

# Intraplex<sup>®</sup> SynchroCast3<sup>™</sup>

Single-Frequency Simulcasting on  
T1/E1 or IP Networks for Public Safety



## Provides Simulcast Timing Control and Network Flexibility

The Intraplex<sup>®</sup> SynchroCast3<sup>™</sup> precision simulcast timing control system from Harris provides a dynamic, scalable solution that enables utilization of a set of common frequencies on a network of base stations with overlapping coverage areas. The simulcast operation allows for efficiencies, including increasing overall coverage areas, serving more users with the same number of frequencies, and eliminating coverage gaps due to factors like terrain shielding. Using precise GPS timing references, the SynchroCast3 system regularly measures the delay through the network and automatically compensates for variations in throughput delay without interrupting normal radio system functions.

With the introduction of the SynchroCast3 system, operators now have the option to use either Intraplex Access Server multiplexers on T1 or E1 networks or the NetXpress<sup>™</sup> multiplexer on IP Networks to provide the connections between the system head end and the base station sites. Whichever network is chosen, the same proven SynchroCast3 dynamic delay adjustments provide the simulcast timing control.

Public Safety mobile radio systems have traditionally used T1/E1 links to connect the system head end to the base station sites. The economics and increased bandwidths of IP connections have begun to attract more and more potential users. Unfortunately, the increased transport delay and packet delay variation have prevented IP from being a realistic consideration for simulcast operation. Harris has solved this problem by using the proven SynchroCast3 modules and delay management algorithms in the robust NetXpress platform. The resulting solutions provide true high-resolution delay control on IP networks.

In the same way it is able to manage changing delays in a T1/E1 network, the SynchroCast3/NetXpress system also automatically adjusts for IP link delays. Link delay changes can result from diverse packet routing, packet buffers,

signal path fade and other network conditions. The actual throughput delay to each base station site is continuously sampled. If a change in delay persists, the SynchroCast3 system initiates a delay correction at the appropriate base station site. Once the delay correction is started, the shift in delay time is performed seamlessly so that there is no interruption to system operation, and at a controlled rate to prevent overshooting the desired delay value.

## Improves on Industry-Leading Performance

SynchroCast3 improves on earlier generations of the SynchroCast product with increased time sampling, new alert/alarm reporting features, simplified installation and management, and the ability to integrate into existing SynchroCast installations. More efficient use of network bandwidth reduces timing overhead and allows additional bandwidth to be allocated to audio and data transmission. Providing dynamic and hitless delay adjustments, reliable operation and flexible implementations, this newest-generation product continues to provide the highest level of service possible.

## Optimizes the Use of Available Frequencies and Dramatically Improves Coverage Areas

Users are often confronted with limited spectrum and channel allocations. Turning a traditional radio system into a simulcast network can improve penetration in areas with marginal coverage. Now, mobile radio system operators can install new simulcast radio systems over T1/E1 or IP networks, or upgrade existing mobile radio systems for simulcast operation. The SynchroCast3 system makes new GPS-based timing technology available to older mobile radio networks. It gives users easy control of the system functions critical to adjusting the coverage area to achieve desired performance. The SynchroCast3 system also provides reference signals to the base station for precise control of channel frequencies.

**Why use SynchroCast3 over IP?**

**Transition network links to IP**

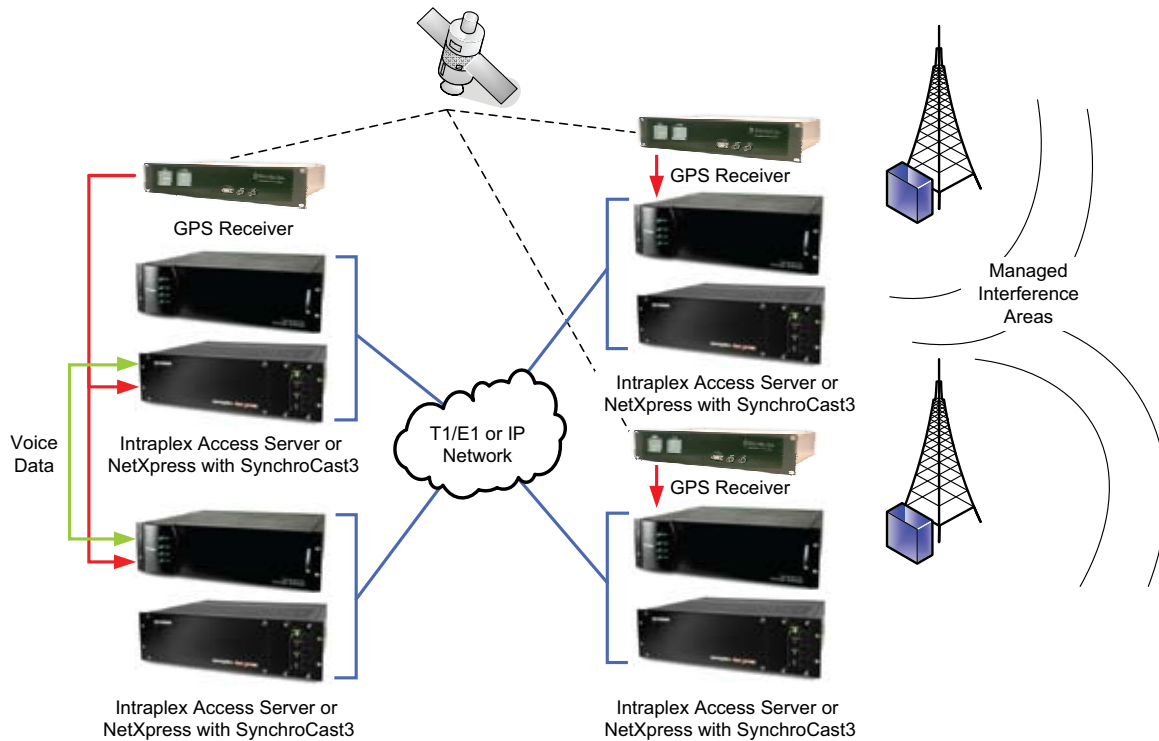
The increased bandwidth and flexible architecture of IP links have made them a preferred choice in many installations.

**Make better use of available frequencies**

With a limited set of frequencies available for mobile radio applications, getting the most benefit from the existing infrastructure is essential.

**Increase coverage and channels without adding frequencies**

By simulcasting the current frequencies, the operator can increase the coverage and, typically, the number of radio system channels. A simple radio system might use three frequencies distributed over an area to provide coverage. Converting this to a simulcast system allows the user to cover the same area with one frequency. This will release the two additional frequencies for reuse as extra channels on the radio system or for use by another agency.



**SynchroCast3 System Requirements**

**Components**

A SynchroCast3 system is ordered as add-on components or as a preconfigured package with the Intraplex Access Server or NetXpress multiplexer (running version 2.1 software or higher). SynchroCast3 components are as follows:

- IX-SNC-101S Control point timing module
- IX-SNC-101T Transmitter point timing module
- IX-MA-480 Module adapter for GPS and timing interfaces required for the IX-SNC-101S and X-SNC-101T
- IX-SNC-SCS-8 Cable set for SynchroCast3 timing modules at the control point or transmitter
- IX-SNC-SCS-9 Cable set for expansion multiplexers at the control point or transmitter

**GPS Receiver**

One GPS receiver is required for each base station site in the system and at the control point site. Consult a Harris Networking and Government Solutions representative for recommended models.

**Compatible Modules**

The SynchroCast3/NetXpress system works with many Intraplex channel modules. Intraplex model numbers IX-VF-25 (4 Wire) or IX-VF-28 (4 Wire Tx only) can be used for the voice channels of the system.

**For more information, please visit [www.intraplex.com](http://www.intraplex.com).**

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