Smart Edge Switch x QTS NAS

QGD-1600 / QGD-1602

Supports ADRA NDR solution, or QTS VM and applications to satisfy business networking needs
Overview

• Hardware Features & Advantages
• Software Features & Advantages
  ✓ L2 Network management functions
  ✓ QTS applications
  ✓ ADRA NDR
• Multi-purpose for one machine: support network management, storage, computing, etc.
• Guardian’s diverse use scenes
QNAP Networking Equipment Product Evolution

1st Generation
Unmanaged switch

2nd Generation
L2/ L3 Managed Switch

3rd Generation
Guardian Smart Edge Switch
- With QTS NAS OS
- Run virtual machines
- Hybrid cloud storage

QNAP Networking Equipment Product Evolution
Guardian's unique strengths and features

Hardware Advantages
QGD-1600 hardware architecture

- **SSD**: 2 x 2.5" SSD
- **CPU**: Intel J4115 up to 2.5 GHz Quad-core
- **RAM**: 4G/8GB RAM
- **PCIe Interface**: 2 x PCIe Gen 2 x 2
- **LAN**: 2 x Internal LAN GbE
- **USB**: 1 x USB 3.0, 2 x USB 2.0
- **HDMI**: 1 x HDMI 2.0
- **Host Interface**: 1 x Host Interface

**Power Supply**
- **Total**: 100W
- **Max Power**: 100W

**Switch**
- Microchip VSC7425
- 16-port GbE RJ45 with 2port SFP combo
- **System power controller**
- **Host power controller**

**System power button**
- (Rear)
- **Max**: 48W
- **Max Power**: 100W
QGD-1600 hardware features

Front
- LCM
- HDMI
- Host Interface
- Combo Port (RJ45, SFP)
- LED Status

Rear
- System power button
- 2 x PCIe Gen2 x2

Dimensions: (H)47.2 × (W)436.2 × (D)326.2 mm

Host Interface: 2 x USB2.0, 2 x PCIe Gen2 x2, USB 3.0

QGD: -1600 hardware features

Reset button (QTS / Switch)
Host Power Button
The Intel® Celeron® J4115 quad-core 1.8 GHz processor with 2.5GHz burst speed delivers efficient computing power to Guardian.

Two 2.5" SSD/ HDD SATA slots are built in, allowing you to store surveillance video files.

Supports installation of 10GbE NICs, QM2 expansion cards or USB 3.2 Gen 2 (10Gbps) expansion cards for maximum application expansion flexibility.

Supports two DDR4 dual-channel SO-DIMM memory slots up to 8GB (2 x 4GB).
QGD-1602 hardware architecture

- 2 x 2.5" SSD
- Intel Atom C3558/C3758 4/8-core
- 8GB RAM (up to 64GB)
- 2 x PCIe Gen 3
- 2 x M.2 NVMe
- 2 x Internal 10GbE
- USB 3.0 x 2
- Improved features

Host Interface:
- 4 x RJ45
- 2 x 1GbE, 2 x 5GbE

System power button (Rear)
- Power Supply
- System Power
- Host power controller
- System power controller

Switch:
- 2 x 10GbE SFP+
- Microchip VSC7448
- 16 x RJ45
- 8 x 1GbE, 8 x 2.5GbE

Host power button
QGD-1602 hardware features

Front:
- LCM
- 2 x 1G/2.5G/5GbE Multi-Gigabit host ports
- 8 x 2.5GbE Multi-Gigabit switch ports
- 2 x 10GbE SFP+ ports
- Separated Host/Switch system indicator and reset button
- Host Power button
- USB 3.2 Gen1 5Gbps
- 2 x 1GbE host ports
- 8 x 1GbE switch ports

Back:
- System power
- PCIe Gen3 slot x 2
QGD-1602 internal view

- 2 x PCIe Gen3 x2 (x4 connector) Slots
- 2.5-inch HDD / SSD slots
- Intel® Atom® Processor
- DDR4 Memory
- 2 x M.2 NVMe SSD slots
Hard disk and SSD installation

Step 1
Open the cover of the switch

Step 2
Remove the hard disk slot, put it in the hard disk and fix it, and then fix the hard disk slot

Step 3
Cover the cover of the switch

Open cover

Remove hard disk slot

Put in the hard disk

Fix it

Fix hard disk slot

Cover cover

2.5-inch SSD
Choose the HDD/SSD for Guardian

Solid State (SSD)  For users who are looking for efficient computing power

Suitable for NAS
Maximum capacity up to 3.84TB
(Seagate IronWolf 125)
(WD Red™ SA500 NAS SATA SSD)

Industrial reliability
Maximum capacity up to 7.68TB
(Micron 5400)

High performance & capacity
Maximum capacity up to 3.84TB
(Samsung 870 EVO)
Extend Guardian functionality with the PCIe slot

The Guardian QGD-1600/1602 features two PCIe expansion slots, and you can flexibly configure a variety of QNAP PCIe expansion cards as needed.

- QM2
  - SSD
    - QM2-2S-244A
    - QM2-2P-344A
    - QM2-2P-384A
- QWA-AC2600
- USB 3.1 Gen 2 (10Gbps)
  - QXP-10G2U3A
Efficient and economical, flexible expansion of storage space

The TR-002/004 and TR-004U are the best choice for you to expand your Guardian storage space. The USB 3.2 Gen1 Type-C transmission interface makes storage and backup tasks smoother!
High quality hardware components

Smart fan
Support automatic and manual adjustment of fan speed, effectively improve the hardware cooling capacity of the mechanism
Metal body for efficient heat dissipation and anti-interference

With metal body design, the thermal conductivity is better, the heat dissipation is more outstanding, and the electromagnetic interference can be effectively shielded to ensure long-term stable operation, which provides a strong guarantee for the efficient and stable operation of the overall network.
Guardian's unique strengths and features

Software Advantages

QGD-1600 / QGD-1602
QGD-1600/1602 software architecture

- **Cloud manager**
  - Mobile apps and utilities
  - Cloud agent
  - VJBOD
  - Storage management
  - VM management (KVM)
  - Network & Virtual Switch

- **QTS Operating System**
  - QVR Pro
  - Container Station
  - VM
  - VM Service
  - Network & Virtual Switch

- **Docker Service**
  - CentOS
  - Ubuntu

- **VM Service**
  - RouterOS
  - AP Controller
  - Linux Host
  - SIP Server

- **Virtualization Station**

- **Support remote storage, cloud storage via VJBOD Cloud or HybridMount**
  - SMB / NFS / AFP / FTP / RTRR / iSCSI

- **Object-based Storage**
  - File-based Storage

- **RAID expansion enclosure**

- **Network & Virtual Switch Manager**
  - Physical Switch
  - Virtual Switch

- **Network & Virtual Switch**
  - Guardian Network Switch Manager
  - External devices
  - Virtualization Station
Guardian's unique strengths and features

L2 Network Management Advantages
QuNetSwitch's friendly and intuitive graphical management user interface

Guardian provides an intuitive and friendly web management interface that allows users to easily perform device monitoring, configuration, firmware updates, and advanced network management functions.
### Complete Layer 2 network management function

<table>
<thead>
<tr>
<th>IGMP Snooping</th>
<th>VLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimizing multicast performance helps in-line media streaming, VoIP and other bandwidth-intensive applications that are sensitive to time delays.</td>
<td>Enhance network security by isolating traffic within the enterprise based on requirements such as administrators, general users, employees, or visitors.</td>
</tr>
<tr>
<td><strong>Link Aggregation (LACP)</strong></td>
<td><strong>Quality of Service</strong></td>
</tr>
<tr>
<td>Combine two physical lines to form a high-speed virtual data transmission path, increase transmission speed, and enhance network connection reliability.</td>
<td>Different network usage priorities can be configured according to the port or VLAN group to ensure the quality of service and optimize network transmission efficiency.</td>
</tr>
</tbody>
</table>
**Complete Layer 2 network management function**

<table>
<thead>
<tr>
<th>Access-Control List (ACL)</th>
<th>Loop detection and protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support for access control mechanisms, you can set multiple access rules, specify specific protocols, IP addresses, subnet masks, and port access conditions.</td>
<td>When the network generates a loop, the network that generates the loop will be closed, effectively avoiding network interruption.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Port Mirroring</th>
<th>Jumbo frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allows network administrators to capture data (packets) for specific ports to monitor the network or troubleshoot.</td>
<td>Support Jumbo fram huge packet selection, which helps improve overall data transmission efficiency.</td>
</tr>
</tbody>
</table>
Guardian's unique strengths and features

QTS Applications
Guardian X QVR Pro complete solution
Guardian X QVR Pro complete solution

**Instant Playback**
Monitor the live view of multiple channels and play recordings on a single interface. With just one click you can switch between live, individual playback and sync playback modes. You can also view recordings at a specific time by clicking the time line or by selecting a time range.

**Dynamic Layout**
The QVR Pro Client provides a highly-customizable display panel. You can change each channel’s display ratio, arrange the display, or use the built-in display module to fulfill your surveillance needs.

**Region of Interest**
The updated Region of Interest (ROI) feature supports multiple regional images from the same camera in live view and playback mode. You can define and enlarge multiple areas on the overview image with no selection limitations or additional licenses required.
Guardian X QVR Pro complete solution

**Qdewarp Technology**
The innovative Qdewarp enables users to view standard fisheye camera recordings in proportional ratios and sizes without affecting original recordings. The distorted parts on the edges can be turned into a clear panoramic view.

**E-map**
If an event occurs, you can quickly know the camera’s location on the e-map to ensure a timely response.

**Multiple Notification Methods**
The event notification provides multiple ways of being informed of emerging events, including flashing red borders of channels, alert buzzers, and the motion icon on the e-map.
Run virtual machines and containers, one machine and multiple systems

Virtualization Station and Container Station lead a full range of hybrid virtual application solutions. Regardless of your needs, you can rely on QNAP’s complete virtualization application support. Choosing the right deployment strategy for your virtualization needs can be easy!
Guardian provides fast and convenient VM hosting and management services.

Traditional NAS + Switch:
- RouterOS
- Virtualization Station
- Virtual Switch
- NIC
- WAN
- Internet
- LAN Networking Devices

Guardian Solution:
- Guardian vSwitch Mode VM Installer
- RouterOS
- VM
- VM
- NIC
- LAN
- Internet
- LAN Networking Devices
Support VM Installer for quick and easy VM software setup

Simple installation in three steps, saving a lot of setup troubles.

1. Select the VM service you want to install
2. Set the corresponding WAN Port
3. Finish the settings
Double your productivity output

**Access files on External Devices**

**File Station**
Use File Station to directly access files on USB devices - including optical disc drives. Files from USB devices can be easily backed up to the QGD.

**Full-text Search**

**Qsirch**
Qsirch supports keyword search for finding images, music, videos, documents, and emails, making it easier than ever to locate files.

**File Digitalization**

**OCR Converter**
OCR Converter extracts text from images, helping to facilitate file organization, editing, and searching.

**Smart Filing**

**Qfiling**
Qfiling automates file organization. Files are automatically archived into folders based on your settings.
QTS / Guardian storage

**Cloud Storage**

- Object Storage
- Object Storage
- Object Storage

**Remote Storage**

- WebDAV
- SMB
- FTP

**Data center**

**File Services**

- Local Application
  - SMB
  - NFS
  - FTP
  - WebDAV
  - Qsync

- File Station
  - Qfile

**File Access**

- Ethernet
- Fibre Channel

**Cache Engine**

- Local Disks/SSDs
- Block Access

**File-Based Cloud Gateway**

- VJBOD Cloud
  - LUNs
  - LUN Size
  - Provisioning
  - Dedicated Storage

**Virtual File System**

- Cloud File Connector

**File Station Mount**

- Cloud Connector
- Remote File Connector

**Virtual File System**

- Dedicated Cache Volume

**Cloud Storage**

- Object Storage
- Object Storage
- Object Storage

**Remote Storage**

- WebDAV
- SMB
- FTP

**Data center**

**Customer File System**

- Local Servers

**Local Users**

- File Access
QNAP's VJBOD Cloud feature is a block-based Gateway block cloud gateway.

The VJBOD Cloud Gateway allows users to easily connect to the cloud's storage and convert it to disk on the local side.

Enterprise IT staff or general users can use the more familiar file access protocol (NFS, SMB, AFP, FTP, WebDAV) for access.
HybridMount with 2 modes for data usage

<table>
<thead>
<tr>
<th></th>
<th>Cloud Drive Mount</th>
<th>Network Drive Mount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Setup Method</strong></td>
<td>Mount cloud drives</td>
<td>Choose &quot;File Cloud Gateway&quot; mode and create a cache space</td>
</tr>
<tr>
<td><strong>Connections</strong></td>
<td>2 life-time free connections</td>
<td>No limit</td>
</tr>
<tr>
<td></td>
<td>Buy license for more connections</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No limit</td>
<td></td>
</tr>
<tr>
<td><strong>Accessing Performance</strong></td>
<td>Depends on network speed</td>
<td>High performance due to the cache space</td>
</tr>
<tr>
<td><strong>Access in File Station</strong></td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td><strong>Access in SMB / NFS / AFP</strong></td>
<td>NOT Supported</td>
<td>Supported</td>
</tr>
<tr>
<td><strong>Sync with Cloud</strong></td>
<td>Sync only when browsing</td>
<td>NOT Supported</td>
</tr>
<tr>
<td><strong>Support QTS application</strong></td>
<td>NOT Supported</td>
<td>Supported [Qsirch, Music, TV]</td>
</tr>
</tbody>
</table>
Synchronization and co-management of global multi-site office files

With a cloud space, it can be accessed all over the world and achieve file synchronization. Collect data from global locations and freely expand space.

Configure Guardian as a file-based cloud gateway at each point office.

Easy and efficient access to the cloud by office users
1. Support access protocol
2. local cache allows access to cloud files as if it were a local experience

Eliminate the traditional VPN time-consuming and laborious access method
QNAP QvPC innovation technology

With QNAP’s exclusive QvPC technology (QNAP virtualized Personal Computer Technology), you can connect your Guardian to a keyboard, mouse, and connect to the monitor via HDMI to use the Guardian switch as a PC.

Connect the mouse keyboard, Guardian Switch can also be used as a PC.
A variety of web apps let you get started quickly.

- QTS
- File Station
- QVR Pro Client
- QuNetSwitch

Note: QGD-1602 doesn’t have an HDMI output port; therefore, only QGD-1600 supports HD station.
Guardian's unique strengths and features

ADRA
NDR

QGD-1600 / QGD-1602
Adaptive Threat Detection
Threat Watch
Threat Trap

Real-time Threat Analysis
Correlation Analysis
Deep Threat Analysis

Isolation Response
Access Switch
Isolate Victims/Zone
Risk Management

• Note: After upgrading to ADRA NDR O.S., the QGD switch cannot run QTS NAS OS and VMs.
ADRA NDR key features

- Near-Zero configuration
- Deploy without changing network infrastructure
- Line-rate performance (VMs/NAS/Server farm)
- Transparent & Adaptive detection
- Automated correlations and analysis
- Automated Isolation
Firewall + ADRA complete the secure network from internet to intranet
# Suspicious network activities detectable by ADRA NDR

<table>
<thead>
<tr>
<th>Type</th>
<th>Threat behaviors</th>
</tr>
</thead>
</table>
| Scan                          | • Device/network scanning  
                                   | • TCP/UDP/ICMP/ARP scanning                                                     |
| Abnormal operation            | • Network flooding  
                                   | • TCP flag attacking   
                                   | • Unknown domain request  
                                   | • Credential phishing       |
| Vulnerability                 | • CVE vulnerabilities relate zero day attack  
                                   | • MS MAPP relate zero day attack       
                                   | • Patch Tuesday relate zero day attack       |
| Malware/Ransomware suspicious operation* | • C&C call back  
                                   | • Exploit-kit detect  
                                   | • Network spoof  
                                   | • DDoS |

*Note: ADRA is designed to detect the behaviors generated by malware/ransomware, rather than analyzing the content of files or performing decryption for analysis.
QGD family selection for ADRA NDR

<table>
<thead>
<tr>
<th>Model series</th>
<th>Recommended max. number of detection devices</th>
<th>Recommended max. number of high-bandwidth detection devices</th>
<th>Recommended max. number of Threat Traps</th>
</tr>
</thead>
<tbody>
<tr>
<td>QGD-1600P Series</td>
<td>1-50</td>
<td>1-10</td>
<td>1-2</td>
</tr>
<tr>
<td>QGD-1602P-C3558-8G</td>
<td>51-80</td>
<td>11-30</td>
<td>3-6</td>
</tr>
<tr>
<td>QGD-1602P-C3758-16G</td>
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<td>31-60</td>
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• Note: Choose the right model based on your number of detection edge devices and Threat Traps.
Guardian smart edge switches

- Layer 2 Management
- QTS NAS O.S.
- VM / Container supported
- QVR Pro Surveillance solution

Best Solution for ADRA
Multi-purpose for one machine: Guardian's practical application in various environmental architectures
Guardian commercial wireless AP Integrated Solution

### Traditional Deployment
- UniFi Cloud Key
- UAP-AC-PRO
- UAP-AC-LR
- UAP-AC-M
- US-16-150W
- USG-PRO-4
- Hybrid Cloud
- LAN
- WAN

### Guardian Solution
- UAP-AC-PRO
- UAP-AC-LR
- UAP-AC-M
- myQNAPcloud
- UniFi Controller
- pfSense (DHCP Server)
- Guardian Smart Switch
- Remote Access to UniFi Controller
- Internet

### Advantages
1. One machine covers all features, saving a lot of space
2. Highly expandable capabilities to meet future growth needs
3. Integrated solution
Guardian X RouterOS X QWA-AC2600 network solution

- Support for installing RouterOS, OpenWrt
- VPN encryption transmission can be established at each office
- Share the wireless network to the device with the QWA-2600AC wireless network card
QGD-1600/1602 supports the installation of pfSense firewall software on virtual machines to effectively block external network intrusion threats. In addition, for enterprise intranets, protection and blocking can be implemented according to requirements, which can effectively improve the information security of devices in each intranet.
Guardian brings next-gen IP Phone integrated solution
Guardian’s diverse use scenes
Chain store solution

Install a Guardian switch at each branch to create a complete solution and back up the data to headquarters through remote storage.
Create a one-machine surveillance solution

Live Demo

Description:
- Soft routing software installed on a virtual machine
- Install QVR Pro
- Expand your storage with VJBOD & USB RAID
- With QWA-2600AC network card, support more devices wireless networking
Different from the traditional exchangers on the market, you have a better choice!

Guardian Smart Edge Switch

QGD-1600 / QGD-1602
Guardian Smart Edge Switch: four benefits of all-in-one integrated solution

1. **Reduce costs**
   No need to buy a variety of different equipment, a single device can meet the needs of use; and save the cost of AC power, power lines, plugs and other materials.

2. **Reduce learning costs**
   A single centralized management interface that saves you the cost of learning familiar with the operation of different devices.

3. **Reduce maintenance costs**
   Provide you with a safer and more secure enterprise solution, no need to worry about the risk of single equipment damage, and effectively reduce the cost of subsequent maintenance.

4. **High expandability**
   Highly flexible functional design to effectively meet the needs of the company's future growth environment.
QNAP

Smart Edge Switch x QTS NAS

QGD-1600 / QGD-1602

Innovative Hybrid managed switch + NAS/NDR combo solution