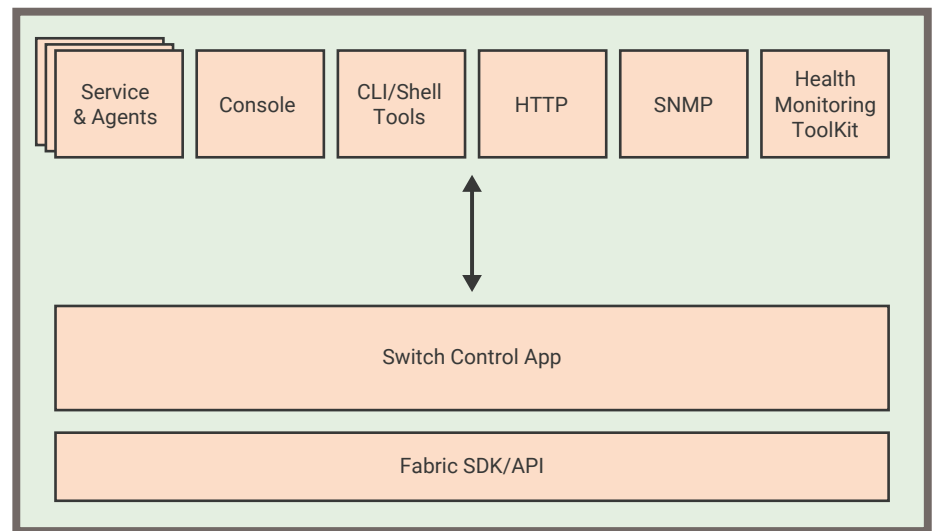


OpenWare 6.7



OpenWare is Abaco's switch management environment, available exclusively on our NETernity™ layer 2/3 Ethernet switches, meeting the needs of customers in a broad range of industries, including military/aerospace and commercial/industrial. OpenWare is GNU/Linux-based firmware, bringing together the best of Open Source and proprietary switch control, routing and protocol implementations.

This provides the user with a switch that can be easily configured for any network requirement – from the trivially simple, through to the highly complex. The flexible OpenWare environment allows customization for specific requirements and incorporation of the latest standards.



OpenWare feature highlights:

Secure: Multi-level military-grade security delivers the optimum application-dependent balance between protecting data and preventing unauthorized access on the one hand and accessibility and usability on the other. This allows fast turnaround on new emerging Common Vulnerabilities and Exposures (CVEs).

Robust: OpenWare benefits from over 20 years of continuous development, and is field-proven in thousands of mission-critical installations around the world - even in space. At Abaco, dependability comes built-in.

Fast: In life or death situations, a switch boot time that's measured in minutes is unacceptable. OpenWare delivers all the benefits of a fully managed switch – but with boot times under 15 seconds.

Customizable: OpenWare was developed by Abaco's Networking Innovation Center, with every element built from source inhouse. Those developers are able to modify management/security interfaces, protocols, or any other aspect of the software to meet almost any network requirement.

Open: GNU/Linux®-based architecture blends open source network switching and routing with Abaco's experience and expertise in advanced network management to deliver the best of both worlds.

Interoperable: Based on industry standard layer 2/3 network protocols, management and security technology, OpenWare-based switches are compatible with existing network infrastructures for maximum deployability.

OpenWare 6.7

Switch protocol features:

Layer 2

- Jumbo frames
- VLANs (port based): IEEE 802.1Q
- VLANs (tagged): IEEE 802.3ac
- Quality of Service: IEEE 802.1p, RFC 2474, 2475, 2597, 3246, 3260
- Storm control: Protection from malicious attacks and misconfiguration
- Filtering: Forward or block traffic matching configured patterns
- Trunking (Link Aggregation): set up either manually, or using the Link Aggregation Control Protocol (LACP): IEEE 802.3ad
- Mirroring: Traffic from one or more ports can be "copied" to another port.
- Port Configuration – Flexible port management
- Rate limiting: Prevent saturation of the network by rogue devices
- Provider Bridge - Double Tag VLAN (802.1Q, 802.1AD)

Layer 3

- Static NAT (RFC 2663)
- Moved from Quagga to FRRouting
- Routing: RFC 1519, 1812 – Fast Hardware Based Routing
- Routing protocols – IPv4 and IPv6
 - Protocols supported include RIP, OSPF and BGP for IPv4 and RIPng, OSPF IPv6 and BGP IPv6.
 - RFC 1058, 2453, 2328, 1997, 2439, 3107, 4241, 4456, 5056
- Differentiated Services (DiffServ)

Security control

- Port Security
- Port Authorization: IEEE 802.1X, RFC 2868, 2866
- Radius Server
- Denial of Service Protection
- DHCP Snooping
- MAC Notification

Multicast

- IGMP Snooping Querier: RFC 1112, 2236, 3376, 4541
- MLD (Multicast Listener Discovery) Snooping Querier: RFC 3513, 4541
- Static Multicast control
- IGMP/MLD Access Groups & Limits
- GARP, GVRP, GMRP: IEEE 802.1D 802.1Q
- PIM-SM (Protocol Independent Multicast – Sparse Mode) allows multicast traffic to be carried over unicast routes: RFC 4601

Configuration

- Software only PTP (IEEE 1588) clock synchronisation
- DHCP Client/Server/Relay – IPv4 and IPv6: RFC 951, 1542, 1534, 2131, 2132, 3046, 3315, 3396, 3736, 4242
- DHCP Server Port Aware
- Configuration profiles: OpenWare provides the ability for Geographic Addressing. This allows switches to automatically select different configuration files, dependent on per-defined criteria – for example when the switch is in a particular slot.
- Configuration Snapshot: provides a mechanism for saving an active configuration, rolling back to a previously saved configuration, or loading a configuration which has been externally downloaded on to the switch.

Management Protocol

- SNMP – Autoneg Management (IEEE-MAU-MIB)
- SNMP – FRRouting Management
- SNMP – RFC 2741 SNMP: RFC 1155, 1157, 1212, 1215, 1901, 1908, 2571, 2573, 2578, 2579, 3410, 3416, 3584

Redundancy/Failover

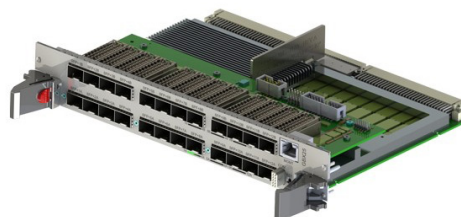
- ERPS Redundant Ring Support (ITU G.8032v1)
- MSTP (Multiple Spanning Tree): IEEE 802.1d, 802.1w, 802.1Q-2005
- VRRP (Virtual Router Redundancy Protocol): RFC3768
- FailOver Groups (FOG): proprietary mechanism, allowing for fast failover/failback of switches or links in homogeneous networks. This is a building block for High Availability configurations.

Built In Test (BIT)

- OpenWare provides tools to run deployed test of the hardware, on startup or on request, or continuously, in the background. This provides a high level of confidence in the switch operation.
- Availability
- OpenWare is available on a wide range of NETernity switches, with many combinations of form factor, fiber or copper, slow to very fast line speeds, different levels of ruggedness, thermals and packaging.



RES3000



GBX25



SWE440S