Key Features

- Ability to send multi-channel serial data across an inexpensive IP network and reconstruct data into separate serial channels at the destination, all in real-time
- Optional generation of one or many IRIG time code outputs that recreate remote station time references locally
- Very high accuracy cross-channel and IRIG time/data correlation of 0.05 ms (50 microseconds)
- Unrestricted network mesh topologies are supported for simultaneously sending data and timing information to multiple destinations
- Dual-redundant system of 32 serial channels and 8 IRIG timing channels uses only 8U of rack space
- Web-based interface for configuration and status as well as full SNMP management
- Real-time GUI display status of all serial I/O channels, IRIG timing channels, Stratum clocks, and network data flow as well as integrated bit-error-rate test (BERT) capability
- Automatic failover in milliseconds from one server to the other server if a hardware or network problem occurs
- Full hot-swap of redundant system for repair or maintenance
Overview

With the NetAcquire Multiplexer Option, distributing serial data in real time has never been easier or more reliable. Now you can harness the power of the Internet to transport your specialized data and timing signals over commonly available inexpensive IP networks.

The NetAcquire Multiplexer option extends a NetAcquire server, giving it the ability to read data and timing information from multiple input channels and convert the resulting data streams into network packets. It then sends this aggregate data stream out over a WAN network. A NetAcquire server at the destination reads the data from the network and reconstitutes the data back into the equivalent data and timing information at a remote location.

Reliability

The integrity of your data is maintained throughout the distribution process. NetAcquire’s Multiplexer preserves the relationship of the signals from the source side to the destination side. The time correlation of the source signals also is maintained and reconstituted on output.

The NetAcquire Multiplexer has a unique output channel rate adaptation ability that prevents the serial bit slips and data padding which result from input-to-output timing mismatch. Other reliability features include automatic reconnect after network infrastructure failures, quality of service channel prioritization (makes sure your most important data comes through first), automatic compensation for individual network delays, and the ability to re-configure system properties dynamically without the need for a system reset. When combined with the High Availability Option, your data distribution processes have the additional benefit of automatic multiplexer fail-over if a hardware or network problem occurs. NetAcquire Multiplexer protects your data from source to destination.

Efficiency and Flexibility

Unlike traditional time division multiplexer (TDM) systems, the NetAcquire Multiplexer option does not require a dedicated T1 or T3 connection, and is much more bandwidth-efficient because it uses packet-based technology. Network costs are reduced and bandwidth is available for other uses.

The NetAcquire Multiplexer also eliminates the restrictions of traditional point-to-point communications. Configurable packet routing supports transfer of the same data to several destinations simultaneously. In addition, groups of channels from any number of different points of origin can be routed to the same destination. This routing flexibility reduces both infrastructure and management costs.

Features

- Transfers data signals reliably in real-time between two or more sites connected only by a network
- Supports different types of data signals, including serial, analog, and digital, with a mix-and-match input/output architecture
- Very low data transport latency and high throughput
- Allows both internal and external transmit timing and adaptive or fixed receive timing; recovered transmit timing is available for isochronous data without clock
- Each channel supports full-duplex and asymmetric transmit/receive rates
- Automatic compensation for variable network delays
- Robust communication with automatic detection and correction of bit errors that may occur during network communication
- Transfers one or more IRIG timing channels when used with the NetAcquire IRIG option
- Quality of Service (QoS) prioritization of data channels to maintain transfer of important channels even when network throughput decreases
- Automatic network reconnect if a network infrastructure failure occurs
- Load sharing and network path diversity provided through an optional second network interface
- Maximizes available communications bandwidth with optimized multiplexing protocol formats
- Patent pending, available communications bandwidth with optimized multiplexing protocol formats
- Automatic source-to-destination data rate tracking avoids error-prone manual configuration
- Operates transparently with the NetAcquire High Availability Option, allowing automatic multiplexer/demultiplexer fail-over to a second NetAcquire server if a hardware or network problem occurs
NetAcquire High Availability

Uptime Performance
Mission-Critical systems will experience the ultimate in uptime performance using the NetAcquire High Availability (HA) Option. The unique NetAcquire HA Option allows two NetAcquire servers to work together in a redundant 1+1 primary/standby capacity. If one server has a fault, the other server will automatically be switched in to take over communications. A Redundancy Connection Panel (RCP) multiplexes and de-multiplexes serial channels and analog and digital IRIG time signals from the two servers. Electronic switchover avoids minutes or even hours of downtime common with legacy systems.

For increased availability, the NetAcquire High Availability Option can be combined with the NetAcquire High Reliability chassis. The NetAcquire High Reliability chassis already offers, in a single server configuration, greater than 50,000 hours mean-time-before-failure (MTBF) and less than 15 minutes mean-time-to-repair (MTTR). By combining two NetAcquire High Reliability chassis in a 1+1 redundant configuration, the system availability approaches an extraordinary 99.9999% level (“six nines”). This availability performance is accomplished even when anticipated repair times for most failures are delayed 24 hours or more.

This high system "availability" is achieved through the combination of high “reliability” and low “repair” time. The NetAcquire design has focused on raising the value of the reliability numerator by using redundancy, both within a server and between two 1+1 servers.

This pioneering design places its emphasis on reducing repair time. If an automatic switchover from a primary server to a standby server occurs, the “repair” time is as little as several milliseconds. No cable changes are required when a failover occurs—the RCP automatically reroutes all serial and IRIG signals to the redundant interface hardware.

Availability Features
- High system availability using two NetAcquire servers as a redundant system
- Automatic and rapid switchover of the standby unit
- Hot-swap of redundant system for repair or maintenance (non-service affecting)
- Easy to setup and operate
- Ability to manually control the primary/standby and online/offline status of each server and to perform routine hardware maintenance and software upgrades
- Dedicated redundancy control hardware also protects from potential software failures
- Continuous active monitoring of all I/O channel hardware, including all RS-422 transceiver circuits and all IRIG signal transceivers
- Continuous active monitoring of network interfaces, disk drives, power supplies, fans, temperature, IRIG interface and serial interfaces
- Multiple display capabilities for system status and alerts: Web browser display, LCD front-panel display, LED back-panel display, SNMP, and archived operations history
- Automatic replication of configuration information

99.9999% Availability
Specifications

Typical Serial (PCM) Input/Output
- Channels: Up to 64 bidirectional serial channels
- Data rates: 0-3 Mbps (with baud rate auto-detect), 0-20 Mbps, or 0-100 Mbps
- Electrical: RS-422, RS-232, TTL, ECL, or LVDS
- Parameters: Synchronous/Asynchronous/Isynchronous, software-selectable word width, bit rate, clock recovery, NRZ-LM/S, R-NRZ and Biphase-L/M/S bit encoding, SDLC/HDLC, MSB/LSB data alignment, data/clock polarity and frame synchronization
- Clocking: Internal and external transmit timing and adaptive or fixed receive timing; recovered transmit timing is available for isochronous data without clock
- Diagnostics: Selectable loopback and loopout options and integrated bit error rate tester
- Failover: Serial channel hardware is fully redundant and supports automatic failover
- Data Decommutation: Advanced frame support with subcommutation, embedded formats, and CCSDS support

Network
- Interface: Ethernet, twisted pair (100BASE-T), with Gigabit and fiber optic options
- Protocol Support: TCP, UDP, HTTP, FTP, SNMP, CORBA, IIOP, DNS, RARP, DHCP, BOOOP, NTP
- Space Links: Integrated SCPS-TP and Reed-Solomon error correction support
- Quality of Service: User-selectable using DSCP (Differentiated Services Codepoint)
- Negotiation: Automatic or manual link speed and duplex negotiation
- ATM support: Available through external router
- PPP: Dial-up modem and high-speed serial

Timing
- IRIG Timing: IRIG B with both AM and DC level shift signal formats; input level from 1 to 10 Vpp and programmable termination and programmable output level from 1 to 8 Vpp
- IRIG Failover: IRIG channel hardware is fully redundant and supports automatic failover
- Phase Accuracy: Phase relationship maintained within 50 µs between IRIG and serial signals
- External Stratum Source: DS-1 or RS-422 inputs, 1.544 MHz or 2.048 MHz (auto-detected)
- Stratum Failover: Automatic failover between external primary reference, external secondary reference, and internal Stratum 3E reference

Other Input/Output Interfaces
- Analog signals: Up to 512 channel and 750,000 conversions/second
- Digital signals: TTL, RS-422, ECL, LVDS, high voltage, relay, contact closure
- Avionics bus support: MIL-STD-1553, ARINC-429, Firewire (1394)
- Application-specific interfaces: 250,000 Gate field-programmable digital gate array

Processor/Memory
- Main Processor: 2.4 or 3.06 GHz Pentium® 4
- RAM: 256 MB with expansion
- Coprocessors: DSP and Pentium M in some I/O subsystems

Data Storage Option
- Capacity: Up to 120 Gbytes
- Speed: >100 Mbps, continuous
- Redundancy: Optional RAID mirroring
- Overflow: Automatic detection and wraparound

NetAcquire Server Software
- Operating System: Hard real-time with latency guarantees
- Diagnostics: Selectable power-up, continuous, and remotely initiated
- Backup: One-step configuration save/restore
- Open Programming Architecture: Available with NetAcquire Extension Toolkit

Client Software
- User Interface: Web-based with Java GUI and SNMP
- Third-party software support: LabVIEW™, DataViews, Satellite Tool Kit, IADS, MATLAB®, .NET, C, C++, Java, CORBA, Visual BASIC

Physical
- Frame: Heavy-duty steel
- Operating temperature: 32 to 122°F (0 to 50°C)
- Ventilation: 49 CFM fan with air filter
- Power Requirements: 90-132 VAC or 180-264 VAC with automatic range switching, 250 watts (DC power optional)
- Rackmount: 1U, 2U, 4U, and 6U available

Solutions that Fit
NetAcquire Corporation specializes in real-time distributed systems. We can configure NetAcquire solutions that are customized to your network, input/output, and processing needs.

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