

- *ASTRO 25 IP Center Security* – Secure the heart of your ASTRO 25 Conventional network with features such as central authentication event logging, backup recovery and system hardening.
- *Remote Site Security* – Protect information as it travels across your network sites by implementing features such as: Router encryption, port security, and access controls.
- *Perimeter Security* – Defend your network against outside attacks using: firewalls, Intrusion detection sensor and Demilitarized zones.

See the [\*Information Assurance for Private Radio Networks white paper\*](#) for more information.

## Looking to the Future

A successful, phased migration to an ASTRO 25 Conventional network with IP connectivity can be accomplished through thoughtful upfront planning. Motorola has the comprehensive experience and knowledge to guide you through every phase of the project from future needs assessment and engineering design through installation, upgrade operations, service, and on-going support. Motorola's focus on quality in each phase will ensure that the modernization of your system is smooth and cost-effective with minimal impact to your operations.

### ***Steps for a Successful Migration:***

- Perform a system audit and performance assessment on the current network
- Assess future communications needs – coverage, capacity, user needs, voice/data, dispatch
- Identify migration plan and scenarios – infrastructure, subscribers, dispatch operations
- Establish timeline and evolution phases of migration
- Execute planned project phases

# **MOTOA<sup>4</sup>**

**MISSION CRITICAL SOLUTIONS**

The MOTOA4 portfolio allows customers to gradually evolve technologies from the analog world to digital and on to the future. Motorola is working to provide information seamlessly into the hands of first responders when and where they need it so that our customers can focus on their mission and leave the technology to us. Technology that's second nature.™



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