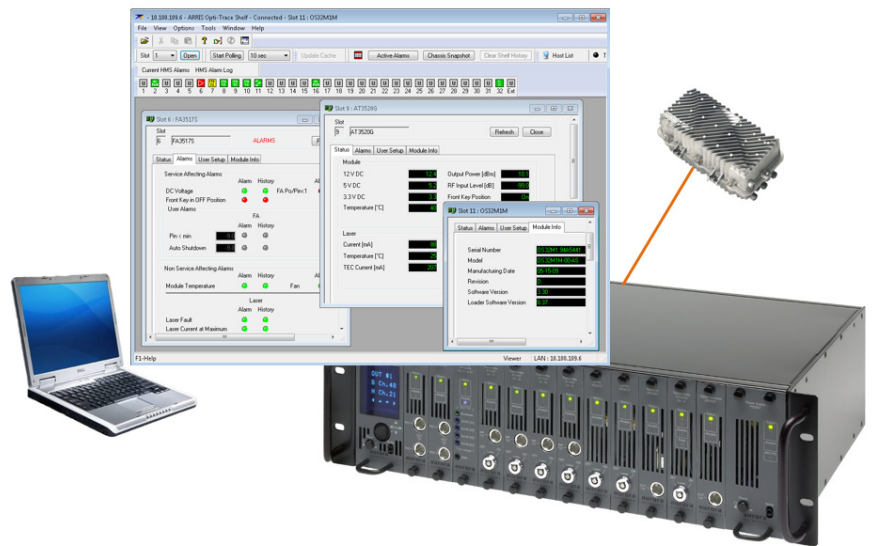


Headend Optics Platform (CH3000)

Opti-Trace[®] Management Software For ARRIS CH3000 Chassis and Compatible Node/VHub-based HFC/RFoG Modules

FEATURES

- Enables local and global topology configuration, fault, and security management for inside plant and outside plant HFC/RFoG products equipped with digital return communications
- Supports CH3000 Chassis and remote NC2000, NC4000, VHub, UVHub, and Opti Max OM4120/OM6000 optical nodes
- Windows PC-based application with extensive and intuitive user-friendly Graphical User Interfaces
- Remotely launched and operated through standard web browsers and SNMP wired/wireless networks
- Three Management Options:
 - Local serial/USB craft interface (CMS)
 - Full suite remote to single shelf (OTS)
 - Full suite remote enterprise (EMS)



PRODUCT OVERVIEW

Opti-Trace[®] is ARRIS's Windows-based Element Management System software for local and remote management and monitoring of optical transmitters, receivers, EDFAs, switches, and transponders installed in ARRIS CH3000 Chassis and NC2000, NC4000, VHub, UVHub, Opti Max OM4120, and OM6000 optical nodes.

The Opti-Trace management software simplifies operations, helping operators to quickly provide enhanced services and optimization of the overall subscriber experience.

Three software packages are offered. Limited monitoring and management is accomplished via a wired RS232 or USB connection between various chassis or node-based modules and a PC/Laptop using the Opti-Trace Craft Management Software (CMS). CMS is typically used for initial and incremental in-field local (not remote) module setup and adjustments.

The extensive full suite of remote monitoring and management capabilities for all modules installed in a CH3000 chassis and NC2000, NC4000, VHub, UVHub, and Opti Max OM4120/OM6000* nodes is accomplished via an SNMP (Ethernet) connection between a PC/Laptop installed with Opti-Trace Shelf (OTS) and the target CH3000 chassis. Opti-Trace Element Management Software (EMS) is used in conjunction with OTS to provide global/enterprise network views and management of multiple CH3000 networks and connected nodes. OTS/EMS connections can be as simple as a minimal wired or wireless Ethernet connection between the Opti-Trace equipped PC and the CH3000 chassis of interest, or as comprehensive as a centrally located back-office wide distribution multi-hub/multi-node system connected through the Internet or private network. Web/internet-based connection and management is also supported by simply entering the IP address of the target CH3000 chassis CX3002 controller into the OTS/EMS User Interface.

Opti-Trace CMS, OTS, and EMS software applications provide an extensive offering of graphical user interfaces (GUIs) to drill down to the module level whether they are transmitters, receivers, amplifiers, switches, or node modules to monitor events, configure/manage/set parameters, thresholds, set and monitor alarms, provide firmware updates, and troubleshoot systems.

OTS Chassis and Installed Module Views

The screenshot displays the Opti-Trace management software interface. At the top, a 'Return Node 10-20 - 10.100.109.9 - ARRS Opti-Trace Shelf - Connected' window shows a chassis rack with 32 slots. Red arrows point from labels to specific slots: PS3004D Power Supply (Slot 1), DR3002 Receiver (Slot 2), BP3100C Backplate (Slot 3), FA3524S Amplifier (Slot 4), DR3450N Receiver (Slot 8), and CX3002 Controller (Slot 31).

Below the chassis view, three detailed GUI windows are shown:

- Slot 8: DR3450N ALARMS:** Shows alarm settings for various parameters like 12V DC, Fan, and Temperature. It includes a table for alarm severity and enable status.
- MFN Properties:** Displays detailed properties for the DR3450N module, including Transceiver Info (Serial Number, Model Number, H/W Revision), Status (Running Mode, Message Channel Errors), and Alarms (DC Voltage, PLL Slip, VCD, MAC FIFO Overflow).
- Manage Alarm Thresholds:** Shows a table for setting alarm thresholds for signals like PSVAC1, PSVAC2, and ARDOPwB. The table includes columns for Signal, Value, Unit, Lower Threshold, and Upper Threshold.

*OM4120 and OM6000 node connections require a DT7x30 Digital Transmitter in the node with a DR3450N connection to the CH3000 Chassis. Functionality is limited to node monitoring only. Contact Technical Support for Opti-Trace and firmware version requirements.

Opti-Trace Craft Management Software (CMS)

CMS supports local monitoring and management of modules installed in an ARRIS CH3000 chassis as well as modules that are installed in certain ARRIS nodes and VHubs. With CMS, modules are accessed using an RS-232 serial cable (or USB Cable for newer modules) that is connected between the PC where CMS is installed and the craft port of a PS3xxx CH3000 chassis based power supply module. Certain modules within NC2000, NC4000, VHub, UVHub, or OM4120/OM6000 nodes can be accessed and managed through the connected CH3000 chassis power supply and a DR3xxx Digital Receiver module.

CMS allows you to:

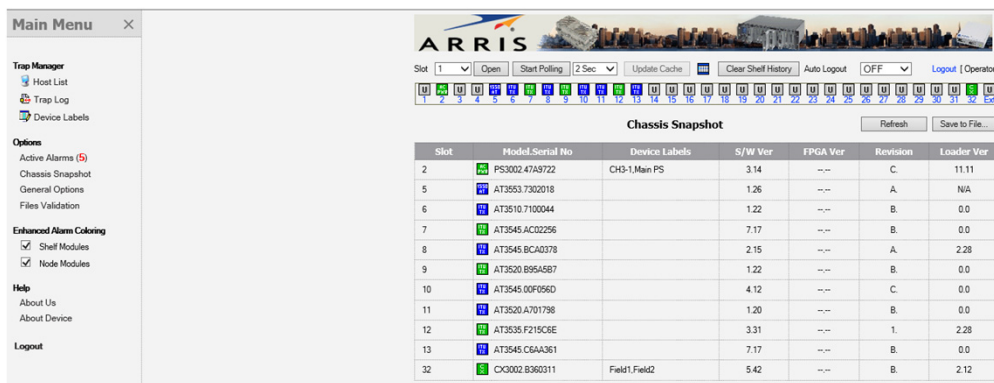
- Locally monitor and manage modules in a CH3000 chassis i.e. status, alarms, settings.
- Locally monitor and manage external node-based modules connected to a Digital Transmitter (DT42xxN/DT7x30N) in the node with a DR3xxx digital receiver connection to the CH3000 chassis.
- Perform firmware upgrades on active modules installed in the CH3000 chassis and NC2000, NC4000 nodes, VHubs, or UVHubs.

Opti-Trace Shelf Management Software (OTS)

OTS is an SNMP-enabled application that is used to monitor, configure, and manage up to 32 modules installed in a CH3000 Chassis (i.e. “shelf”). In a typical headend installation, multiple “shelves” of CH3000 chassis are used to serve the exterior cable plant, distribution network, and subscriber base, and OTS enables independent management of shelves via the unique IP address of the resident CX300x Communications Module in each chassis. OTS also provides monitoring and management of modules that are installed in certain ARRIS nodes and VHubs, accomplished via a DR3xxx Digital Receiver in the chassis and connected DTxxxxN Digital Return Transmitters installed in the node. Multiple digital receivers and consequently multiple nodes can be managed by OTS. All information is displayed via a set of intuitive and comprehensive GUIs available for each module.

OTS supports:

- SNMP-based connectivity via a standard SNMP (Ethernet) network, including wireless and Web browser/internet access.
- Individual shelf views showing up to 32 slots of installed modules, including module level alarm indicators.
- Monitoring and configuration/management of the modules installed in the CH3000 shelf, as well as certain modules in connected NC2000, NC4000, VHub, UVHub, and OM4120/OM6000* nodes.
- Set up of trap receiver lists on shelves, viewing of traps received, plus storage and retrieval of trap history.
- Easy setup and clearing of alarms and alarm history of the entire shelf, nodes, and individual modules.
- Utilization of a Batch Configuration Utility to configure multiple devices simultaneously.



*OM4120 and OM6000 node connections require a DT7x30 Digital Transmitter in the node with a DR3450N connection to the CH3000 Chassis. Functionality is limited to node monitoring only. Contact Technical Support for Opti-Trace and firmware version requirements.

Opti-Trace Element Management Software (EMS)

EMS allows for the local or remote monitoring and configuration/management of large-scale networks consisting of multiple ARRIS CH3000-based Optical Transport System Headend equipment. EMS provides a highly detailed global or enterprise network view and management of a network of CH3000 chassis-based shelf networks plus connections to their respective NC2000, NC4000, VHub, UVHub, and OM4120/OM6000 nodes when implemented with ARRIS Optical Digital Return Transmitter technology. When used with Opti-Trace Shelf (OTS), the complete visual identification, location, and “drill down” into networks including their respective component modules in wide geographic and global areas for monitoring and management can be achieved, as long as they reside in the same connected IP network, such as the internet or private network.

EMS supports:

- Creation and display of a hierarchy (topological view) of multiple connected CH3000 chassis shelves and respective connected nodes within segmented and global enterprise networks.
- Drilling down to manage connected Headend/Hub shelves and node modules (via OTS) such as transmitters, receivers, switches, and more.
- Direct configuration and management of parameters and events (alarms, traps, etc.) within modules.
- Alarm notifications visible through the system hierarchy.
- Administration of firmware updates for NI3030 Network Interface and CX3002 Communications Controller modules.

EMS and OTS communicate with the CH3000 chassis shelf via an installed CX3002 Communications Module or NI3030x Management Module using SNMPv1 (Simple Network Management Protocol version 1) commands. Each shelf requires one CX3002 Communications Module. Access via a web browser/internet is also supported.

SPECIFICATIONS

Characteristics	Specification
Minimum System Requirements	Applies to latest software versions. Check the CMS, OTS, EMS User Guide for the specific CMS/OTS/EMS version used to learn the specific requirements and features for each release.
Operating System	Windows XP, Windows 7, 8, 10
Processor	Pentium 90 or faster
Memory	256 MB minimum (CMS, OTS, EMS each require 256 MB min)
Available Disk Space	CMS: 25 MB; OTS: 10 MB; EMS: 20 MB
Network Interface	10/100 Ethernet (10 Mbps Ethernet is required); SNMP v1
Monitor	16-bit SVGA
Hardware Support (Headend)	CH3000-based modules; OTS/EMS require one CX3002 Communications Controller; CMS requires CH3000 PS3xxx or module serial/USB interface
Hardware Support (Remote)	NC2000, NC/NH4000 node, VHub, UVHub platform with DT4xxx Digital Return Transceiver to DR3xxx Digital Return Receiver to CH3000 chassis; OM4120, OM6000 Opti Max node platform with DT7x30 Digital Return Transceiver to DR3450N Digital Return Receiver connection to the CH3000 chassis

ORDERING INFORMATION

Model Name	Description
Opti-Trace Craft Management Software (CMS)	Local RS232/USB-based management of CH3000 and node modules
Opti-Trace Shelf Management Software (OTS)	Local/remote SNMP-based management of single CH3000 chassis and node modules
Opti-Trace Element Management Software (EMS)	Local/remote SNMP-based management of multiple CH3000 chassis and node modules OTS must be installed with EMS for shelf access/view. One OTS installation manages multiple active CH3000 shelves and modules.

NOTE:

Nodes must be outfitted using ARRIS Optical Digital Return Transmitter modules in order to monitor/manage node modules.

Contact your local ARRIS Sales Representative to obtain CMS, OTS, and EMS software. Opti-Trace CMS, OTS, EMS are only available by download. You must have an account on the ARRIS software download system.

RELATED PRODUCTS

CH3000 Chassis	AT3xxx Transmitters,
CX3002 Controller	DR3xxx Digital Receivers,
NI3030 Network Interface	FA3xxx Amplifiers
NC2000, NC/NH4000, VHub, UVHub, OM4120, OM6000 Platforms	DT4xxx, DT7x30 Digital Transmitters OR4xxx Optical Receivers FA4xxx Amplifiers

Customer Care

Contact Customer Care for product information and sales:

- United States: 866-36-ARRIS
- International: +1-678-473-5656

Note: Specifications are subject to change without notice.

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