

- Access point monitoring and management<sup>1</sup>
- User authorization scenarios management
- Wireless network radio parameters adaptation
- 802.11 r/k/v roaming management



**vWLC** is an enterprise-class virtualized controller for medium and large enterprises and city area networks. The controller allows building distributed wireless networks using different L2/L3 traffic scenarios.

It supports firewall functions to ensure network security. Different user authorization scenarios for corporate and public (guest) networks can be created using vWLC. Scenarios of integration with corporate services (LDAP, RADIUS, etc.) of the customer are also available.

The controller is deployed in a virtualized environment, enabling flexible scaling. Built-in Airtune module allows to manage radio parameters of access points (AP) and adjust to the current environment, as well as to perform client balancing. Seamless roaming support (802.11 r/k/v) provides the best client switching between AP.

### Minimal system requirements<sup>2</sup>

CPU	x86-64 architecture, clock frequency not less than 1.8 GHz MMX, SSE, SSE2, SSE3, SSSE3, SSE4.1, SSE4.2 instruction set support (Intel Nehalem or AMD Barcelona CPU generation or higher)
RAM	not less than 4 GB
Disk space	not less than 1 GB
Hypervisors	VirtualBox 6.0 or higher, WMWare Workstation/ESXi 6.7.0 or higher
Supported I/O	Emulation: Intel E1000, Intel E1000E, VMXNET2, VMXNET3 Paravirtualization: VirtIO PCI Pass-through: Intel XL710 Ethernet Controller (2x40/1x40/4x10/2x20/2x10/1x10), Intel X722 Ethernet Controller (2x10/4x10)

### Features and capabilities

#### Access point management

- WPA/WPA2/WPA3<sup>3</sup> Personal
- WPA/WPA2/WPA3<sup>3</sup> Enterprise
- Open network with OWE encryption<sup>3</sup>
- Local collection of user accounts<sup>4</sup>
- Downloading of user accounts to an external RADIUS server
- Support for seamless roaming standards IEEE 802.11r/k/v
- Integration with external portals<sup>5</sup>
- Automatic management of radio environment resources
- Authorization of AP by certificates

<sup>1</sup> In demo mode, 15 AP can be connected. The number of AP can be extended according to the license. The maximum number of AP is 5000.

<sup>2</sup> The given requirements allow vWLC installation and initial startup with basic configuration.

<sup>3</sup> WPA3 and OWE are supported on WEP-3ax, WEP-3L, WEP-30L, WEP-30L-Z, WOP-30L, WOP-30LI, WOP-30LS, WEP-550K.

<sup>4</sup> The functions will be implemented in future firmware versions.

<sup>5</sup> The operation is verified with Eltex-NAICE, WNAM Netams, Cisco ISE.

## Features and capabilities (continued)

**Supported access points**

- WEP-1L
- WEP-2L
- WEP-3L
- WEP-200L
- WEP-30L
- WEP-30L-Z
- WEP-3ax
- WEP-50L
- WEP-550K
- WOP-2L
- WOP-20L
- WOP-30L
- WOP-3L-EX
- WOP-30LI
- WOP-30LS
- WEP-2ac
- WEP-2ac Smart
- WOP-2ac
- WOP-2ac rev.B
- WOP-2ac rev.C

**Switching**

- Up to 4094 VLAN (802.1Q)
- Voice-VLAN
- Q-in-Q (802.1ad)
- MAC-based VLAN
- Bridge domain
- LAG/LACP (802.3ad)
- Port-security, protected port
- Jumbo frames

**MPLS**

- LDP
- L2VPN VPWS
- L2VPN VPLS Martini Mode, Kompella Mode
- L3VPN MP-BGP (Option A, B, C)
- L2VPN/L3VPN over GRE, DMVPN
- Transparent transfer of service protocols

**Routing****BGP:**

- Address family: IPv4, IPv6, VPNv4, L2VPN, IPv4 label-unicast, Flow-spec
- Flexible management of route information by attributes. Support for Conditional Advertisement, Route Aggregation and Local-AS
- High scalability and configuration flexibility: support for peer-group, dynamic neighbor, as-range and Route-reflector
- Fall over based on BFD and Fast Error Peer Detection
- Graceful restart
- Authentication
- Flexible redistribution from/to BGP process of routes from other protocols

- Ability to run up to 64 simultaneous processes
- ECMP
- Support for policy-based routing

**OSFP(v3):**

- Zones of different types: Normal, Stub, Totally stub, NSSA, Totally NSS
- Operation of different network types: Broadcast, NBMA, Point-to-point, Point-to-multipoint, Point-to-multipoint non-broadcast
- Summarizing and filtering of routing information
- Authentication
- ECMP
- Passive interface
- Flexible redistribution from/to OSPF process of routes from other protocols
- Ability to run up to 64 simultaneous processes
- Support for BFD
- Auto cost calculation
- Support for policy-based routing

**IS-IS:**

- Operation in different network types: Broadcast, Point-to-point
- L1-/L2 layer neighborhood setting
- Metric style: narrow, wide, transition
- Authentication
- Routing information filtering
- Flexible redistribution from/to IS-IS process of routes from other protocols
- Ability to run up to 64 simultaneous processes
- Support for policy-based routing

**RIP(ng):**

- Operation in modes (RIP only): Broadcast, Multicast, Unicast
- Summarizing and filtering of routing information
- Route metrics management
- Authentication
- Passive interface
- Flexible redistribution from/to RIP process of routes from other protocols
- Support for policy-based routing

**Static:**

- Support for BFD
- Recursive search
- Route metrics management
- Ability to choose the sender notification option about blocked traffic

## Features and capabilities (continued)

**IPsec**

- Policy-based and route-based modes
- Encapsulation modes: tunnel and transport
- Authentication types: pre-shared key, public key, xauth (ikev1 only), eap (ikev2)
- Support for mobike (ikev2 only)
- Support for ike ikering authentication key sets

**Remote Access**

- Remote access to the corporate network via PPTP, L2TP over IPsec, OpenVPN, WireGuard
- PPPoE/PPTP/L2TP client
- User authentication
- Connection encryption

**Security**

- Support for L2/L3/L4 fields-based ACL
- Zone-based Firewall in two modes: stateful and stateless. Rule triggering logging, counters
- Application-based filtering
- Protection against DoS/DDoS/Spoof attacks and their logging
- IPS/IDS and their logging
- Signature analysis via IPS in two modes: transit and mirrored traffic logging
- Interaction with Eltex Distribution Manager for licensed content — rule sets provided by Kaspersky SafeStream II

**Monitoring and management**

- Support for standard and advanced SNMP MIB, RMONv1
- Zabbix agent/proxy
- User local authentication via RADIUS, TACACS+, LDAP
- Protection against configuration errors, automatic configuration recovery
- CLI
- Syslog
- System resource usage monitoring
- Ping, monitor, traceroute (IPv4/IPv6), output of packet information in console
- Firmware update, download and upload via TFTP, SCP, FTP, SFTP, HTTP(S)
- Support for NTP
- Netflow v5/v9/v10 (export of URL statistics for HTTP, host for HTTPS)
- Remote management, WEB, Telnet, SSH (IPv4/IPv6)
- LLDP, LLDP MED
- Local and remote saving of router configuration

**Redundancy and clustering**

- VRRP v2, v3
- Tracking based on VRRP or SLA tests
- VRRP parameter management
- PBR parameter management
- Interface administrative status management
- Static route activation and deactivation
- AS-PATH and preference attribute management in route-map
- DHCP failover to reserve IP address base issued by DHCP server
- Failover Firewall to reserve Firewall and NAT sessions
- MultiWAN
- Dual-Homing
- Certificate synchronization
- WLC state synchronization

**Fault-tolerant cluster:**

- Easy administration and integration: synchronization of configurations, time, versions, licences
- Redundancy of all connections in the cluster
- Router redundancy (in current version 1+1 redundancy is supported)

**Services**

- DHCP client, server
- DHCP Relay Option 82
- DNS resolver
- NTP
- TFTP server

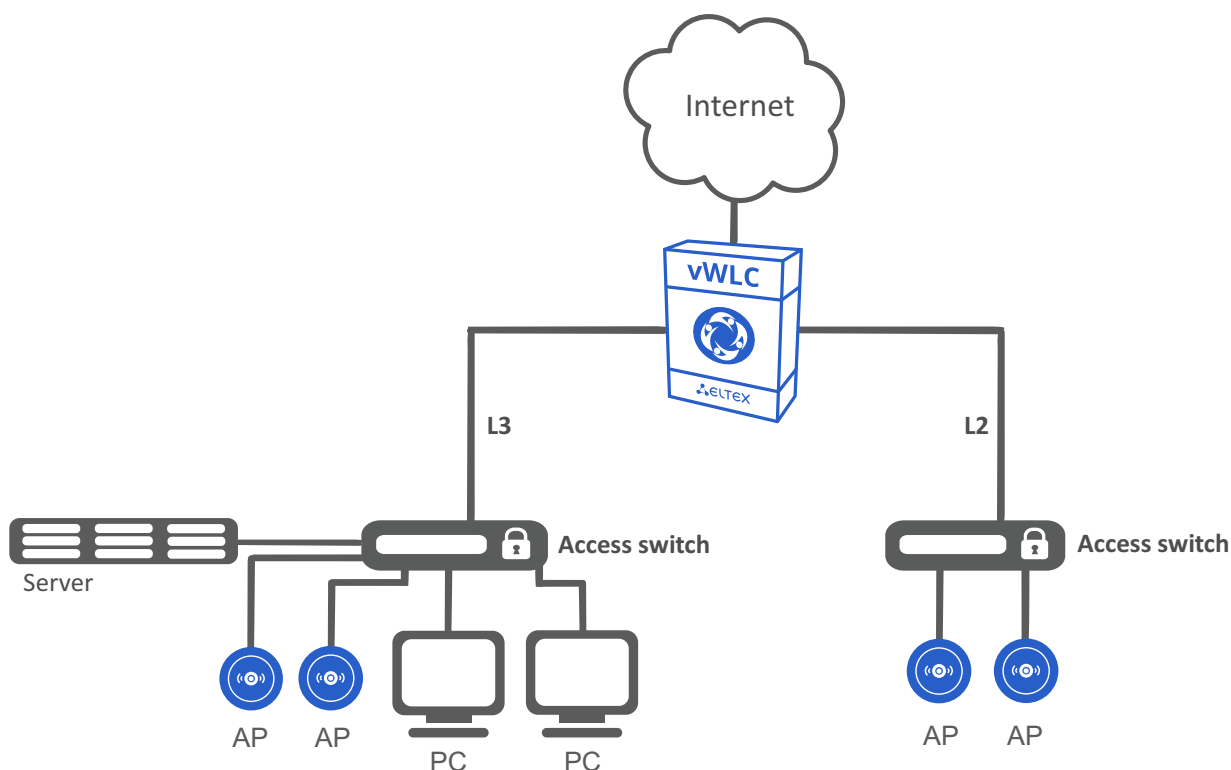
**BRAS (IPoE)<sup>1</sup>**

- User termination
- Black/white lists of URL
- Quoting by traffic volume, session time, network applications
- HTTP/HTTPS Proxy
- HTTP/HTTPS Redirect
- Session accounting via Netflow protocol
- Interaction with AAA, PCRF servers
- Bandwidth management by offices and SSID, user sessions
- User authentication via MAC or IP addresses

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<sup>1</sup> Available only for vWLC FREE option.

Use case for corporate network



Ordering information

Name	Description
vWLC FREE	Programmable controller vWLC FREE option, 1 Mbps, 1024 RIB BGP, 1000 RIB OSPF, 1000 RIB IS-IS, 1000 RIB RIP, 2 VPN, BRAS-DEMO, WIFI-DEMO, 15 AP

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