



# Unlock Networking Possibilities with Cloud

**Nebula Secure Cloud Networking Solution**  
Solution Guide



nebula

# We help you make everything easier



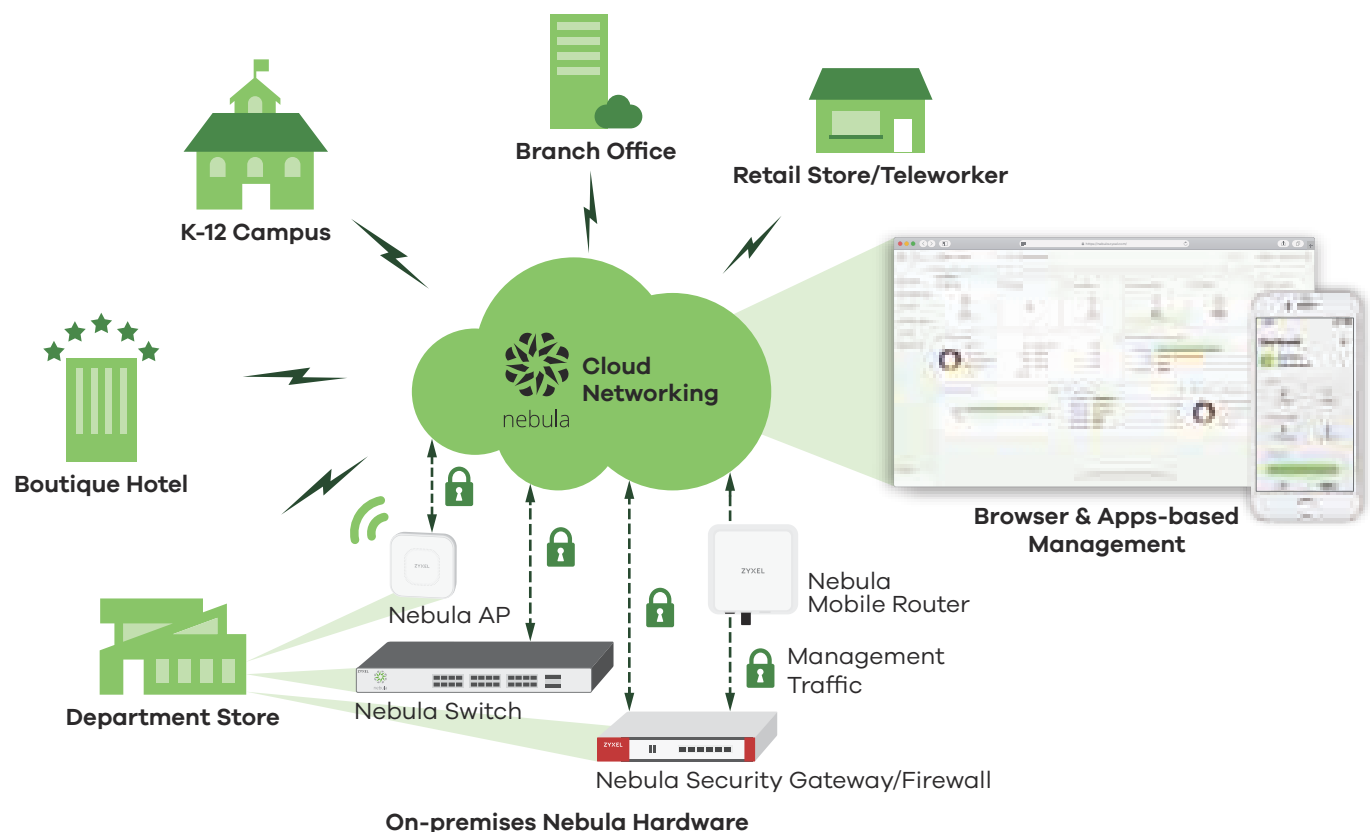
# Overview

Nebula secure cloud networking solution provides cloud-based, centralized control and visibility over all Nebula wired, wireless, security, and mobile router hardware — all without the cost and complexity of on-site

control equipment or overlay management systems. With comprehensive product portfolio that can be centrally managed from the cloud, Nebula offers simple, intuitive and scalable management for all networks.

## Highlights

- Intuitive, automated network management interface as well as continuous feature updates that eliminate training and labor for network implementation, maintenance and support
- Zero-touch provisioning, built-in multi-tenant, multisite network management tools accelerate deployment of large networks
- Centralized, unified and on-demand control as well as visibility that reduce capital expense for hardware and software
- Free cloud management for the life of the product without the need for ongoing costs
- Access points and switches with NebulaFlex Pro, USG FLEX firewalls (0102 bundled SKUs), ATP firewalls, and Nebula 5G/LTE routers are sold with bundled Professional Pack license for you to experience advanced cloud management features
- A comprehensive networking and security product portfolio from a single vendor ensures better product compatibility
- Per-device licensing model with flexible subscriptions provides rich diversity and high flexibility for customers of all sizes



# Introduction to Nebula secure cloud networking solution

Nebula's networking and security products, including access points, switches, security firewalls, and 5G/LTE routers, are purpose-built for cloud management. They break the traditions and come up with easy management, centralized control, auto-configuration, real-time Web-based diagnostics, remote monitoring and more.

The Nebula cloud managed networking introduces an affordable, effortless approach for network deployments with high security and scalability to provide completely control over Nebula devices and users. When an

organization grows from small sites to massive, distributed networks, the Nebula hardware with cloud-based self-provisioning enables easy, quick and plug-n-play deployment to multiple locations without IT professionals.

Through Nebula cloud services, firmware and security signature updates are delivered seamlessly, while secure VPN tunnels can be established automatically between different branches over the Web with just a few clicks. Based on a secure infrastructure, Nebula is designed with fault-tolerant properties that enable local networks to keep operating properly in WAN downtimes.



# Nebula secure cloud networking solution architecture

The Nebula Cloud provides a networking paradigm for building and managing networks over the Internet in the Software as a Service model. Software as a Service (SaaS) is defined as a way of delivering software for users to access via the Internet rather than local installation. In the Nebula architecture, network functions and management services are pushed to the cloud and delivered as a service that provides instant control to the entire network without wireless controllers and overlay network management appliances.

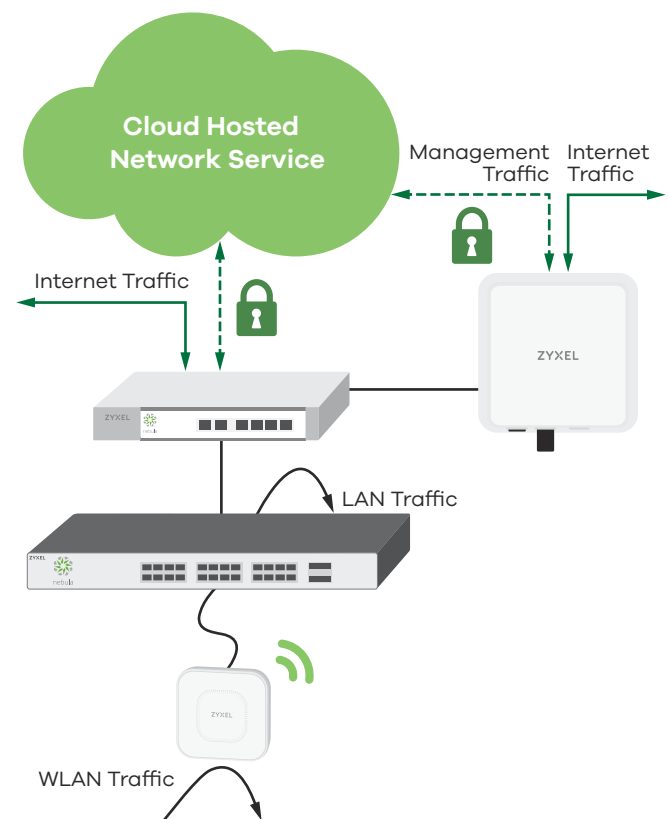
All Nebula devices are built from the ground up for cloud management with the capability to communicate with Nebula's cloud control center through the Internet. This TLS-secured connectivity between hardware and the cloud provides network-wide visibility and control for network management using the minimal bandwidth.

Over the cloud, thousands of Nebula devices around the world can be configured, controlled, monitored and managed under a single pane of glass. With multi-site network management tools, businesses are allowed to deploy new branches of any size, while administrators are able to make policy changes any time from a central control platform.

## Data Privacy and Out-of-band Control Plane

The Nebula service uses the infrastructure and services built upon the Amazon Web Service (AWS), so all Nebula security details can be referred to AWS Cloud Security. Nebula is committed to data protection, privacy and security as well as compliance with applicable regulatory frameworks in the world. Nebula's technical architecture along with its internal administrative and procedural safeguards can assist customers with design and deployment of cloud-based networking solutions that comply with EU data privacy regulations.

In Nebula's out-of-band control plane, network and management traffics are split into two different data paths. Management data (e.g. configuration, statistics, monitoring, etc.) turn towards Nebula's cloud from devices through an encrypted Internet connection of the NETCONF protocol, while user data (e.g. Web browsing and internal applications, etc.) flows directly to the destination on the LAN or across the WAN without passing through the cloud.



#### Features of the Nebula Architecture:

- End user data does not traverse through the cloud.
- Unlimited throughput, no centralized controller bottlenecks when new devices are added.
- Network functions even if connection to cloud is interrupted.
- Nebula's cloud management is backed by a 99.99% uptime SLA.

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## NETCONF Standard

Nebula is an industry-first solution that implements NETCONF protocol for safety of configuration changes in cloud management as all NETCONF messages are protected by TLS and exchanged using secure transports. Prior to NETCONF, CLI scripting and SNMP were two common approaches; but they have several limitations such as lacking of transaction management or useful standard security and commit mechanisms. The NETCONF protocol has been designed to address the shortcomings of the existing practices and protocols.

With the support of TCP and Callhome to overcome the NAT barrier, NETCONF is considered more reliable and elegant. It is also thinner than CWMP (TR-069) SOAP, which saves Internet bandwidth. With these features, the NETCONF protocol is regarded as more suitable for cloud networking.



# Nebula Control Center (NCC)

Nebula Control Center offers a powerful insight into distributed networks. Its intuitive and web-based interface illustrates an instant view and analysis of network performance, connectivity and status automatically and continuously. Integrated with organization-wide and site-wide management tools, Nebula provides a quick and remote access for administrators to ensure the network is up and performing efficiently.

Nebula Control Center is also engineered with a number of security tools that provide optimal protection to networks, devices and users; and they also deliver the needed information to enforce security and enhance control over the entire Nebula network.



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## Highlights

- **Responsive web design and intuitive user interface with light & dark modes**
- **Multi-lingual management interface (English, Traditional Chinese, Japanese, German, French, Russian and more to come)**
- **Multi-tenant, multi-site manageability**
- **Role-based administration privileges**
- **First time setup wizard**
- **Powerful organization-wide management tools**
- **Rich site-wide management tools**
- **Site-based auto and smart configuration tools**
- **Misconfigured protection against disconnecting NCC**
- **Configuration changing alerts**
- **Login & Configure auditing**
- **Real-time and historical monitoring/reporting**
- **Granular device based information and trouble shooting tools**
- **Flexible firmware management**

### First Time Setup Wizard

Nebula first time setup wizard helps create your organization/site and setup an integrated network with only a few simple clicks, making your devices up and running in minutes.

### Role-based Administration

Supervisors are allowed to appoint different privileges for multiple administrators to manage network and guest access. Specify management authority in the network access control function to maximize security and to avoid accidental misconfiguration.



Role-based Administration

### Organization-wide Management Tools

Powerful organization-wide features such as organizational overview, configuration backup and restore, configuration template and configuration clone are supported to allow MSP and IT admins to manage their org/sites much easier.

### Site-wide Management Tools

Integrated with the feature-rich dashboards, maps, floor plans, automatic visual and actionable network topology and site-based auto and smart configuring tools, the Nebula Control Center delivers instant network analysis and automatically performs AP authentication, configuration parity check, switch ports link aggregation and site-to-site VPN.

### Misconfiguration Protection

To prevent any connectivity interruption caused by incorrect or inappropriate configuration, the Nebula devices can intelligently identify if the order or setting from NCC is correct to ensure the connection is always up with the Nebula cloud.

### Configuration Changing Alerts

Configuration changing alerts help administrators to manage thousands of networking devices more efficiently, especially in larger or distributed sites. These real-time alerts are automatically sent from the Nebula Cloud system when configuration changes are made to keep new policies always up-to-date in the entire IT organization.

### Login & Configure Auditing

The Nebula cloud control center automatically records the time and IP address of every logged in administrators. The configure audit log lets administrators track Web-based login actions on their Nebula networks to see what configuration changes were made and who made the changes.

### Real-time & Historical Monitoring

Nebula Control center provides 24x7 monitoring over the entire network, giving administrators real-time and historical activity views with unlimited status records that can be backdated to the installation time.



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# Nebula Mobile App

The Nebula mobile app offers a fast approach to network management, providing an easy method for device registration and an instant view of real-time network status, which is particularly suitable for small business owners with little to no IT skills. With it, you can perform WiFi network configuration, break down usage by device

and client, troubleshoot with live tools, check the status of connected Nebula devices and clients at a glance, and scan device QR codes to register large numbers of devices to the Nebula Control Center all at once. The app's features and functions include:

## Highlights

- Sign up Nebula account
- Installation walk through wizard for creating org & site, adding devices (QR code or manually), setting up WiFi networks
- Hardware install guide and LED guide
- Centralize 3-in-1 device status
- Per-device and site-wide usage graph
- Per-device and site-wide PoE consumption
- WiFi login info sharing via mobile phone or QR code
- Switch and gateway ports info
- Check map and photo of device location
- Firmware upgrade schedule
- Enable/disable SSID
- Site-wide client monitoring with action support
- Site-wide application usage analysis with action support
- License overview and inventory
- Live trouble shooting tools: reboot, Locator LED, switch port power cycle, cable diagnostics, connection test
- Tech support and MSP contact info
- Push notifications - Device down/up & license issue related
- Notification center up to 7 days alert history



# Product families

## Access Points with NebulaFlex/ NebulaFlex Pro

Zyxel NebulaFlex solution allows the access points to be used in two modes; it's easy to switch between standalone mode and License Free Nebula Cloud management, anytime, with a few simple clicks. NebulaFlex provides true flexibility to adapt the access point to different needs in an ever-changing environment.

When used with Nebula you are able to centrally manage, access real-time network information and gain effortless control over your devices, all under a single intuitive platform without the need to install any software or add additional equipment like a controller. NebulaFlex Pro further supports triple mode functionality (standalone, hardware controller and Nebula) to give business clients true flexibility whatever their project may need.

### Access Points with NebulaFlex Product Options

| Model                      | NWA50AX                                                                                                                                                                    | NWA90AX                                                                                                                                                                    | NWA55AXE                                                                                                                                                             | NWA110AX                                                                                                                                                                       |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product name</b>        | 802.11ax (WiFi 6)<br>Dual-Radio PoE<br>Access Point                                                                                                                        | 802.11ax (WiFi 6)<br>Dual-Radio PoE<br>Access Point                                                                                                                        | 802.11ax (WiFi 6)<br>Dual-Radio Outdoor<br>PoE Access Point                                                                                                          | 802.11ax (WiFi 6)<br>Dual-Radio PoE<br>Access Point                                                                                                                            |
|                            |                                                                                         |                                                                                         |                                                                                  |                                                                                           |
| <b>Typical deployment</b>  | Small business,<br>Entry-level<br>establishments                                                                                                                           | Small business,<br>Entry-level<br>establishments                                                                                                                           | Outdoor,<br>Entry-level<br>establishments                                                                                                                            | Entry-level wireless<br>establishments                                                                                                                                         |
| <b>Radio specification</b> | <ul style="list-style-type: none"><li>• 1 x 802.11 b/g/n/ax radio</li><li>• 1 x 802.11 a/n/ac/ax radio</li><li>• 1.775 Gbps max rate</li><li>• 2x2 + 2x2 MU-MIMO</li></ul> | <ul style="list-style-type: none"><li>• 1 x 802.11 b/g/n/ax radio</li><li>• 1 x 802.11 a/n/ac/ax radio</li><li>• 1.775 Gbps max rate</li><li>• 2x2 + 2x2 MU-MIMO</li></ul> | <ul style="list-style-type: none"><li>• 1 x 802.11 b/g/n/ax radio</li><li>• 1 x 802.11 a/n/ac/ax radio</li><li>• 1.775 Gbps max rate</li><li>• 2x2 MU-MIMO</li></ul> | <ul style="list-style-type: none"><li>• 1 x 802.11 b/g/n/ax radio</li><li>• 1 x 802.11 a/n/ac/ax radio</li><li>• 1.775 Gbps max rate</li><li>• 2x2:2 + 2x2:2 MU-MIMO</li></ul> |
| <b>Power</b>               | DC input: 12 VDC 1.5 A<br>PoE (802.3at): power<br>draw 16 W                                                                                                                | DC input: 12 VDC 1.5 A<br>PoE (802.3at): power<br>draw 16 W                                                                                                                | DC input: 12 VDC 1.5 A<br>PoE (802.3at): power<br>draw 16 W                                                                                                          | DC input: 12 VDC 1.5 A<br>PoE (802.3at): power<br>draw 17 W                                                                                                                    |
| <b>Antenna</b>             | Embedded antenna                                                                                                                                                           | Embedded antenna                                                                                                                                                           | External antenna                                                                                                                                                     | Embedded antenna                                                                                                                                                               |

\* Bundled licenses are not applicable to NebulaFlex AP.

## Highlights

- Enjoy cloud features like zero-touch deployment, real-time configurations with Nebula
- Easy setup on SSID/SSID schedule/VLAN/Rate limiting
- DPPSK (Dynamic Personal Pre-Shared Key) and standard-based WPA Personal support
- Enterprise wireless security and RF optimization
- Secure WiFi solution provides remote workers the same access to the corporate network and resources while being protected with the enterprise-grade security.
- Connect and Protect (CNP) service provides small business environments with a trusted and application visible WiFi hotspot network to enhance wireless user protection and experience.
- DCS, smart load balancing and client roaming/steering
- Rich Captive Portal support Nebula Cloud Authentication Server accounts, social login with Facebook accounts, Facebook WiFi, and Voucher
- Support smart mesh and wireless bridge
- Wireless health monitoring and report

## Access Points with NebulaFlex Product Options

| Model                      | NWA210AX                                                                                                                                                                            | NWA1123ACv3                                                                                                                                                       | NWA1123-AC PRO                                                                                                                                                                 |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product name</b>        | 802.11ax (WiFi 6) Dual-Radio PoE Access Point                                                                                                                                       | 802.11ac Wave 2 Dual-Radio Ceiling Mount PoE Access Point                                                                                                         | 802.11ac Dual-Radio Dual-Mount Access Point                                                                                                                                    |
|                            |                                                                                                  |                                                                                |                                                                                           |
| <b>Typical deployment</b>  | Medium to high density deployments                                                                                                                                                  | Entry-level wireless establishments                                                                                                                               | Medium to high density deployments                                                                                                                                             |
| <b>Radio specification</b> | <ul style="list-style-type: none"> <li>• 1 x 802.11 b/g/n/ax radio</li> <li>• 1 x 802.11 a/n/ac/ax radio</li> <li>• 2.975 Gbps max rate</li> <li>• 4x4:4 + 2x2:2 MU-MIMO</li> </ul> | <ul style="list-style-type: none"> <li>• 1 x 802.11 b/g/n radio</li> <li>• 1 x 802.11 a/n/ac radio</li> <li>• 1.2 Gbps max rate</li> <li>• 2x2 MU-MIMO</li> </ul> | <ul style="list-style-type: none"> <li>• 1 x 802.11 b/g/n radio</li> <li>• 1 x 802.11 a/n/ac radio</li> <li>• 1.75 Gbps max rate</li> <li>• 3x3 MIMO with 3 streams</li> </ul> |
| <b>Power</b>               | DC input: 12 VDC 2 A<br>PoE (802.3at): power draw 19 W                                                                                                                              | DC input: 12 VDC, 1 A<br>PoE (802.3af): power draw 11 W                                                                                                           | 802.3at PoE only (No DC jack)                                                                                                                                                  |
| <b>Antenna</b>             | Embedded antenna                                                                                                                                                                    | Embedded antenna                                                                                                                                                  | Dual-optimized internal antenna                                                                                                                                                |

\* Bundled licenses are not applicable to NebulaFlex AP.

## Access Points with NebulaFlex Pro Product Options

| Model                      | WAX510D                                                                                                                                                                             | WAX610D                                                                                                                                                                             | WAX630S                                                                                                                                                                           |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product name</b>        | 802.11ax (WiFi 6) Dual-Radio Unified Access Point                                                                                                                                   | 802.11ax (WiFi 6) Dual-Radio Unified Pro Access Point                                                                                                                               | 802.11ax (WiFi 6) Dual-Radio Unified Pro Access Point                                                                                                                             |
|                            |                                                                                                    |                                                                                                    |                                                                                                |
| <b>Typical deployment</b>  | Entry-level wireless establishments                                                                                                                                                 | Medium to high density deployments                                                                                                                                                  | High density and interference-laden indoor environments                                                                                                                           |
| <b>Radio specification</b> | <ul style="list-style-type: none"> <li>• 1 x 802.11 b/g/n/ax radio</li> <li>• 1 x 802.11 a/n/ac/ax radio</li> <li>• 1.775 Gbps max rate</li> <li>• 2x2:2 + 2x2:2 MU-MIMO</li> </ul> | <ul style="list-style-type: none"> <li>• 1 x 802.11 b/g/n/ax radio</li> <li>• 1 x 802.11 a/n/ac/ax radio</li> <li>• 2.975 Gbps max rate</li> <li>• 4x4:4 + 2x2:2 MU-MIMO</li> </ul> | <ul style="list-style-type: none"> <li>• 1 x 802.11 b/g/n/ax radio</li> <li>• 1 x 802.11 a/n/ac/ax radio</li> <li>• 2.975 Gbps max rate</li> <li>• 4x4 + 2x2:2 MU-MIMO</li> </ul> |
| <b>Power</b>               | DC input: 12 VDC 1.5 A<br>PoE (802.3at): power draw 17 W                                                                                                                            | DC input: 12 VDC 2 A<br>PoE (802.3at): power draw 19 W                                                                                                                              | DC input: 12 VDC 2 A<br>PoE (802.3at): power draw 19 W                                                                                                                            |
| <b>Antenna</b>             | Dual-optimized internal antenna                                                                                                                                                     | Dual-optimized antenna                                                                                                                                                              | Embedded smart antenna                                                                                                                                                            |

| Model                      | WAX650S                                                                                                                                                                                                            | NWA5123-AC HD                                                                                                                                                                           | WAC5302D-Sv2                                                                                                                                                      |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product name</b>        | 802.11ax (WiFi 6) Dual-Radio Unified Pro Access Point                                                                                                                                                              | 802.11ac Wave 2 Dual-Radio Unified Access Point                                                                                                                                         | 802.11ac Dual-Radio Unified Access Point                                                                                                                          |
|                            |                                                                                                                                 |                                                                                                      |                                                                              |
| <b>Typical deployment</b>  | High density and interference-laden indoor environments                                                                                                                                                            | Medium to high density deployments                                                                                                                                                      | Per-room deployments                                                                                                                                              |
| <b>Radio specification</b> | <ul style="list-style-type: none"> <li>• 1 x 802.11 b/g/n/ax radio</li> <li>• 1 x 802.11 a/n/ac/ax radio</li> <li>• 1 x monitoring radio</li> <li>• 3.55 Gbps max rate</li> <li>• 4x4:4 + 4x4:4 MU-MIMO</li> </ul> | <ul style="list-style-type: none"> <li>• 1 x 802.11 b/g/n radio</li> <li>• 1 x 802.11 a/n/ac radio</li> <li>• 1.6 Gbps max rate</li> <li>• 3x3 MIMO with 3 streams (MU-MIMO)</li> </ul> | <ul style="list-style-type: none"> <li>• 1 x 802.11 b/g/n radio</li> <li>• 1 x 802.11 a/n/ac radio</li> <li>• 1.6 Gbps max rate</li> <li>• 2x2 MU-MIMO</li> </ul> |
| <b>Power</b>               | DC input: 12 VDC 2.5 A<br>PoE (802.3bt): power draw 31 W                                                                                                                                                           | DC input: 12 VDC, 2 A<br>PoE: 802.3at compliant/802.3af (Restrict 2.4G & 5G radio to one transmit stream only.)                                                                         | PoE (802.3at): power draw 20 W (includes 7 W for PoE PSE)<br>PoE (802.3af): power draw 12 W (PoE PSE disabled)                                                    |
| <b>Antenna</b>             | Embedded smart antenna                                                                                                                                                                                             | Embedded antenna                                                                                                                                                                        | Smart antenna                                                                                                                                                     |

\* 1-year Professional pack license is bundled in NebulaFlex Pro AP

## Access Points with NebulaFlex Pro Product Options

| Model                      | WAC500                                                                                                                                                            | WAC500H                                                                                                                                                           | WAC6103D-I                                                                                                                                                                     |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product name</b>        | 802.11ac Wave 2 Dual-Radio Unified Access Point                                                                                                                   | 802.11ac Wave 2 Wall-Plate Unified Access Point                                                                                                                   | 802.11ac Dual-Radio Dual-optimized Antenna 3x3 Access Point                                                                                                                    |
|                            |                                                                                  |                                                                                  |                                                                                             |
| <b>Typical deployment</b>  | Entry-level wireless establishments                                                                                                                               | Per-room deployments                                                                                                                                              | Medium to high density deployments                                                                                                                                             |
| <b>Radio specification</b> | <ul style="list-style-type: none"> <li>• 1 x 802.11 b/g/n radio</li> <li>• 1 x 802.11 a/n/ac radio</li> <li>• 1.2 Gbps max rate</li> <li>• 2x2 MU-MIMO</li> </ul> | <ul style="list-style-type: none"> <li>• 1 x 802.11 b/g/n radio</li> <li>• 1 x 802.11 a/n/ac radio</li> <li>• 1.2 Gbps max rate</li> <li>• 2x2 MU-MIMO</li> </ul> | <ul style="list-style-type: none"> <li>• 1 x 802.11 b/g/n radio</li> <li>• 1 x 802.11 a/n/ac radio</li> <li>• 1.75 Gbps max rate</li> <li>• 3x3 MIMO with 3 streams</li> </ul> |
| <b>Power</b>               | DC input: 12 VDC, 1 A<br>PoE (802.3af): power draw 11 W                                                                                                           | DC input: 12 VDC, 1 A<br>PoE (802.3at/af): power draw 18 W                                                                                                        | 802.3at PoE only                                                                                                                                                               |
| <b>Antenna</b>             | Embedded antenna                                                                                                                                                  | Embedded antenna                                                                                                                                                  | Dual optimized antenna                                                                                                                                                         |

| Model                      | WAC6303D-S                                                                                                                                                                              | WAC6503D-S                                                                                                                                                                     | WAC6552D-S                                                                                                                                                                    | WAC6553D-E                                                                                                                                                                     |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product name</b>        | 802.11ac Wave 2 Dual-Radio Unified Pro Access Point                                                                                                                                     | 802.11ac Dual-Radio Smart Antenna 3x3 Access Point                                                                                                                             | 802.11ac Dual-Radio Unified Pro Outdoor Access Point                                                                                                                          | 802.11ac Dual-Radio External Antenna 3x3 Outdoor Access Point                                                                                                                  |
|                            |                                                                                                      |                                                                                             |                                                                                           |                                                                                           |
| <b>Typical deployment</b>  | High density and interference-laden indoor environments                                                                                                                                 | High density and interference-laden indoor environments                                                                                                                        | Outdoor                                                                                                                                                                       | Outdoor                                                                                                                                                                        |
| <b>Radio specification</b> | <ul style="list-style-type: none"> <li>• 1 x 802.11 b/g/n radio</li> <li>• 1 x 802.11 a/n/ac radio</li> <li>• 1.6 Gbps max rate</li> <li>• 3x3 MIMO with 3 streams (MU-MIMO)</li> </ul> | <ul style="list-style-type: none"> <li>• 1 x 802.11 b/g/n radio</li> <li>• 1 x 802.11 a/n/ac radio</li> <li>• 1.75 Gbps max rate</li> <li>• 3x3 MIMO with 3 streams</li> </ul> | <ul style="list-style-type: none"> <li>• 1 x 802.11 b/g/n radio</li> <li>• 1 x 802.11 a/n/ac radio</li> <li>• 1.2 Gbps max rate</li> <li>• 2x2 MIMO with 2 streams</li> </ul> | <ul style="list-style-type: none"> <li>• 1 x 802.11 b/g/n radio</li> <li>• 1 x 802.11 a/n/ac radio</li> <li>• 1.75 Gbps max rate</li> <li>• 3x3 MIMO with 3 streams</li> </ul> |
| <b>Power</b>               | DC input: 12 VDC, 2 A<br>PoE: 802.3at compliant/ 802.3af (Restrict 2.4G & 5G radio to one transmit stream only.)                                                                        | DC input: 12 VDC 2 A<br>PoE: 802.3at compliant                                                                                                                                 | 802.3at PoE only                                                                                                                                                              | 802.3at PoE only                                                                                                                                                               |
| <b>Antenna</b>             | Embedded smart antenna                                                                                                                                                                  | Embedded smart antenna                                                                                                                                                         | Embedded smart antenna                                                                                                                                                        | External antenna                                                                                                                                                               |

\* 1-year Professional pack license is bundled in NebulaFlex Pro AP

# Switches with NebulaFlex/ NebulaFlex Pro

Zyxel switches with **NebulaFlex** allow you to easily switch between standalone and our license-free Nebula cloud management platform anytime with just a few simple clicks. **NebulaFlex Pro** switches include XS3800-28, GS2220 Series, and GS1350 Series, which are further bundled with a 1-year Professional Pack license. XS3800-28 and GS2220 Series switches come with NebulaFlex Pro, allowing you to use the advanced features including the advanced IGMP technology, the comprehensive IPTV report that provides insights to

channel usage information, the network analytics alert to optimize network performance, and more upcoming new features on NCC. Meanwhile, GS1350 Series further focus on surveillance applications, giving you the flexibility to monitor and manage your surveillance network via the cloud. Both **NebulaFlex/NebulaFlex Pro** switches protect your investment on wired technology by offering the flexibility to transition to the cloud in your own time, without worrying about additional ongoing licensing costs.

## Switches with NebulaFlex Product Options

| Model                          | GS1915-8                                                                            | GS1915-8EP                                                                           |
|--------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Product name                   | 8-port GbE Smart Managed Switch                                                     | 8-port GbE Smart Managed PoE Switch                                                  |
|                                |  |  |
| Switch class                   | Smart Managed                                                                       | Smart Managed                                                                        |
| Total port count               | 8                                                                                   | 8                                                                                    |
| 100/1000 Mbps                  | 8                                                                                   | 8                                                                                    |
| 100/1000 Mbps PoE              | -                                                                                   | 8                                                                                    |
| Gigabit SFP                    | -                                                                                   | -                                                                                    |
| Gigabit combo (SFP/RJ-45)      | -                                                                                   | -                                                                                    |
| Switching capacity (Gbps)      | 16                                                                                  | 16                                                                                   |
| Total PoE power budget (watts) | -                                                                                   | 60                                                                                   |

\* Bundled licenses are not applicable to NebulaFlex switches.

## Highlights

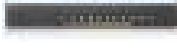
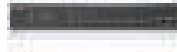
- Smart fan and fanless designs offer silent operations in the office
- Check real-time status intuitively by cloud and PoE LED indicators
- Handles the increasing high-bandwidth applications in your office affordably with four built-in 10G SFP+ uplinks (XGS1930 Series)
- The Multi-Gigabit (100M/1G/2.5G/5G/10G) switches that can step up the network bandwidth via the cloud
- GS1350 Series Surveillance switches are designed with specialized PoE features for IP cameras and surveillance report that can be monitor and manage the surveillance networks via the Cloud
- Flexible to switch between standalone and Nebula Cloud management without additional costs
- Enjoy cloud features like zero-touch deployment, real-time configurations with Nebula
- Efficient network provisioning with multiple ports configuration all at once
- User-friendly ACL and PoE schedule configuration
- Intelligent PoE technology and network topology
- RADIUS, static MAC forwarding and 802.1X authentication
- Advanced Switch Control (Port Bandwidth Control, Vendor Based VLAN, IP Interfacing & Static Routing)
- Advanced IGMP multicast functionality and IPTV report
- Auto PD Recovery to detect and recover failed powered devices automatically

## Switches with NebulaFlex Product Options

| Model                                 | GS1920-8HPv2                                                                        | GS1920-24v2                                                                         | GS1920-24HPv2                                                                        | GS1920-48v2                                                                           | GS1920-48HPv2                                                                         |
|---------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Product name</b>                   | 8-port GbE Smart Managed PoE Switch                                                 | 24-port GbE Smart Managed Switch                                                    | 24-port GbE Smart Managed PoE Switch                                                 | 48-port GbE Smart Managed Switch                                                      | 48-port GbE Smart Managed PoE Switch                                                  |
|                                       |  |  |  |  |  |
| <b>Switch class</b>                   | Smart Managed                                                                       | Smart Managed                                                                       | Smart Managed                                                                        | Smart Managed                                                                         | Smart Managed                                                                         |
| <b>Total port count</b>               | 10                                                                                  | 28                                                                                  | 28                                                                                   | 50                                                                                    | 50                                                                                    |
| <b>100/1000 Mbps</b>                  | 8                                                                                   | 24                                                                                  | 24                                                                                   | 44                                                                                    | 44                                                                                    |
| <b>100/1000 Mbps PoE</b>              | 8                                                                                   | -                                                                                   | 24                                                                                   | -                                                                                     | 48                                                                                    |
| <b>Gigabit SFP</b>                    | -                                                                                   | -                                                                                   | -                                                                                    | 2                                                                                     | 2                                                                                     |
| <b>Gigabit combo (SFP/RJ-45)</b>      | 2                                                                                   | 4                                                                                   | 4                                                                                    | 4                                                                                     | 4                                                                                     |
| <b>Switching capacity (Gbps)</b>      | 20                                                                                  | 56                                                                                  | 56                                                                                   | 100                                                                                   | 100                                                                                   |
| <b>Total PoE power budget (watts)</b> | 130                                                                                 | -                                                                                   | 375                                                                                  | -                                                                                     | 375                                                                                   |

\* Bundled licenses are not applicable to NebulaFlex switches.

### Switches with NebulaFlex Product Options

| Model                                      | XS1930-10                                                                         | XS1930-12HP                                                                       | XS1930-12F                                                                          |
|--------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Product name</b>                        | 8-port Multi-Gigabit Smart Managed Switch with 2 SFP+ Uplink                      | 8-port Multi-Gigabit Smart Managed PoE Switch with 2 10GbE and 2 SFP+ Uplink      | 10-port 10G Smart Managed Fiber Switch with 2 Multi-Gigabit Ports                   |
|                                            |  |  |  |
| <b>Switch class</b>                        | Smart Managed                                                                     | Smart Managed                                                                     | Smart Managed                                                                       |
| <b>Total port count</b>                    | 10                                                                                | 12                                                                                | 12                                                                                  |
| 100M/1G/2.5G/5G/10G Ethernet (RJ-45)       | 8                                                                                 | 2                                                                                 | 2                                                                                   |
| 100M/1G/2.5G/5G/10G Ethernet PoE++ (RJ-45) | -                                                                                 | 8                                                                                 | -                                                                                   |
| 10 Gigabit SFP+                            | 2                                                                                 | 2                                                                                 | 10                                                                                  |
| <b>Switching capacity (Gbps)</b>           | 200                                                                               | 240                                                                               | 240                                                                                 |
| <b>Total PoE power budget (watts)</b>      | -                                                                                 | 375                                                                               | -                                                                                   |

| Model                                 | XGS1930-28                                                                          | XGS1930-28HP                                                                        | XGS1930-52                                                                           | XGS1930-52HP                                                                          |
|---------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Product name</b>                   | 24-port GbE Smart Managed Switch with 4 SFP+ Uplink                                 | 24-port GbE Smart Managed PoE Switch with 4 SFP+ Uplink                             | 48-port GbE Smart Managed Switch with 4 SFP+ Uplink                                  | 48-port GbE Smart Managed PoE Switch with 4 SFP+ Uplink                               |
|                                       |  |  |  |  |
| <b>Switch class</b>                   | Smart Managed                                                                       | Smart Managed                                                                       | Smart Managed                                                                        | Smart Managed                                                                         |
| <b>Total port count</b>               | 28                                                                                  | 28                                                                                  | 52                                                                                   | 52                                                                                    |
| 100/1000 Mbps                         | 24                                                                                  | 24                                                                                  | 48                                                                                   | 48                                                                                    |
| 100/1000 Mbps PoE                     | -                                                                                   | 24                                                                                  | -                                                                                    | 48                                                                                    |
| 10 Gigabit SFP+                       | 4                                                                                   | 4                                                                                   | 4                                                                                    | 4                                                                                     |
| <b>Switching capacity (Gbps)</b>      | 128                                                                                 | 128                                                                                 | 176                                                                                  | 176                                                                                   |
| <b>Total PoE power budget (watts)</b> | -                                                                                   | 375                                                                                 | -                                                                                    | 375                                                                                   |

\* Bundled licenses are not applicable to NebulaFlex switches.

### Switches with NebulaFlex Pro Product Options

| Model                                 | GS1350-6HP                                                                        | GS1350-12HP                                                                       | GS1350-18HP                                                                        | GS1350-26HP                                                                         |
|---------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Product name</b>                   | 5-port GbE Smart Managed PoE Switch with GbE Uplink                               | 8-port GbE Smart Managed PoE Switch with GbE Uplink                               | 16-port GbE Smart Managed PoE Switch with GbE Uplink                               | 24-port GbE Smart Managed PoE Switch with GbE Uplink                                |
|                                       |  |  |  |  |
| <b>Switch class</b>                   | Smart Managed                                                                     | Smart Managed                                                                     | Smart Managed                                                                      | Smart Managed                                                                       |
| <b>Total port count</b>               | 6                                                                                 | 12                                                                                | 18                                                                                 | 26                                                                                  |
| 100/1000 Mbps                         | -                                                                                 | 2                                                                                 | -                                                                                  | -                                                                                   |
| 100/1000 Mbps PoE+                    | 5 (port 1-2 PoE++)                                                                | 8                                                                                 | 16                                                                                 | 24                                                                                  |
| Gigabit SFP                           | 1                                                                                 | 2                                                                                 | -                                                                                  | -                                                                                   |
| Gigabit combo (SFP/RJ-45)             | -                                                                                 | -                                                                                 | 2                                                                                  | 2                                                                                   |
| <b>Switching capacity (Gbps)</b>      | 12                                                                                | 24                                                                                | 36                                                                                 | 52                                                                                  |
| <b>Total PoE power budget (watts)</b> | 60                                                                                | 130                                                                               | 250                                                                                | 375                                                                                 |

| Model                                 | GS2220-10                                                                           | GS2220-10HP                                                                         | GS2220-28                                                                            | GS2220-28HP                                                                           |
|---------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Product name</b>                   | 8-port GbE L2 Switch with GbE Uplink                                                | 8-port GbE L2 PoE Switch with GbE Uplink                                            | 24-port GbE L2 Switch with GbE Uplink                                                | 24-port GbE L2 PoE Switch with GbE Uplink                                             |
|                                       |  |  |  |  |
| <b>Switch class</b>                   | Layer 2                                                                             | Layer 2                                                                             | Layer 2                                                                              | Layer 2                                                                               |
| <b>Total port count</b>               | 10                                                                                  | 10                                                                                  | 28                                                                                   | 28                                                                                    |
| 100/1000 Mbps                         | 8                                                                                   | 8                                                                                   | -                                                                                    | -                                                                                     |
| 100/1000 Mbps PoE+                    | -                                                                                   | 8                                                                                   | -                                                                                    | 24                                                                                    |
| Gigabit SFP                           | -                                                                                   | -                                                                                   | -                                                                                    | -                                                                                     |
| Gigabit combo (SFP/RJ-45)             | 2                                                                                   | 2                                                                                   | 4                                                                                    | 4                                                                                     |
| <b>Switching capacity (Gbps)</b>      | 20                                                                                  | 20                                                                                  | 56                                                                                   | 56                                                                                    |
| <b>Total PoE power budget (watts)</b> | -                                                                                   | 180                                                                                 | -                                                                                    | 375                                                                                   |

## Switches with NebulaFlex Pro Product Options

| Model                          | GS2220-50                                                                         | GS2220-50HP                                                                        |
|--------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Product name                   | 48-port GbE L2 Switch with GbE Uplink                                             | 48-port GbE L2 PoE Switch with GbE Uplink                                          |
|                                |  |  |
| Switch class                   | Layer 2                                                                           | Layer 2                                                                            |
| Total port count               | 50                                                                                | 50                                                                                 |
| 100/1000 Mbps                  | 44                                                                                | 44                                                                                 |
| 100/1000 Mbps PoE+             | -                                                                                 | 48                                                                                 |
| Gigabit SFP                    | 2                                                                                 | 2                                                                                  |
| Gigabit combo (SFP/RJ-45)      | 4                                                                                 | 4                                                                                  |
| Switching capacity (Gbps)      | 100                                                                               | 100                                                                                |
| Total PoE power budget (watts) | -                                                                                 | 375                                                                                |

| Model                                                | XS3800-28                                                                           |
|------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product name                                         | 28-port 10GbE L2+ Managed Switch*                                                   |
|                                                      |  |
| Switch class                                         | Layer 2 Plus                                                                        |
| Total port count                                     | 28                                                                                  |
| 100M/1G/2.5G/5G/10G Ethernet (RJ-45)                 | 4                                                                                   |
| Multi-Gigabit combo (100M/1G/2.5G/5G/10G RJ-45/SFP+) | 8                                                                                   |
| 10 Gigabit SFP+                                      | 16                                                                                  |
| Switching capacity (Gbps)                            | 560                                                                                 |

\* Routing & IP interfaces are only available in standalone mode for now.

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# Firewall Series

Zyxel's firewalls are the newest addition to the Nebula cloud management family, and it further optimizes Nebula with holistic security and protection for SMB business networks. Zyxel's firewalls are capable of authenticating individuals and devices for all scenarios, especially for remote applications. This enables it to extend and secure your distributed network anywhere, anyhow, easily and affordably. Zyxel's firewalls deliver high performance, ensures comprehensive protection

as a self-evolving solution, and synchronizes your security to fit into all kinds of networks. Our integrated cloud threat intelligence will automatically stop threats at the network edge by blocking or quarantining, preventing damage to the network. We also provide up-to-the-minute protection with detailed reporting on investigations, threat preventions, active monitoring, and high visibility of network activities in today's ever-changing, ever-more-complex network environments.

## Highlights

- Higher precision of detection and assurance of multi-layered protection uncover threats
- Collaborating policy enforcement devices and eliminating repetitive logins with Collaborative Detection & Response
- Best practices for remote access with Secure WiFi and VPN management consolidates and ensures the same network control and security across multiple sites
- Level up security with two-factor authentication (2FA) network access let you quickly and easily verify users' identities with users accessing their networks through the edge devices
- High assurance multi-layered protection includes IP/URL/DNS reputation filter (ATP only), app patrol, web filtering, anti-malware and IPS
- Cloud sandboxing technology prevents zero-day attacks of all sorts (ATP only)
- Comprehensive summary reports for security events and network traffic through SecuReporter service
- Flexible to switch between on-premise and Nebula Cloud management without additional costs
- Enjoy cloud features like Zero Touch Provisioning (ZTP), real-time configurations with Nebula



## Product Options

| Model                                                 | ATP100W                                                                           | ATP200                                                                            | ATP500                                                                             | ATP700                                                                              | ATP800                                                                              |
|-------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product name                                          | ATP Firewall                                                                      | ATP Firewall                                                                      | ATP Firewall                                                                       | ATP Firewall                                                                        | ATP Firewall                                                                        |
|                                                       |  |  |  |  |  |
| <b>System Capacity &amp; Performance<sup>*1</sup></b> |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| SPI firewall throughput (Mbps) <sup>*2</sup>          | 1,000                                                                             | 2,000                                                                             | 2,600                                                                              | 6,000                                                                               | 8,000                                                                               |
| VPN throughput (Mbps) <sup>*3</sup>                   | 300                                                                               | 500                                                                               | 900                                                                                | 1,200                                                                               | 1,500                                                                               |
| IPS throughput (Mbps) <sup>*4</sup>                   | 600                                                                               | 1200                                                                              | 1,700                                                                              | 2,200                                                                               | 2,700                                                                               |
| Anti-malware throughput (Mbps) <sup>*4</sup>          | 380                                                                               | 630                                                                               | 900                                                                                | 1,600                                                                               | 2,000                                                                               |
| UTM throughput (AV and IDP) <sup>*4</sup>             | 380                                                                               | 600                                                                               | 890                                                                                | 1,500                                                                               | 1900                                                                                |
| Max. TCP concurrent sessions <sup>*5</sup>            | 300,000                                                                           | 600,000                                                                           | 1,000,000                                                                          | 1,600,000                                                                           | 2,000,000                                                                           |
| Max. concurrent IPsec VPN tunnels <sup>*6</sup>       | 40                                                                                | 100                                                                               | 300                                                                                | 1,000                                                                               | 1,000                                                                               |
| Recommended gateway-to-gateway IPsec VPN tunnels      | 20                                                                                | 50                                                                                | 150                                                                                | 300                                                                                 | 300                                                                                 |
| Concurrent SSL VPN users                              | 30                                                                                | 60                                                                                | 150                                                                                | 150                                                                                 | 500                                                                                 |
| VLAN interface                                        | 8                                                                                 | 16                                                                                | 64                                                                                 | 128                                                                                 | 128                                                                                 |
| <b>Security Service</b>                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Sandboxing <sup>*7</sup>                              | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| Web Filtering <sup>*7</sup>                           | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| Application Patrol <sup>*7</sup>                      | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| Anti-Malware <sup>*7</sup>                            | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| IPS <sup>*7</sup>                                     | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| Reputation Filter <sup>*7</sup>                       | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| Geo Enforcer <sup>*7</sup>                            | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| SecuReporter Premium <sup>*7</sup>                    | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| Collaborative Detection & Response <sup>*7</sup>      | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| Service Insight                                       | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| Security Profile Synchronize (SPS) <sup>*7</sup>      | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| SSL (HTTPS) Inspection                                | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| 2-Factor Authentication                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| <b>VPN Features</b>                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| VPN                                                   | IKEv2, IPsec, SSL, L2TP/IPsec                                                     | IKEv2, IPsec, SSL, L2TP/IPsec                                                     | IKEv2, IPsec, SSL, L2TP/IPsec                                                      | IKEv2, IPsec, SSL, L2TP/IPsec                                                       | IKEv2, IPsec, SSL, L2TP/IPsec                                                       |
| Microsoft Azure                                       | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| Amazon VPC                                            | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| <b>Secure WiFi Service<sup>*7</sup></b>               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Maximum Number of Tunnel-Mode AP                      | 12                                                                                | 20                                                                                | 36                                                                                 | 132                                                                                 | 260                                                                                 |
| Maximum Number of Managed AP                          | 24                                                                                | 40                                                                                | 72                                                                                 | 264                                                                                 | 520                                                                                 |
| Recommend max. AP in 1 AP Group                       | 10                                                                                | 20                                                                                | 60                                                                                 | 200                                                                                 | 300                                                                                 |

Note:

\*: This matrix with firmware ZLD5.2 or later.

\*1: Actual performance may vary depending on system configuration, network conditions, and activated applications.

\*2: Maximum throughput based on RFC 2544 (1,518-byte UDP packets).

\*3: VPN throughput measured based on RFC 2544 (1,424-byte UDP packets).

\*4: Anti-malware (with Express mode) and IPS throughput measured using the industry standard HTTP performance test (1,460-byte HTTP packets). Testing done with multiple flows.

\*5: Maximum sessions measured using the industry standard IXIA IxLoad testing tool

\*6: Including Gateway-to-Gateway and Client-to-Gateway.

\*7: Enable or extend feature capacity with Zyxel service license.

## Product Options

| Model                                                   | USG20(W)-VPN                                                                      | USG FLEX 100(W)                                                                   | USG FLEX 200                                                                       | USG FLEX 500                                                                        | USG FLEX 700                                                                        |
|---------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Product name                                            | VPN Firewall                                                                      | ZyWALL USG FLEX 100(W) Firewall                                                   | ZyWALL USG FLEX 200 Firewall                                                       | ZyWALL USG FLEX 500 Firewall                                                        | ZyWALL USG FLEX 700 Firewall                                                        |
|                                                         |  |  |  |  |  |
| <b>System Capacity &amp; Performance<sup>*1</sup></b>   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| SPI firewall throughput <sup>*2</sup> (Mbps)            | 350                                                                               | 900                                                                               | 1,800                                                                              | 2,300                                                                               | 5,400                                                                               |
| VPN throughput (Mbps)                                   | 90                                                                                | 270                                                                               | 450                                                                                | 810                                                                                 | 1,100                                                                               |
| VPN IMIX Throughput (Mbps) <sup>*3</sup>                | 40                                                                                | 100                                                                               | 160                                                                                | 240                                                                                 | 550                                                                                 |
| IPS throughput <sup>*4</sup> (Mbps)                     | -                                                                                 | 540                                                                               | 1100                                                                               | 1,500                                                                               | 2,000                                                                               |
| Anti-Malware throughput (Mbps) <sup>*4</sup>            | -                                                                                 | 360                                                                               | 570                                                                                | 800                                                                                 | 1,450                                                                               |
| UTM throughput (Anti-malware & IPS, Mbps) <sup>*4</sup> | -                                                                                 | 360                                                                               | 550                                                                                | 800                                                                                 | 1,350                                                                               |
| Max. TCP concurrent sessions <sup>*5</sup>              | 20,000                                                                            | 300,000                                                                           | 600,000                                                                            | 1,000,000                                                                           | 1,600,000                                                                           |
| Max. concurrent IPsec VPN tunnels <sup>*6</sup>         | 10                                                                                | 40                                                                                | 100                                                                                | 300                                                                                 | 500                                                                                 |
| Recommended gateway-to-gateway IPsec VPN tunnels        | 5                                                                                 | 20                                                                                | 50                                                                                 | 150                                                                                 | 250                                                                                 |
| Concurrent SSL VPN users                                | 5/15                                                                              | 30                                                                                | 60                                                                                 | 150                                                                                 | 150                                                                                 |
| VLAN interface                                          | 8                                                                                 | 8                                                                                 | 16                                                                                 | 64                                                                                  | 128                                                                                 |
| <b>Security Service</b>                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Anti-Malware <sup>*7</sup>                              | -                                                                                 | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| IPS <sup>*7</sup>                                       | -                                                                                 | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| Application Patrol <sup>*7</sup>                        | -                                                                                 | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| Email Security                                          | -                                                                                 | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| Web Filtering <sup>*7</sup>                             | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| SecuReporter <sup>*7</sup>                              | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| Collaborative Detection & Response <sup>*7</sup>        | -                                                                                 | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| SSL (HTTPS) inspection                                  | -                                                                                 | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| 2-Factor Authentication                                 | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| Device Insight                                          | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| Security Profile Synchronize (SPS) <sup>*7</sup>        | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| <b>VPN Features</b>                                     |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| VPN                                                     | IKEv2, IPsec, SSL, L2TP/IPsec                                                     | IKEv2, IPsec, SSL, L2TP/IPsec                                                     | IKEv2, IPsec, SSL, L2TP/IPsec                                                      | IKEv2, IPsec, SSL, L2TP/IPsec                                                       | IKEv2, IPsec, SSL, L2TP/IPsec                                                       |
| Microsoft Azure                                         | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| Amazon VPC                                              | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |
| <b>Secure WiFi Service<sup>*7</sup></b>                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Maximum Number of Tunnel-Mode AP                        | -                                                                                 | 10                                                                                | 10                                                                                 | 18                                                                                  | 66                                                                                  |
| Maximum Number of Managed AP                            | -                                                                                 | 24                                                                                | 40                                                                                 | 72                                                                                  | 264                                                                                 |
| Recommend max. AP in 1 AP Group                         | -                                                                                 | 10                                                                                | 20                                                                                 | 60                                                                                  | 200                                                                                 |

Note:

\*: This matrix with firmware ZLD5.2 or later.

\*1: Actual performance may vary depending on system configuration, network conditions, and activated applications.

\*2: Maximum throughput based on RFC 2544 (1,518-byte UDP packets).

\*3: VPN throughput measured based on RFC 2544 (1,424-byte UDP packets); IMIX: UDP throughput based on a combination of 64 byte, 512 byte and 1424 byte packet sizes.

\*4: Anti-malware (with Express Mode) and IPS throughput measured using the industry standard HTTP performance test (1,460-byte HTTP packets). Testing done with multiple flows.

\*5: Maximum sessions measured using the industry standard IXIA IxLoad testing tool

\*6: Including Gateway-to-Gateway and Client-to-Gateway.

\*7: With Zyxel service license to enable or extend the feature capacity.

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## 5G/LTE Router Series

Zyxel 5G/LTE routers are the newest addition to the Nebula cloud management family, and it further optimizes Nebula with more comprehensive and unified solutions for SMB networks.

Zyxel offers wide 5G NR and 4G LTE product portfolio. From indoor to outdoor, Zyxel's offerings are suitable for a wide range of deployment scenarios and a variety of network infrastructures, freeing yourself from cabled

installation. Outdoor router offers internet connectivity that utilizes state-of-the-art wireless network technology, and thanks to its outdoor-friendly design, it is now possible to work in harsh environments. Indoor router can be a backup or primary connection through 5G/LTE for your business. Enjoy a superior mobile network experience in any occasions and easily expand businesses with our wireless broadband solutions.

### Highlights

- 5G NR downlink up to 5 Gbps\* (NR7101, NR5101)
- IP68-rated weather protection (NR7101)
- Deploys AX1800 WiFi 6 (NR5101)
- Supports SA/NSA mode and network slicing function (NR7101, NR5101)

- Easy installation via free mobile app for finding the best installation signal spot
- Free from wired connection
- Failover function

\* The maximum data rate is a theoretical value. The actual data rate depends on the operator and network environment



## Product Options

| Model               |                     | Nebula NR7101               |        | Nebula NR5101                      |                                    | Nebula LTE3301-PLUS                                                                               |  |
|---------------------|---------------------|-----------------------------|--------|------------------------------------|------------------------------------|---------------------------------------------------------------------------------------------------|--|
| Product Name        |                     | Nebula 5G NR Outdoor Router |        | Nebula 5G NR Indoor Router         |                                    | Nebula 4G LTE-A Indoor Router                                                                     |  |
| Download Data Rates |                     | 5 Gbps*                     |        | 5 Gbps*                            |                                    | 300 Mbps*                                                                                         |  |
| 5G                  | Band                | Freq (MHz)                  | Duplex |                                    |                                    |                                                                                                   |  |
|                     | 1                   | 2100                        | FDD    | Yes                                | Yes                                | -                                                                                                 |  |
|                     | 3                   | 1800                        | FDD    | Yes                                | Yes                                | -                                                                                                 |  |
|                     | 5                   | 850                         | FDD    | Yes                                | Yes                                | -                                                                                                 |  |
|                     | 7                   | 2600                        | FDD    | Yes                                | Yes                                | -                                                                                                 |  |
|                     | 8                   | 900                         | FDD    | Yes                                | Yes                                | -                                                                                                 |  |
|                     | 20                  | 800                         | FDD    | Yes                                | Yes                                | -                                                                                                 |  |
|                     | 28                  | 700                         | FDD    | Yes                                | Yes                                | -                                                                                                 |  |
|                     | 38                  | 2600                        | TDD    | Yes                                | Yes                                | -                                                                                                 |  |
|                     | 40                  | 2300                        | TDD    | Yes                                | Yes                                | -                                                                                                 |  |
|                     | 41                  | 2500                        | TDD    | Yes                                | Yes                                | -                                                                                                 |  |
|                     | 77                  | 3700                        | TDD    | Yes                                | Yes                                | -                                                                                                 |  |
|                     | 78                  | 3500                        | TDD    | Yes                                | Yes                                | -                                                                                                 |  |
|                     | DL 4x4 MIMO         |                             |        | Yes (n5/8/20/28 supports 2x2 only) | Yes (n5/8/20/28 supports 2x2 only) | -                                                                                                 |  |
| LTE                 | 1                   | 2100                        | FDD    | Yes                                | Yes                                | Yes                                                                                               |  |
|                     | 3                   | 1800                        | FDD    | Yes                                | Yes                                | Yes                                                                                               |  |
|                     | 5                   | 850                         | FDD    | Yes                                | Yes                                | Yes                                                                                               |  |
|                     | 7                   | 2600                        | FDD    | Yes                                | Yes                                | Yes                                                                                               |  |
|                     | 8                   | 900                         | FDD    | Yes                                | Yes                                | Yes                                                                                               |  |
|                     | 20                  | 800                         | FDD    | Yes                                | Yes                                | Yes                                                                                               |  |
|                     | 28                  | 700                         | FDD    | Yes                                | Yes                                | Yes                                                                                               |  |
|                     | 38                  | 2600                        | TDD    | Yes                                | Yes                                | Yes                                                                                               |  |
|                     | 40                  | 2300                        | TDD    | Yes                                | Yes                                | Yes                                                                                               |  |
|                     | 41                  | 2500                        | TDD    | Yes                                | Yes                                | Yes                                                                                               |  |
|                     | 42                  | 3500                        | TDD    | Yes                                | Yes                                | -                                                                                                 |  |
|                     | DL CA               |                             |        | Yes                                | Yes                                | B1+B1/B5/B8/B20/B28<br>B3+B3/B5/B7/B8/B20/B28<br>B7+B5/B7/B8/B20/B28<br>B38+B38; B40+B40; B41+B41 |  |
|                     | UL CA               |                             |        | Yes                                | Yes                                | -                                                                                                 |  |
|                     | DL 4x4 MIMO         |                             |        | B1/3/7/38/40/41/42                 | B1/3/7/38/40/41/42                 | -                                                                                                 |  |
|                     | DL 256-QAM          |                             |        | Yes                                | Yes                                | -                                                                                                 |  |
|                     | UL 64-QAM           |                             |        | Yes (supports 256QAM)              | Yes (supports 256QAM)              | -                                                                                                 |  |
|                     | MIMO (UL/DL)        |                             |        | 1x4                                | 1x4                                | 1x2                                                                                               |  |
| 3G                  | 1                   | 2100                        | FDD    | Yes                                | Yes                                | Yes                                                                                               |  |
|                     | 3                   | 1800                        | FDD    | Yes                                | Yes                                | Yes                                                                                               |  |
|                     | 5                   | 2100                        | FDD    | Yes                                | Yes                                | Yes                                                                                               |  |
|                     | 8                   | 900                         | FDD    | Yes                                | Yes                                | Yes                                                                                               |  |
| WiFi AP             | 802.11n 2x2         |                             |        | Yes**                              | Yes                                | Yes                                                                                               |  |
|                     | 802.11ac 2x2        |                             |        | -                                  | Yes                                | Yes                                                                                               |  |
|                     | 802.11ax 2x2        |                             |        | -                                  | Yes                                | -                                                                                                 |  |
|                     | Number of users     |                             |        | -                                  | Up to 64                           | Up to 32                                                                                          |  |
| Ethernet            | GbE LAN             |                             |        | x1 (PoE)                           | x2                                 | x4                                                                                                |  |
|                     | GbE WAN             |                             |        | -                                  | x1 (reuse LAN 1)                   | x1 (reuse LAN 1)                                                                                  |  |
| SIM slot            | Micro/Nano SIM slot |                             |        | Micro SIM                          | Micro SIM                          | Micro SIM                                                                                         |  |
| Power               | DC input            |                             |        | PoE 48 V                           | DC 12 V                            | DC 12 V                                                                                           |  |
| Ingress protection  |                     | IP68                        |        | -                                  |                                    | -                                                                                                 |  |

\* The maximum data rate is a theoretical value. The actual data rate depends on the operator.

\*\* WiFi AP is used for management purpose only.

# License information

## Per-device License Model

Nebula’s per-device licensing allows IT teams to maintain various expiration dates across devices, sites or organizations. Each Organization can have a single

shared expiration, which will be manageable through our new Circle license management platform for channel partners, namely Subscription Alignment.

## Flexible Management License Subscription

Nebula Control Center (NCC) offers multiple subscription options to meet customers’ needs. Whether you are looking for a complimentary option giving you some peace of mind at no extra cost, more control over your network updates and visibility, or even the most advanced management of cloud networking, Nebula is here to help you.

However, the devices must maintain the same NCC management License Pack Type across the organization.

Nebula MSP Pack further provides cross-organization management functionality, helping MSP streamlines multi-tenant, multi-site, multi-level network deployment and management, and deliver superior service to their customers



### MSP Pack

- Per-admin account license that include cross-org. management features and can be used in conjunction with existing Packs (Base/Plus/Pro)
- MSP portal
  - Create organization
  - MSP branding
- Admins & teams
  - Cross-org synchronization
  - MSP alerts



### Base Pack

License-free feature set/service with a rich set of management features



### Plus Pack

A new feature set/service that includes the most frequently requested advanced features



### Pro Pack

A full feature set/service with all advanced functionality and management features

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# Flexible Security License Subscription

With the addition of USG FLEX and ATP Series firewall to the Nebula cloud management family, Nebula security solution further expands its offerings with holistic security and protection for SMB business networks.

Furthermore, the new cloud-based access point security service — Connect & Protect (CNP) provides a value-added protection to ensure a secure and smooth small business WiFi.



## Gold Security Pack

A complete feature set for ATP series to perfectly fit SMBs' requirements as well as to enable the maximum performance and security with an all-in-one appliance. This pack not only supports all Zyxel security services but also Nebula Professional Pack.



## Secure WiFi

USG FLEX license to manage remote access points (RAP) with the support of secured tunnel to extend corporate network to remote workplace



## UTM Security Pack

All-in-one UTM security service license add-on(s) to USG FLEX Series Firewall, which includes Web Filtering, IPS, Application Patrol, Anti-Malware, SecuReporter, Collaborative Detection & Response, and Security Profile Sync



## Content Filter Pack

Three-in-one security service license add-on(s) to USG20(W)-VPN, which includes Web Filtering, SecuReporter Premium, and Security Profile Sync.



## Connect & Protect (CNP)

Cloud-mode access point license to provide IP Reputation Filter & App Visibility with throttling to ensure a secure and smooth wireless network

# Nebula Trial License

To provide users the experience of using the full range of advanced features and services in both Nebula Pro Pack and NSS Security Pack, Nebula provides 30-day trial license to users when they create a new organization in NCC\*. Registered device-bundled license and separately purchased license keys will only be activated and consumed after the trial license period expires.

\*: All USG FLEX models will have a 30-day free trial license of UTM Security Pack. If a customer adds an USG FLEX bundled SKU (0102F) with an UTM bundled license to an organization, NCC will automatically grant & activate a Pro Pack license aligning to that device's UTM license terms as part of the bundled license service.

| M | R | F | S | W | Feature Name                                                                                                                           | Base Pack      | Plus Pack    | Pro Pack      |
|---|---|---|---|---|----------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------|---------------|
| • | ✓ | ✓ | ✓ | ✓ | Unlimited Registration & Central Management (Configuration, Monitoring, Dashboard, Location Map & Floor Plan Visual) of Nebula Devices | •              | •            | •             |
| • | ✓ | ✓ | ✓ | ✓ | Zero Touch Auto-Deployment of Hardware/Configuration from Cloud                                                                        | •              | •            | •             |
| • | ✓ | ✓ | ✓ | ✓ | Over-the-air Firmware Management                                                                                                       | •              | •            | •             |
| • | ✓ | ✓ | ✓ | ✓ | IOS and Android APP (Deployment, Management and Push Notifications)                                                                    | •              | •            | •             |
| • |   | ✓ | ✓ | ✓ | Central Device and Client Monitoring (Log and Stat Information) and Reporting                                                          | 24HR (Rolling) | 7D (Rolling) | 1YR (Rolling) |
| • | ✓ | ✓ | ✓ | ✓ | Admin Accounts per Organization (Full Access for Administration Rights)                                                                | 5              | 8            | NO LIMIT      |
| • |   | ✓ |   | ✓ | User Authentication Entries (via built-in Nebula Cloud Authentication Server)                                                          | 50             | 100          | NO LIMIT      |
|   |   | ✓ | ✓ | ✓ | Network Function Scheduling (SSID/PoE/Firewall Rules)                                                                                  | •              | •            | •             |
|   |   |   | ✓ | ✓ | MAC-Based and 802.1X Authentication                                                                                                    | •              | •            | •             |
|   |   | ✓ |   | ✓ | Captive Portal Authentication                                                                                                          | •              | •            | •             |
| • |   | ✓ | ✓ | ✓ | Cloud Saving Mode                                                                                                                      | •              |              |               |
| • | ✓ | ✓ | ✓ | ✓ | Advanced Firmware Scheduling (Org/Site/Device)                                                                                         |                | •            | •             |
| • |   | ✓ | ✓ | ✓ | Advanced Reporting Features (including Export/Email Reports/Scheduled Reports – Custom Logo)                                           |                | •            | •             |
| • | ✓ | ✓ | ✓ | ✓ | Automatic Network Topology (Visual and Actionable)                                                                                     |                | •            | •             |
| • | ✓ | ✓ | ✓ | ✓ | Email Users and Alert Notifications                                                                                                    |                | •            | •             |
| • |   |   |   | ✓ | WiFi Vouchers (Auto-Gen Vouchers for Access/Authentication with user defined time limits)                                              |                | •            | •             |
| • | ✓ | ✓ | ✓ | ✓ | Organizational User Audit/Change Logs                                                                                                  |                |              | •             |
| • |   | ✓ | ✓ | ✓ | Organizational-wide Configuration Sync, Clone and Template                                                                             |                |              | •             |

| M | R | F | S | W | Feature Name                                                                                                                          | Base Pack | Plus Pack | Pro Pack |
|---|---|---|---|---|---------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|----------|
| • | ✓ | ✓ | ✓ | ✓ | Configuration Backup/Restore                                                                                                          |           |           | •        |
| • | ✓ | ✓ | ✓ | ✓ | Priority Nebula Support Request<br>(Direct NCC incl. Web Chat)                                                                        |           |           | •        |
| • |   | ✓ | ✓ | ✓ | Open API for Ecosystem Partner Application Integration                                                                                |           |           | •        |
| • |   | ✓ |   | ✓ | Client Diagnostics — Connection Journey Based Event Log                                                                               |           |           | •        |
|   |   |   |   |   | Advanced WiFi AAA Security (Dynamic Personal PSK,<br>✓ Facebook WiFi, Dynamic VLAN Assignment via NCAS, 3rd<br>Party AAA Integration) |           |           | •        |
|   |   |   |   |   | Advanced WiFi Control & Management<br>✓ (RSSI Threshold Setting per AP, Export NAT AP Traffic Log,<br>Programmable SSID & PSK)        |           |           | •        |
|   |   |   |   |   | WiFi Health Monitoring and Report<br>✓ (AI/Machine Learning for Wireless)                                                             |           |           | •        |
|   |   |   | ✓ |   | Advanced Switch Control (Port Bandwidth Control, Vendor<br>Based VLAN, IP Interfacing & Static Routing)                               |           |           | •        |
|   |   |   | ✓ |   | Switch IPTV Feature Set<br>(Advanced IGMP, IPTV Report w. AI/ML Alert)                                                                |           |           | •        |
|   |   |   | ✓ |   | Switch Surveillance Feature Set<br>(Monitoring, Extended Range, Auto PD Recovery)                                                     |           |           | •        |
| • |   | ✓ |   |   | Zyxel CNM SecuReporter                                                                                                                |           |           | •        |
|   |   | ✓ |   |   | Firewall Advanced VPN Feature Set<br>(VPN Topology, VPN Traffic Usage, Smart VPN, L2TP/IPSec<br>VPN Client Script Provisioning)       |           |           | •        |
|   |   | ✓ |   | ✓ | Collaborative Detection & Response (CDR) with<br>automatically respond action (USG FLEX & ATP Series only)                            |           |           | •        |

M = Management Feature (NCC)  
R = LTE/5G Mobile Router Feature  
F = Firewall Feature

S = Switch Feature  
W = Wireless Feature

# Service related information

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## Nebula Forum

The Nebula forum is a great place where users can come together to share tips and ideas, get problems solved and learn from fellow users around the world. Join the conversations to know more about everything the Nebula products can do. Visit Nebula forum to explore more.

URL: <https://forum.nebula.zyxel.com/>

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## Support Request

The Support Request channel allows users to submit request tickets directly on NCC. It is a tool that provides an easy way for users to send and track an inquiry for help on a problem, request or service, to find answers to their questions quickly. The request will go directly to the Nebula support team, and will be reviewed and followed by a dedicated group until the proper resolutions are found.

\* Available for Professional Pack users.



## Corporate Headquarters

**Zyxel Networks Corp.**  
Tel: +886-3-578-3942  
Fax: +886-3-578-2439  
Email: [sales@zyxel.com.tw](mailto:sales@zyxel.com.tw)  
[www.zyxel.com](http://www.zyxel.com)

### Europe

**Zyxel Belarus**  
Tel: +375 25 604 3739  
Email: [info@zyxel.by](mailto:info@zyxel.by)  
[www.zyxel.by](http://www.zyxel.by)

**Zyxel BeNeLux**  
Tel: +31 23 555 3689  
Fax: +31 23 557 8492  
Email: [sales@zyxel.nl](mailto:sales@zyxel.nl)  
[www.zyxel.nl](http://www.zyxel.nl)  
[www.zyxel.be](http://www.zyxel.be)

**Zyxel Bulgaria**  
(Bulgaria, Macedonia,  
Albania, Kosovo)  
Tel: +3592 4443343  
Email: [info@cz.zyxel.com](mailto:info@cz.zyxel.com)  
[www.zyxel.bg](http://www.zyxel.bg)

**Zyxel Czech Republic**  
Tel: +420 241 091 350  
Hotline: +420 241 774 665  
Fax: +420 241 091 359  
Email: [sales@cz.zyxel.com](mailto:sales@cz.zyxel.com)  
[www.zyxel.cz](http://www.zyxel.cz)

**Zyxel Denmark A/S**  
Tel: +45 39 55 07 00  
Fax: +45 39 55 07 07  
Email: [sales@zyxel.dk](mailto:sales@zyxel.dk)  
[www.zyxel.dk](http://www.zyxel.dk)

**Zyxel Finland**  
Tel: +358 9 4780 8400  
Email: [myynti@zyxel.fi](mailto:myynti@zyxel.fi)  
[www.zyxel.fi](http://www.zyxel.fi)

**Zyxel France**  
Tel: +33 (0)4 72 52 97 97  
Fax: +33 (0)4 72 52 19 20  
Email: [info@zyxel.fr](mailto:info@zyxel.fr)  
[www.zyxel.fr](http://www.zyxel.fr)

**Zyxel Germany GmbH**  
Tel: +49 (0) 2405-6909 0  
Fax: +49 (0) 2405-6909 99  
Email: [sales@zyxel.de](mailto:sales@zyxel.de)  
[www.zyxel.de](http://www.zyxel.de)

**Zyxel Hungary & SEE**  
Tel: +36 1 848 0690  
Email: [info@zyxel.hu](mailto:info@zyxel.hu)  
[www.zyxel.hu](http://www.zyxel.hu)

**Zyxel Iberia**  
Tel: +34 911 792 100  
Email: [ventas@zyxel.es](mailto:ventas@zyxel.es)  
[www.zyxel.es](http://www.zyxel.es)

**Zyxel Italy**  
Tel: +39 011 230 8000  
Email: [info@zyxel.it](mailto:info@zyxel.it)  
[www.zyxel.it](http://www.zyxel.it)

**Zyxel Norway**  
Tel: +47 22 80 61 80  
Fax: +47 22 80 61 81  
Email: [salg@zyxel.no](mailto:salg@zyxel.no)  
[www.zyxel.no](http://www.zyxel.no)

**Zyxel Poland**  
Tel: +48 223 338 250  
Hotline: +48 226 521 626  
Fax: +48 223 338 251  
Email: [info@pl.zyxel.com](mailto:info@pl.zyxel.com)  
[www.zyxel.pl](http://www.zyxel.pl)

**Zyxel Romania**  
Tel: +40 31 0809 888  
Fax: +40 31 0809 890  
Email: [info@cz.zyxel.com](mailto:info@cz.zyxel.com)  
[www.zyxel.ro](http://www.zyxel.ro)

**Zyxel Russia**  
Tel: +7 499 705 6106  
Email: [info@zyxel.ru](mailto:info@zyxel.ru)  
[www.zyxel.ru](http://www.zyxel.ru)

**Zyxel Slovakia**  
Tel: +421 220 861 847  
Hotline: +421 220 861 848  
Fax: +421 243 193 990  
Email: [info@cz.zyxel.com](mailto:info@cz.zyxel.com)  
<http://www.zyxel.sk>

**Zyxel Sweden A/S**  
Tel: +46 8 55 77 60 60  
Fax: +46 8 55 77 60 61  
Email: [sales@zyxel.se](mailto:sales@zyxel.se)  
[www.zyxel.se](http://www.zyxel.se)

**Zyxel Switzerland**  
Tel: +41 (0)44 806 51 00  
Fax: +41 (0)44 806 52 00  
Email: [info@zyxel.ch](mailto:info@zyxel.ch)  
[www.zyxel.ch](http://www.zyxel.ch)

**Zyxel Turkey A.S.**  
Tel: +90 212 314 18 00  
Fax: +90 212 220 25 26  
Email: [bilgi@zyxel.com.tr](mailto:bilgi@zyxel.com.tr)  
[www.zyxel.com.tr](http://www.zyxel.com.tr)

**Zyxel UK Ltd.**  
Tel: +44 (0) 118 9121 700  
Fax: +44 (0) 118 9797 277  
Email: [sales@zyxel.co.uk](mailto:sales@zyxel.co.uk)  
[www.zyxel.co.uk](http://www.zyxel.co.uk)

**Zyxel Ukraine**  
Tel: +380 89 323 9959  
Email: [info@zyxel.eu](mailto:info@zyxel.eu)  
[www.zyxel.ua](http://www.zyxel.ua)

### Asia

**Zyxel China (Shanghai)  
China Headquarters**  
Tel: +86-021-61199055  
Fax: +86-021-52069033  
Email: [sales@zyxel.cn](mailto:sales@zyxel.cn)  
[www.zyxel.cn](http://www.zyxel.cn)

**Zyxel China (Beijing)**  
Tel: +86-010-62602249  
Email: [sales@zyxel.cn](mailto:sales@zyxel.cn)  
[www.zyxel.cn](http://www.zyxel.cn)

**Zyxel China (Tianjin)**  
Tel: +86-022-87890440  
Fax: +86-022-87892304  
Email: [sales@zyxel.cn](mailto:sales@zyxel.cn)  
[www.zyxel.cn](http://www.zyxel.cn)

**Zyxel India**  
Tel: +91-11-4760-8800  
Fax: +91-11-4052-3393  
Email: [info@zyxel.in](mailto:info@zyxel.in)  
[www.zyxel.in](http://www.zyxel.in)

**Zyxel Kazakhstan**  
Tel: +7 727 350 5683  
Email: [info@zyxel.kz](mailto:info@zyxel.kz)  
[www.zyxel.kz](http://www.zyxel.kz)

**Zyxel Korea Corp.**  
Tel: +82-2-890-5535  
Fax: +82-2-890-5537  
Email: [sales@zyxel.kr](mailto:sales@zyxel.kr)  
[www.zyxel.kr](http://www.zyxel.kr)

**Zyxel Malaysia**  
Tel: +603 2282 1111  
Fax: +603 2287 2611  
Email: [sales@zyxel.com.my](mailto:sales@zyxel.com.my)  
[www.zyxel.com.my](http://www.zyxel.com.my)

**Zyxel Middle East FZE**  
Tel: +971 4 372 4483  
Cell: +971 562146416  
Email: [sales@zyxel-me.com](mailto:sales@zyxel-me.com)  
[www.zyxel-me.com](http://www.zyxel-me.com)

**Zyxel Philippine**  
Email: [sales@zyxel.com.ph](mailto:sales@zyxel.com.ph)  
[www.zyxel.com.ph](http://www.zyxel.com.ph)

**Zyxel Singapore**  
Tel: +65 6339 3218  
Hotline: +65 6339 1663  
Fax: +65 6339 3318  
Email: [apac.sales@zyxel.com.tw](mailto:apac.sales@zyxel.com.tw)

**Zyxel Taiwan (Taipei)**  
Tel: +886-2-2739-9889  
Fax: +886-2-2735-3220  
Email: [sales\\_tw@zyxel.com.tw](mailto:sales_tw@zyxel.com.tw)  
[www.zyxel.com.tw](http://www.zyxel.com.tw)

**Zyxel Thailand**  
Tel: +66-(0)-2831-5315  
Fax: +66-(0)-2831-5395  
Email: [info@zyxel.co.th](mailto:info@zyxel.co.th)  
[www.zyxel.co.th](http://www.zyxel.co.th)

**Zyxel Vietnam**  
Tel: (+848) 35202910  
Fax: (+848) 35202800  
Email: [sales\\_vn@zyxel.com.tw](mailto:sales_vn@zyxel.com.tw)  
[www.zyxel.com/vn/vi/](http://www.zyxel.com/vn/vi/)

### The Americas

**Zyxel USA  
North America Headquarters**  
Tel: +1-714-632-0882  
Fax: +1-714-632-0858  
Email: [sales@zyxel.com](mailto:sales@zyxel.com)  
[us.zyxel.com](http://us.zyxel.com)

**Zyxel Brazil**  
Tel: +55 (11) 3373-7470  
Fax: +55 (11) 3373-7510  
Email: [comercial@zyxel.com.br](mailto:comercial@zyxel.com.br)  
[www.zyxel.com/br/pt/](http://www.zyxel.com/br/pt/)

For more product information, visit us on the web at [www.zyxel.com](http://www.zyxel.com)

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