NovaTech®

Corporate Communications
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LATEST SOFTWARE

Orion5/5r Firmware Version: 1.41.0
OrionLX Release: 8.5
Orion NCD3 Version: 3.27
Bitronics M87x firmware: v4.08.2
Bitronics 70 Series Configurator: v4.05
Bitronics M57x firmware: v4.08.2
Bitronics 50 Series Firmware: v3.09
BiView: v3.03

UPCOMING TRAINING

OrionLX / OrionLXm Automation Platform
December 2 - 3, 2014

Ethernet for the Utility Professional
December 4, 2014

To register for these upcoming classes, please visit our website.

Bruce Muschlitz presented at the inaugural PAC World Americas Conference 2014 in Raleigh, NC on the status of development and the finer points of the 61850 standard.

TechTalk

New Security Monitoring Points

The standard OrionLX software feature "Sensor Master" (NCD Version 3.26 or higher and OrionLX release 8.0 or higher) now includes new points to monitor how a user is logged in or attempting to log in. These new binary and counter points, with text attributes on the counter points, can be annunciated in the following ways:

1. Mapped to a SCADA Master in any protocol that supports binary inputs and counters.

2. Mapped to a DNP3 SCADA Master as binary inputs and counter inputs with or without support for DNP3 Object 110 text strings. Text event strings make available host name, username, and application.

3. Text (host name, username and application) annunciated as an email, or as an alarm message or appearing on an HMI screen. Here is an example of the Text Event format for an invalid user attempting and failing login:

   host slog Invalid user *username* attempted login on *app* (e.g. "OrionLX slog Invalid user novatech attempted login on HTTPS").

The new points appear in NCD as shown below:

Previous monitoring points

New monitoring points
Each is described briefly here. For a more complete description, please refer to the OrionLX User Manual.

Point	Description
SSHD Session Status @Orion Internal	*Value is 1 if SSH or SFTP login is used.*
HTTP Session Status @Orion Internal	*Value is 1 if HTTP login is used.*
HTTPS Session Status @Orion Internal	*Value is 1 if HTTPS login is used.*
Login TTY Session Status @Orion Internal	*Value is 1 if TTY login is used.*
Login Telnet Session Status @Orion Internal	*Value is 1 if telnet is used.*
Pro FTPD Session Status @Orion Internal	*Value is 1 if FTP is used.*
GDM Session Status @Orion Internal	*Value is 1 if user is logged in via attached keyboard and monitor.*
PPP Session Status @Orion Internal	*Value is 1 if user is connected and logged in via PPP.*
IEC61131-3 Session Status @Orion Internal	*Value is 1 if IEC61131-3 login is made via NCD.*
Secure Passthru Session Status @Orion Internal	*Value is 1 if NCM* is connected and logged into.*
Root Session Status @Orion Internal	*Value is 1 if root login is used.*
Local Root Session Status @Orion Internal	*Value is 1 if local root login is used.*
Remote Root Session Status @Orion Internal	*Value is 1 if remote root login is used.*
Local Session Status @Orion Internal	*Value is 1 if local login is used.*
Remote Session Status @Orion Internal	*Value is 1 if remote login is used.*
User Login Count @Orion Internal	*Increments with every login. Decrements with each logout. Text event: username or root*
Known User Login Failure Count @Orion Internal	*Increments every time a known user fails to log in. Text event: username or root*
Unknown User Login Failure Count @Orion Internal	*Increments every time an unknown user tries to log in. Text event: username or root*
User Lockout Count @Orion Internal	*Increments every time a user is locked out. Text event: username or root*

*NCM is the NovaTech Connection Manager for establishing secure connections to substation assets

New DNP3 Master Protocol
Just released

An upgraded DNP3 Master protocol (NCD Version 3.27 and OrionLX release 8.4) includes up to 256 DNP3 TCP connections and a new tabular format similar to the new format for DNP3 Slave, AAR, IEC 61850 and Points Blocking.

Features in New DNP3 Master Tabular Format
• All available IED points and selected points visible in tables
• Each column able to be sorted low-to-high, alpha, etc.
• Search function
• Filters to display points by point type
• Selection to hide Master list and only show selected points
• Selection to hide Alias names
• Selection to print points lists
• Selection to edit common attributes for multiple points
• Selection to re-order points

More DNP3 TCP Connections
• Up to 256 connection for OrionLX CPX (High Performance CPU)
• Up to 128 connections for OrionLXm
• Standard OrionLX remains at 95 connections

Applications with large numbers of points, large numbers of served pages and extensive math and logic may not also support maximum number of connections. Please work with NovaTech Application Engineering to evaluate your specific application.
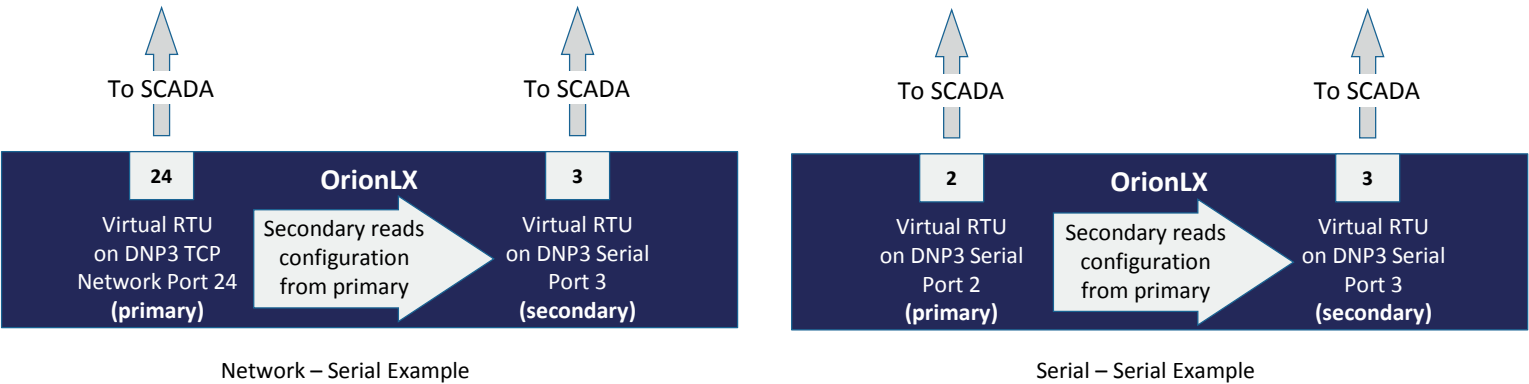
Did You Know?
DNP3 Slave RTUs on separate OrionLX DNP3 ports can be configured as a redundant pair for event queue synchronization purposes.

OrionLX DNP3 communication port redundancy allows a SCADA master with multiple front end processors or communication paths to the OrionLX to poll over a secondary path without receiving duplicate events if the primary path fails.

Since the primary and secondary RTUs have nearly identical configurations, the secondary RTU reads its settings from the primary RTU, except for the RTU name and RTU address. The secondary RTU also reads its input and output point configuration from the primary RTU. The peer settings on the primary RTU must point to the secondary RTU and the peer settings on the secondary RTU must point to the primary RTU. Please refer to the DNP3 Slave manual in the NCD Docs directory for more application configuration details.

A typical configuration would be an RTU on a DNP3 Slave network port for primary communications and an RTU on a DNP3 Slave serial port for secondary communications. If the master is unable to connect via the network, it would poll the OrionLX via the serial port. When events are confirmed on an RTU operating in redundant mode, the events are also cleared on the RTU's redundant peer RTU.

To SCADA   To SCADA

24	OrionLX	3
Virtual RTU on DNP3 TCP Network Port 24 **(primary)**	Secondary reads configuration from primary	Virtual RTU on DNP3 Serial Port 3 **(secondary)**

Network – Serial Example

To SCADA   To SCADA

2	OrionLX	3
Virtual RTU on DNP3 Serial Port 2 **(primary)**	Secondary reads configuration from primary	Virtual RTU on DNP3 Serial Port 3 **(secondary)**

Serial – Serial Example

Bitronics 878 High Density I/O Module
Design Update

TRIP / CLOSE Pairs Design Change
Bitronics has addressed a non-standard DNP3 implementation of TRIP / CLOSE Pairs in the 878 with a new design, effective with firmware release v4.07.1 in May of 2014.

The following DNP modes are now supported:
• TRIP or CLOSE operations to the same DNP index
• Latch-Off / Latch-On commands as synonyms for TRIP and CLOSE commands
• Ability to use pulse time of 0 indicating "Outstation selects appropriate pulse time"
• Ability to over-ride the default pulse time by specifying a non-zero value in the command
• Ability to send a CLOSE command to the second point of a trip/close pair. This supports previous users.

Except for substitution of time in a zero pulse length operation, "normal" point operations remain unchanged.

More Analog Points
The maximum number of analog events supported has been raised from the previous maximum of 40 up to 48.

Simplified 70 Series Configurator for the Bitronics 878
The configuration of an 878 I/O Module is abbreviated compared to the configuration of a 70 Series Recorder. A simplified version of the 70 Series Configurator – without CT and PT set-up, without triggers, etc – is being designed for the 878 that will only show the required configuration sections. Release planned for Q2 2015.

48 I/O shown in extended Bitronics 878 chassis

Using the Bitronics 70 Series as an Upgrade Solution in Subs with Electromechanical Relays

There are still many substation sites where electromechanical relays are providing adequate protection, but where utilities want to upgrade the substation with SCADA measurements, fault recording, distance-to-fault, etc. that aren't available from the existing relays. Rather than disrupting the existing protection, some utilities are using Bitronics 70 Series to provide these upgrade features. The offering from Bitronics and NovaTech provides:
• High accuracy SCADA measurements
• Multiple communication protocols and simultaneous physical links
• Split-core CTs for quicker installation
• Multiple recording modes including SOE, disturbance, trend and fault recording
• Distance-to-fault calculation
• Optional digital inputs and outputs and transducer inputs
• Optional detached displays for local viewing
• Design and installation support

Bitronics 70 Series retrofitted on an electromechanical relay panel. Note the split core CTs on the 5A relay CT circuits.
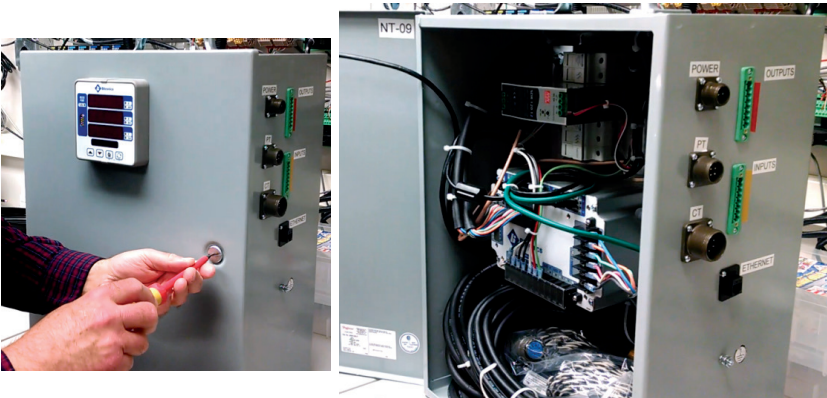
Bitronics 70 Series fault location system for retrofit on a 69kV circuit protected by electromechanical relays. All components required for the retrofit are included in the enclosure; split core CTs, PT wires, I/O cables, and either the Ethernet LAN cable or digital cellular modem.

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Bitronics ♦ D/3 ♦ Orion