

# T500MX-XC

## IP TDC Mux/DeMux Expansion Chassis

**KRATOS** | RT LOGIC



### Overview

The Kratos RT Logic T500 Internet Protocol (IP) Time-Data Correlation (TDC) Multiplexer/Demultiplexer Expansion Chassis (T500MX-XC) captures, packetizes, and transports multiple channels of real-time data and associated Inter-Range Instrumentation Group (IRIG) time between locations linked by commercial IP-based networks, while maintaining very low latency, rigid TDC, and signal integrity. Each channel is independently routable via the Wide Area Network (WAN) to one or many destinations.

The T500MX-XC's built-in expansion includes capabilities for recording, Command and Telemetry (C&T) processing, protocol gateway, digital signal rates from 0 Msps to 520 Mbps, analog signals up to 20 MHz in bandwidth, and 10 Gig Ethernet.

### Implementation

The T500MX-XC has two major components: an industry-standard 1U server platform and the high-density Input/Output (I/O) Chassis. This simple, yet powerful, combination of Commercial Off-the-Shelf (COTS) servers and ultra-reliable I/O hardware is unmatched in the industry.

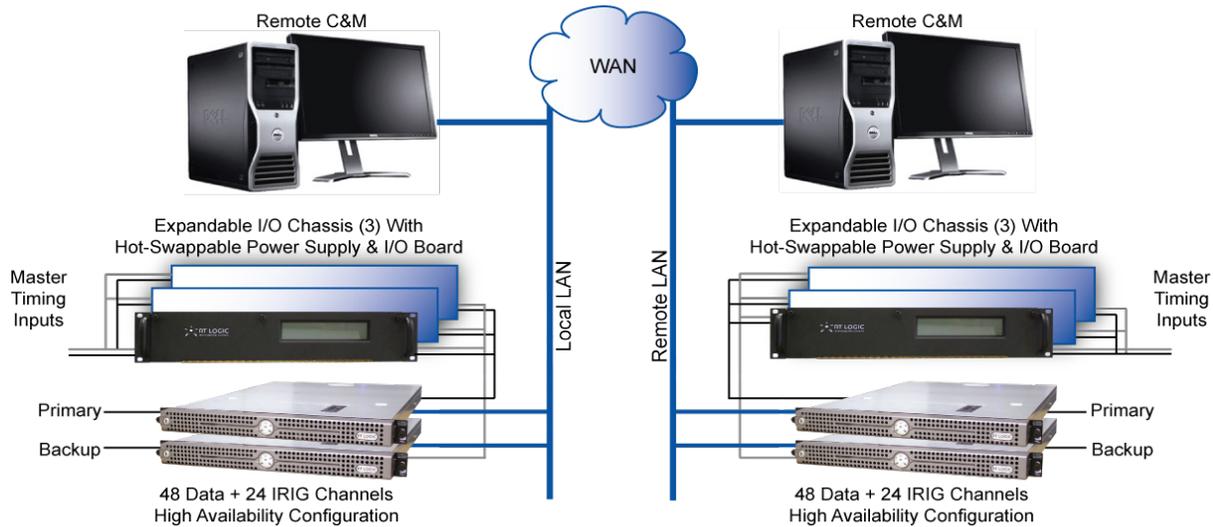
T500MX-XC products use standard, open COTS servers to host the RT Logic application software and interface cards. Obsolescence issues are eliminated due to the wide variety of available industry-standard servers. By default, enterprise-class Dell servers are used due to wide selection, outstanding performance, extensive service and repair network, and high reliability. RT Logic customers have the option to select other server platforms to better fit existing Operations and Maintenance (O&M) strategies. Benefits realized by using an industry standard server platform include the following:

- Leverages rapid advancement in the server/storage industry, high performance at low cost.
- Non-proprietary platform utilizes standard Linux Operating System (OS) and open file system, providing ideal network-centric platform for data accessibility using native industry-standards.
- Wide availability of commodity components to extend features and performance.

### Key Features

- Up to 3 Chassis Per Server
- Settable, Deterministic Latency
- Very Low Latency Contribution
- One-to-Many Reliable Data Distribution
- Transports IRIG Along with Telemetry
- Very Low Stream-to-Stream Skew
- Rate Buffering, Network Latency Resolution
- Supports Configuration and Control
- On-the-Fly for Each Stream
- Factors Out Source Jitter
- Hot-Swappable LRUs
- IP Over Ethernet
- Provides Ultra-Reliable Network Delivery Using a Hot Backup Server
- Control and Status Via Standard Web Browsers
- Many Signal Processing Options
- Clock Recovery, BER, Reed-Solomon, CRC
- Automatic WAN Fault Detection and Recovery
- Optional Data Recording and Playback
- Security Hardened OS

## System Architecture



## Modular, Digital Design

The 1U server is a high-density, high-performance, enterprise-class server. Servers are connected in a dual-redundant configuration. For sparing purposes, each server is treated as a Line Replaceable Unit (LRU). Minimal I/O connections and tool-less mounting hardware reduce the demonstrated Mean Time to Repair (MTTR) to less than 30 minutes.

The T500MX-XC I/O Chassis is a 2U rack-mountable unit with integrated dual-redundant, hot-swappable power supplies, status display, and I/O panel. Its design maximizes I/O ports in a low-profile package. An integrated passive I/O panel (no active components) converts internal high-density connections into DB-25/BNC connections, eliminating the need for port adapters. All port interface circuitry is contained on a single card within the chassis.

The hot-swappable, high-density, high-reliability T500MX-XC-HOST card installed in the I/O chassis provides 16 serial I/O ports, 8 IRIG-B ports, and 2 master timing ports. Card features include:

- 16 full-duplex software selectable multiprotocol serial ports.
- 8 IRIG B ports individually configurable as input or output.
- Hot-swappable with health monitoring circuitry.
- High-reliability design with dual redundant interfaces to support ultra-reliable network delivery.
- Embedded processor for real-time data flow (no OS).
- Field-Programmable Gate Array (FPGA)-based design.
- Flexibility to add new features or implement fixes via field software updates.
- Removable non-volatile memory for ease of maintenance logistics.
- Port I/O protected against overvoltage and Electrostatic Discharge (ESD).