IntellaPatch® Software Overview

APCON Software Interfaces

- WebX
- Monitor
- CLI
- SNMP
- TITAN

Key Distinctions

- Widest selection of software interfaces available
- Secure, remote switch management
- Operating system independence
- Ease of use and installation
- Lowest TCO among products of its kind

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Today's IT administrators and lab engineers face challenges in managing test routines, monitoring activities and security for their networks. To meet the goals of accelerated time to market and maximum uptime with fewer threats, they routinely deploy a host of network devices such as analyzers and probes. However, the ability to support ever-increasing requirements diminishes as budgets for capital equipment and operations shrink.

APCON answers the need with a host of solutions to manage the connectivity and efficient utilization of expensive network tools.

Five Choices – Robust Feature Set

APCON offers five software interfaces – each designed to meet the unique requirements of different users and organizations. Combined with an IntellaPatch switch, these tools provide the ideal solution for electronically moving and sharing expensive testing devices and monitoring equipment across an entire network. Key distinctions for APCON software include:

Ease of Use

From the "wire once" advantage to a full array of labor-saving features, APCON software interfaces offer companies a variety of ways to streamline operations in their test labs and production networks.

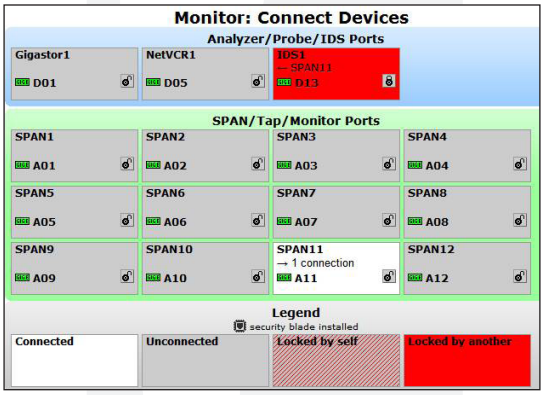
Manually re-patching connections is a time-intensive process that leaves networks vulnerable to human patching errors. APCON's intelligent "wire once" technology eliminates conditions where users can accidentally pull the wrong cable and cause a network failure.

Other user-friendly features include simplified interface views, where users can drag-and-drop device icons or click port images to make connections. Additionally, color-coded status indicators and stylized icons offer a quick snapshot of port activity – making it easier to identify and manage device connections.

Monitor: View Connections

Name	Port	Direction	Name	Port
palladium	B01	»	argon	B05
krypton	B04	»	astatine	B07
germanium	J03	<>	ununbium	P01
erbium	J08	<>	ununtrium	P05
phosphorus	J13	<>	americium	P11
bohrium	J15	<>	yttrium	P15

View connections quickly in Monitor interface



Lock ports directly from the patching screen in MONITOR

APCON interfaces have been optimized to self-manage details that are vital to creating connections – automating many common switch settings. For instance, MONITOR automatically recognizes and sets up security blades; TITAN identifies and selects the highest rate common to connected devices – checking for compatibility, and assuring they share a common rate and a matching data protocol. And those are just two of APCON's many examples.

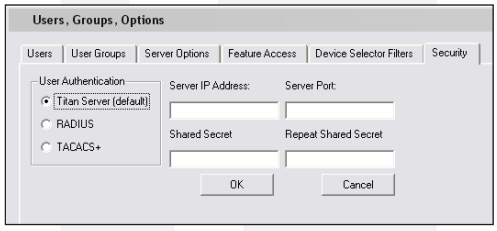
Access & Control

Our range of interface software helps administrators manage user access and device control through a variety of features that include zoning, port locking and topology scheduling.

INTELLAPATCH physical layer switches allow an administrator to enable / deny access to a selection of ports or an entire switch. Called "zoning," this powerful feature is essential in multi-user environments to prevent unauthorized configuration changes. Ports or devices can be configured for read-only access, full access or no access; and each switch has the capability to host multiple zones.

Port locking adds additional security and control by allowing authorized users to lock one or more ports or devices for a specified period. Once a user has locked a port, only that user or an administrator may unlock it. Other users who access the switch are given a visual indication of which ports are unavailable.

Another time-management feature, the Topology Scheduler included in the TITAN interface, enables users to create a calendar for running saved topologies. It offers time-based scheduling, where topologies can be activated and released at set times and dates. Built-in security measures enforce user permissions – preventing users from superseding schedules set by others and precluding a single topology from being used in overlapping schedules.



TACACS+ and RADIUS authentication in TITAN

Patching

As expected, all APCON software interfaces offer the most robust set of patching features available today. Users have the option to patch connections in real-time or run them in batches at once. There is also the ability to customize port names – by location, device name or other naming convention up to 256 characters – which makes the process of creating connections easier and more intuitive.

Security

For today's security-centric network environments, APCON provides numerous features to help put administrators' minds at ease.

All software interfaces allow secure, remote IntellaPatch switch access for multiple users. Whether through a web browser with SSL or via a client interface with SSH, users are granted password-protected access to electronically manage device connectivity. Additionally, administrators can choose from four levels of user access privileges when setting up accounts.

APCON offers full "AAA" support (authorization, authentication and accounting) through RADIUS and TACACS+ to streamline operations, resulting in users no longer needing a separate login and password to access each switch.

Another essential feature is SPAN Port Safety logic, which prevents users from accidentally creating an infinite network loop – thereby eliminating the fatal conditions that can cause catastrophic network failure.

Maintenance

A variety of diagnostic features simplify and enhance the process of managing one or more IntellaPatch switches. From tests that troubleshoot frustrating cable problems, to alarms that monitor SFP temperatures, to a port flapping feature that enable users to test their end devices – APCON covers a full range of maintenance needs for protocols up through 10Gb/s. Just one more reason APCON IntellaPatch switches are the market-leader in Layer 1 switching solutions.

WebX Features

- Embedded – no software installation required
- Simple switch set-up and configuration
- Click-and-drop to connect devices
- Real-time patching
- Patch by device name
- Import/export settings in multiple formats including XML
- SFP digital diagnostics and cable test utilities

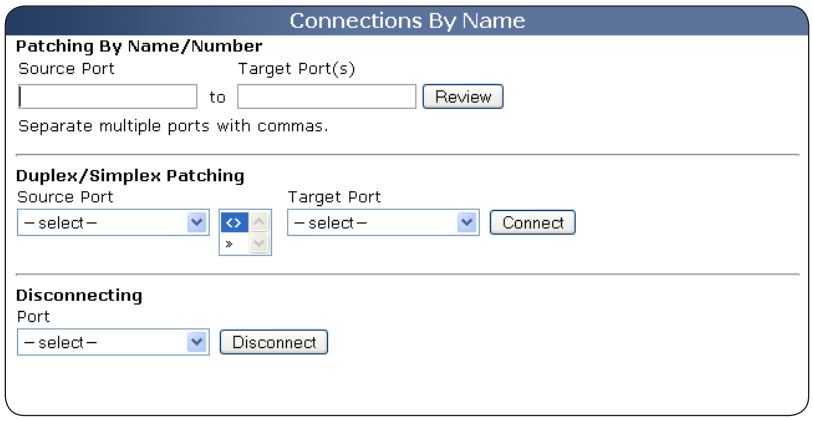
WebX Web Interface

WebX is the embedded web interface included on all IntellaPatch physical layer switches. With no software to install, users can immediately begin configuring and managing port connections in an intuitive environment via their standard web browser. Features include the ability to navigate, configure and view all switch features and security functions; monitor switch status; and detect, diagnose and correct system issues. New personalization options also enable users to toggle between icons and drop-down menus.

Users have four ways to patch:

- Patch by name – connections are made between ports named by device, location or the user's own naming convention
- Real-time patching – connections are made instantly
- Batch patching – multiple connections are made at one time
- Patch by drop-down – connections are made via selections on a drop-down menu

WebX is operating-system independent and compatible with major web browsers, including Microsoft Internet Explorer and Mozilla Firefox. For added security, WebX supports SSL over HTTPS.



Users can quickly make connections from the connections by name screen

MONITOR Features

- Embedded – no software installation required
- Simple, quick-read screen graphics
- Two-click device connections
- Lock ports from patching screen
- SPAN port safety logic prevents SPAN port loops
- Customize user privilege levels and security

*Requires a separate license.

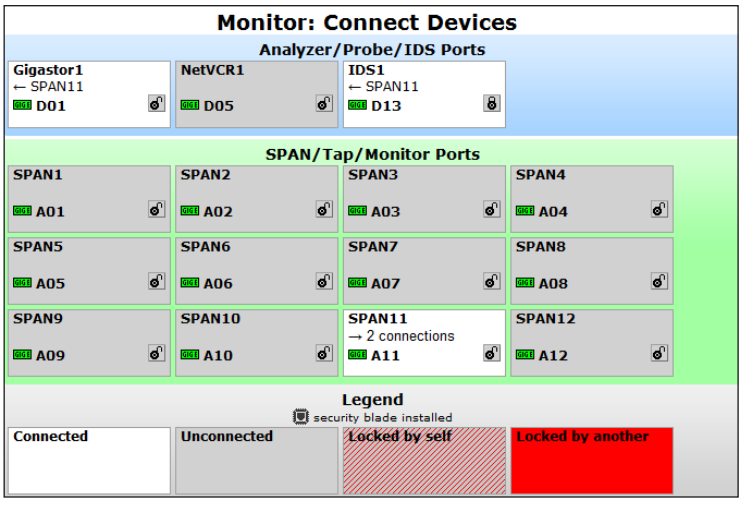
MONITOR

APCON MONITOR provides a simplified solution for electronically moving and sharing network monitoring devices. Now embedded in the WEBX interface, MONITOR* enables physical connectivity of monitoring devices to any point in the network, resulting in full network visibility.

MONITOR's user-friendly interface divides the screen into two groups with Tools at the top and SPAN/Taps at the bottom. Simply click a tool at the top and click a SPAN port at the bottom, and MONITOR makes the connection to easily manage a shared/pooled monitoring and analysis environment. Colors indicate status of the connection, and connected devices are identified below the tool name. Additionally, users can lock/unlock ports on the patching screen, and they can also now search by device name.

A new three-step wizard walks users through the process of setting SPAN port safety logic or classes, which prevents the accidental creation of SPAN loops that can lead to network failure. Users first verify that required services are active, assign port names and then assign SPAN port safety logic or classes.

MONITOR provides unmatched features and security, supporting both media conversion from optical to copper Ethernet and single-mode to multimode fiber interfaces. Multicasting a single data point in the network to multiple monitoring devices is also supported.



Quick-read screen graphics simplify connection management

CLI Features

- Patch by device name
- Port locking
- Port zoning
- Digital diagnostics and alarms
- Tab completion
- Delimited and formatted output
- Detailed help and error handling

CLIv3

Programming interfaces allow users to control APCON switch functions with common scripting languages. The latest release offers developers a new syntax design that optimizes the CLI for writing scripts and automating tests of storage systems, servers, peripherals and operating systems.

The CLI also provides an interactive mode that operates like a text-based wizard – guiding users systematically through sub-commands for setting system parameters. Users now have a batch mode that is optimized for scripting and automation. The full command set of CLIv3 is seamless with CLIv2 as well.

```
PATCHING
  connect simplex <src><dst>                Create a simplex conn
  connect duplex <port1><port2>             Create a duplex conne
  connect multicast <src><dst1><dst2>...    Create a multicast co
  connect named                             Patch by name, intera
  connect named simplex "name 1" "name 2"   Patch by name, batch
  connect named duplex "name 1" "name 2"    Patch by name, batch

  disconnect <port1>...                     Disconnect one or mor
  disconnect multicast source <port>        Disconnect a multicas
  disconnect multicast destination <port>   Disconnect a multicas
  disconnect all                            Disconnect all ports
  disconnect named                          Unpatch by name, inte
  disconnect named simplex "port name"      Unpatch simplex port
  disconnect named duplex "port name"       Unpatch duplex port b
```

The CLI's interactive mode guides users through commands

The IntellaPatch CLI can be controlled through a Telnet interface, via a terminal emulation program for TCP/IP. This Telnet interface allows users to enter commands through the Telnet program that will be executed as if they were entered directly on the switch. For remote users and system administrators needing to access and manage servers running SSHv2, IntellaPatch software supports SSH clients to provide a secure interactive file transfer and terminal client functionality.

SNMPv3

Simple Network Management Protocol, called SNMP, allows the IntellaPatch switch to be seamlessly integrated into existing network and element management platforms via APCON's standardized MIBs (Management Information Base). APCON's SNMP interface allows the IntellaPatch switch to be monitored for health, status, configuration and inventory. The interface also enables a user to fully configure all switch settings – making it equivalent to the WebX and CLI3 management interfaces in terms of functionality. APCON's SNMP interface supports SNMPv1, SNMPv2c and SNMPv3.

TITAN Features

- Manages multiple APCON switches
- Supports thousands of ports/ devices
- Tapping and multi-casting of device traffic
- Real-time connections and stored topologies
- Remote, multi-user access
- Error checking and diagnostics
- Logging of user and switch commands

Scripting Libraries

APCON offers a library of sample automation scripts for common applications, which enable users to streamline IntellaPatch operation.

For example, one script is designed to assist users upgrading firmware to a series of IntellaPatch switches. Instead of upgrading firmware manually on a switch by switch basis, this script automates the process for the user and completes it in less time.

Tcl, Perl, Java, and PHP are a few of the more widely used scripting languages used in conjunction with scripting. Customers also have access to a knowledgeable professional services team that can provide assistance with scripting and automation applications. For additional details, see the professional services overview.

TITAN

TITAN is the ideal software tool for enabling users to cascade multiple IntellaPatch switches to create an expanded virtual switch matrix. This architecture scales to support complex test automation and enterprise monitoring environments supporting thousands of ports and devices.

Through an easy-to-navigate graphical user interface (GUI) TITAN eliminates the need to map physical layer connections between multiple switches – automatically routing traffic along the most efficient connection path. Users visually connect devices in real time with a drag-and-drop canvas, and complex offline topologies can be created, saved and recalled for on-going use.

TITAN's powerful database maintains device inventory, asset management, saved connection topologies, user policies and security levels. The system also provides remote access, advanced security, multi-user access and advanced logging.

For additional details on TITAN, see the TITAN Overview brochure.

Features

- Point-to-point (full duplex), multicast (1-to-N) and loop topologies
- Non-blocking, any-to-any switching architecture
- Hot-swappable blades and transceivers
- Signal regeneration on all ports
- Ethernet and serial port for remote GUI or command line interface management

Benefits

- Instant network topology reconfiguration
- Device sharing
- Elimination of cable swapping
- Management via embedded software

Protected under US Patent #6,243,510.

IntellaPatch® Physical Layer Matrix Switches

Whether deployed in a test lab environment or on a live network, APCON's IntellaPatch switches help reduce capital expenditures and manage resources more efficiently.

Featuring both fiber optic and copper interfaces, IntellaPatch switches are ideal for automating tests of storage systems, servers, peripherals and operating systems. Within enterprise environments, our switches deliver superior efficiency by allowing networks to centralize and share monitoring equipment such as probes, sniffers and IDS.

A proven security tool, IntellaPatch switches allow network managers and lab engineers to electronically plug/unplug network connections. Individual workstations, entire floors or buildings can be connected/disconnected from a secure location.

IntellaPatch physical layer switches are available in 288-, 144-, 64-, 32- and 16-port configurations and offer unparalleled cost, time and energy savings. With non-blocking, any-to-any connectivity at wire speed, they support 1, 2, 4 and 10Gb/s Fibre Channel. Also offering 10/100/1000/10G Ethernet, T1, E1, J1, FDDI and SONET/SDH OC-3, OC-12 and OC-48.

For enhanced flexibility, the multi-protocol blade supports additional protocols including, NTSC/PAL, HDTV, ESCON and Infiniband. APCON's patented solution enables automation, remote access, device sharing, zone set-up and security of switch management.

IntellaPatch Chassis Features

- 1, 2, 4, 9 or 18 blades per chassis
- Up to 2.4 Tb/s switching capacity
- Point-to-point (full duplex), multicast (1 to n), and loop topologies
- Non-blocking, any-to-any switching architecture
- Signal regeneration on all ports

IntellaPatch Blade Features

- High-density port design with 1-inch blade height
- Maximize rack space without sacrificing port accessibility
- Hot-swappable blades and transceivers
- Widest array of protocols – Fibre, Ethernet, as high as 10Gb/s

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