Smart Video Surveillance Solutions for Small and Medium-Sized Enterprises

Retail
Companies with multiple branches
Hotels and restaurants
Production facilities

NETGEAR®
video surveillance solutions
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Dear business partner,

IP video surveillance is becoming one of the most attractive markets for conventional IT resellers. There are several obvious reasons for this:

- Demand for video surveillance is continuing to grow substantially
- The costs of video surveillance are continuing to fall
- IP-based surveillance systems are becoming increasingly common on the market. IMS Research predicts an annual growth rate of 19.9% between 2013 and 2016
- IP-based video surveillance allows easier integration with existing applications such as access control systems, motion detectors, point-of-sale systems/cash registers and face or number plate recognition systems, as no analogue-to-digital conversion is necessary. The existing Ethernet network infrastructure can also be used – Power over Ethernet (PoE) technology supplies power to the connected components and also handles data transfer. Wireless cameras can be integrated in existing WLAN networks, as well as other Ethernet devices such as smoke detectors
- Security personnel, administrators and other authorized users can access the video material at any time and from any location, in real time. If an incident occurs, the recordings can be viewed without the need to travel to the scene itself. Videos can simply be sent to investigative bodies by email
- NAS (network-attached storage) solutions reduce archiving and storage costs. Unlike cassettes, the quality of digitally stored data does not deteriorate over time. The integrated data security on NAS devices ensures that all data is stored reliably and can be accessed within a few seconds
- IP-based surveillance systems are future-proof and can generally be kept up to date via simple software updates
- Legal requirements, franchise regulations etc. also increasingly include provisions relating to video surveillance

NETGEAR Surveillance allows you to share in this success with one of the most attractive and most powerful solutions on the market.

This brochure will provide you with an overview of the areas of application, key components and benefits of the NETGEAR IP surveillance solutions.

We will be happy to discuss further details with you and, of course, provide you with support for specific projects.

We wish you every success!

IMS, April 2012

Sales of network cameras ($ m.) 27% CAGR (2011–16)

IP surveillance is one of the most attractive ICT markets
RETAIL
- Reduced losses resulting from theft of goods
- Problems eliminated by POS (point-of-sale) integration with video surveillance
- Accidents, theft, robbery: protection for customers and staff
- Overview of multiple stores on one interface
- Real-time access to the surveillance system via PC/Mac/mobile
- Protection against vandalism

PRODUCTION PLANTS
- Accidents, theft, robbery: protection for customers and staff
- Overview of multiple sites and production areas on one interface
- Real-time access to the surveillance system via PC/Mac/mobile
- Integration into existing I/O systems, alarms, locks, access control systems and fire alarms

TRANSPORT AND LOGISTICS
- Security for incoming and outgoing goods
- Integration with access control systems, number plate recognition etc.
- Support for HD cameras
- Event detection
- Real-time access to the surveillance system via PC/Mac/mobile
- Surveillance of multiple sites from a central location
- Surveillance of traffic areas

HOTELS, RESTAURANTS, RESIDENTIAL ESTABLISHMENTS
- Safe, friendly environment
- Integration with I/O devices
- Mobile monitoring
- Real-time access to the surveillance system via PC/Mac/mobile
- Integration of fire alarms, door opening sensors etc.
- Privacy masking
- Digital watermarks
- Encryption on the storage system

PUBLIC AREAS
- Monitoring of buildings and areas accessible to the public
- Vandalism
- Crime prevention
- Integration with emergency response systems
- Event detection
- Integration with I/O devices and existing systems (lighting, air conditioning, garage doors etc.)
- Privacy masking
- Real-time access to the surveillance system via PC/Mac/mobile
- Digital watermarks
- Analysis functions

The highly flexible NETGEAR Surveillance solution can be used with up to 128 cameras, making it ideal for a wide range of applications and requirements.
What components are contained in a video surveillance solution?

Small and medium-sized enterprises need cost-effective video surveillance solutions from a single source that are easy to operate but still provide a professional level of protection.

A modern infrastructure typically consists of:
- One or more NAS systems acting as the "NVR" (network video recorder)
- Central control software running on either the NAS or a server/PC (control center)
- The client software for controlling and, above all, monitoring the images from the camera (normally on a separate PC)
- Mobile apps for smartphones and tablets
- Power over Ethernet switches to transfer data from the cameras and to supply power
- WLAN components for wireless cameras
- Cameras
- Other peripheral devices, sensors etc.

NETGEAR provides you with perfectly coordinated infrastructure components:
- ReadyNAS and ReadyDATA storage from 2 – 360 TB
- NETGEAR ReadyNAS Surveillance network video recorder (NVR) software
- NETGEAR ReadyNAS Surveillance client software and mobile apps (included in software)
- Power over Ethernet switches ranging from 5 ports to 50 or more
- Business WLAN components

Example scenario: Video surveillance and networking in the retail sector

ReadyNAS® network-attached storage
Network video recorder for video surveillance, video monitoring, file server, disk-to-disk backup

ProSAFE® 8-port PoE switch or PoE+
- Power over Ethernet (PoE = built-in power supply for outdoor and/or PTZ cameras, VoIP telephony, POS systems)

Control center and viewing
Client running surveillance software

Video surveillance with NETGEAR
Why use ReadyNAS Surveillance software as the network video recorder component?

• ReadyNAS Surveillance offers the same functionality as complex high-end solutions but is much easier to manage.
• ReadyNAS Surveillance also offers many more features than comparable entry-level solutions at the same price.
• Easily installed on the NAS in the form of an app.

Superior Hardware Components

• ReadyNAS systems for any application – 2–48 TB and up to 64 cameras per system.
• Option of combining multiple storage systems.
• Largest range of PoE switches in Europe.

Fully Integrated Approach

• The software runs directly on the NAS.
• Perfect interoperability with NETGEAR PoE switches.
• ReadyNAS data backup functions also suitable for videos.
• Supports over 2000 cameras.

Genuine Business Features

• Intelligent search, e.g. recordings can be searched for movement, lost/unknown objects, camera occlusion, loss of focus.
• Watermark for legal enforceability.
• Privacy masking.
• eMAP for event and device tracking.
• Integration in various systems for point-of-sale surveillance, motion detection, door opening sensors, access control systems etc.

Usage Scenario with NETGEAR ProSAFE Infrastructure and ReadyNAS Network-Attached Storage

- Monitoring via laptop
- Wireless access point
- Corporate network (VLAN 1)
- Network video recorder and storage
- PoE switch
- Wireless access point
- Guest network (VLAN 2)
- VPN firewall
- Warehouse
- Shelf 1
- Shelf 2
- Store entrance

Point-of-sale (POS) systems for integrating video with POS/cash register data, e.g. Casio, IBM, Verifone.

Access control systems (digital I/O, integration with nine leading suppliers).

Additional systems such as number plate recognition.

Extensive playback functions.
### SME-Friendly Management

- Web-based management from anywhere
- UPnP search, auto-detection of cameras and GUI scheduling save time and effort
- Remote access and camera viewing via mobile terminals, browsers and free Windows-based software, for up to 128 cameras
- Drag-and-drop cameras, auto scan, preset point patrol and multiple viewing streams ensure easy, convenient surveillance

### Simple management interface

### Excellent Scalability and Flexibility

- Up to 64 cameras can be managed with each ReadyNAS system
- Multiple systems can be combined and centrally managed
- Simultaneous live view option for a maximum of 128 cameras using the Windows surveillance software
- 100% flexible licensing model based on licenses for one, two or four cameras – only pay for what you actually need
- ReadyNAS can be used simultaneously as a network video recorder (NVR) and for network-attached storage

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### Overview of ReadyNAS Surveillance NVR Software and Compatible

| ReadyNAS® models supported | Max. number of cameras per ReadyNAS®<sup>TM</sup> | Recommended ReadyNAS® series/max. number of cameras | Maximum camera connections per client | Recording options | eMAP | Camera input | Camera output | Motion detection (if supported by camera) | Lost connection | Alerts via email and camera | Integration of digital input triggers | Point of sale | Web live view/playback | Windows management application for live view and playback | Online scheduling tool | Dual stream | ReadyNAS® models supported | Clients | Licensing | Authentication | Licenses |
|---------------------------|---------------------------------|---------------------------------|---------------------------------|------------------|------|------------|------------|----------------------------------|----------------|------------------|-------------------------------|-------------|----------------|--------------------------|-----------------|----------|------------------------|--------|
| **ReadyNAS® Surveillance<sup>TM</sup>** | 64 | 321/314/316 | Live view: 128 cameras, playback: 16 users | Event, motion, digital input, continuous, timed | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | ReadyNAS® 300 series, ReadyNAS® 500/700 series, ReadyNAS® 3220/4220 | ReadyNAS® 300 series, ReadyNAS® 500/700 series | Free trial (64 cameras), license available to purchase on expiry | Multi-tier user authentication (Admin, Power User, User, Guest) | RNNVR01L-10000S: ReadyNAS® Surveillance<sup>TM</sup> single-camera license |
| **ReadyNAS® Surveillance<sup>TM</sup> Home** | B | 102/104/2120 | Live view: 1, playback: 1 user | Continuous | No | No | No | Yes | Yes | Yes | Yes | No | No | No | No | ReadyNAS® 100 series, ReadyNAS® 2120 | Browser, mobile | Single-camera license included | Single user | RNNVR01L-10000S: ReadyNAS® Surveillance<sup>TM</sup> single-camera license |
From wireless access points to network switches, NETGEAR offers a wide range of reliable, cost-effective and easily managed PoE solutions.

**For a general overview of the range of NETGEAR ProSAFE PoE switches, see page 13.**

### Example with PoE Switch (GSM5212P) as PD and PSE

![Diagram of PoE switch setup](image)

### Outstanding Warranty and Support Services

- Lifetime warranty on all NETGEAR ProSAFE switches
- Lifetime next business day hardware replacement
- Lifetime software support

### Overview of PoE Classes

<table>
<thead>
<tr>
<th>PoE Classes</th>
<th>Min. Power Supplied by Power Sourcing Equipment (PSE)</th>
<th>Max. Power for Powered Devices (PDs)</th>
<th>Description of Classes</th>
<th>Powered Devices (PDs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.0 W</td>
<td>0.44 W – 3.84 W</td>
<td>Very low power</td>
<td>IP telephone</td>
</tr>
<tr>
<td>2</td>
<td>7.0 W</td>
<td>3.84 W – 6.49 W</td>
<td>Low power</td>
<td>IP camera</td>
</tr>
<tr>
<td>3</td>
<td>15.4 W</td>
<td>6.49 W – 12.95 W</td>
<td>Medium power</td>
<td>Single-band wireless access point, video phone</td>
</tr>
<tr>
<td>4 (PoE+)</td>
<td>30.0 W</td>
<td>12.95 W – 25.50 W</td>
<td>High power</td>
<td>PTZ IP camera, dual band 11n wireless access point</td>
</tr>
</tbody>
</table>

### Overview of Powered Devices (PDs)

<table>
<thead>
<tr>
<th>Product</th>
<th>Product Description</th>
<th>Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>GS108T</td>
<td>Gigabit smart switch</td>
<td>6 W</td>
</tr>
<tr>
<td>GSM5212P</td>
<td>Gigabit managed switch</td>
<td>15.4 W, max. 60 W</td>
</tr>
<tr>
<td>WG103</td>
<td>Wireless 11g access point</td>
<td>5 W</td>
</tr>
<tr>
<td>WNAP210</td>
<td>Wireless 11n access point</td>
<td>6 W</td>
</tr>
<tr>
<td>WNAP320</td>
<td>Wireless 11n access point</td>
<td>5.8 W</td>
</tr>
<tr>
<td>WNDAP350</td>
<td>Dual band wireless 11n access point</td>
<td>12.7 W</td>
</tr>
<tr>
<td>WNDAP360</td>
<td>Dual band wireless 11n access point</td>
<td>12.7 W</td>
</tr>
<tr>
<td>WNDAP620</td>
<td>3x3 dual band wireless 11n access point</td>
<td>8 W</td>
</tr>
<tr>
<td>WNDAP660</td>
<td>3x3 dual band wireless 11n access point</td>
<td>11.8 W</td>
</tr>
</tbody>
</table>
The "Heart" of the Video Surveillance Solution: NETGEAR Storage

NETGEAR ReadyNAS and ReadyDATA Storage

When selecting video surveillance solutions, it is particularly important that the storage solution provides not only the required capacity and performance but also the best possible warranty and support services.

More than Just Video Surveillance

The main advantage of a NAS device running surveillance software is that the storage device can also be set up to perform numerous additional tasks such as file sharing or backup, without the need to purchase a further device, as is the case with conventional "all-in-one" NVR systems. The software is extremely important if additional functions are to be supported. ReadyNAS and ReadyDATA from NETGEAR are the only solutions in this segment that, for example, allow users to perform a backup on the NAS as frequently as every hour without compromising performance.

This presents substantial benefits for data backup, making losses of data on the shared drive due to accidental deletion or data corruption a thing of the past.

NETGEAR ReadyNAS

ReadyNAS systems are particularly suitable for file serving and all backup requirements. They can also provide storage space for smaller virtualization environments. These systems are scalable up to 84 TB. ReadyNAS is also the platform on which the NETGEAR Surveillance video monitoring software runs. The solution is preinstalled and simply has to be enabled. Licenses are purchased on the basis of the number of cameras. NETGEAR is the only manufacturer in this segment that uses the BTRFS file system, allowing it to offer significantly superior data backup functions.

NETGEAR ReadyDATA

ReadyDATA is suitable for large and very large video surveillance systems using third-party software solutions.

ReadyDATA’s scalability up to 360 TB and additional enterprise-class functions such as block-based replication, SSD caching or deduplication and capacities of up to 360 TB also make it suitable for the very largest video surveillance systems and more demanding storage applications. The key advantage of ReadyDATA is that the customer acquires the functionality and performance typical of much more expensive devices at a considerably lower total cost. Furthermore, all licenses for the sophisticated data backup functions and 10 Gb connectivity are included in the price.

Range of NETGEAR Unified Storage Solutions for All Requirements

<table>
<thead>
<tr>
<th>Functions/Performance</th>
<th>ReadyNAS 104</th>
<th>ReadyNAS 102</th>
<th>ReadyNAS 316</th>
<th>ReadyNAS 314, 2120</th>
<th>ReadyNAS 312</th>
<th>ReadyNAS 4220</th>
<th>ReadyNAS 3220</th>
<th>ReadyNAS 2120</th>
<th>ReadyNAS 716</th>
<th>ReadyNAS 516</th>
<th>ReadyDATA 5200</th>
<th>ReadyDATA 516</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private/self-employed users</td>
<td>BTRFS file system</td>
<td>BTRFS file system</td>
<td>BTRFS file system</td>
<td>ZFS file system</td>
<td>BTRFS file system</td>
<td>BTRFS file system</td>
<td>BTRFS file system</td>
<td>BTRFS file system</td>
<td>BTRFS file system</td>
<td>BTRFS file system</td>
<td>BTRFS file system</td>
<td></td>
</tr>
<tr>
<td>Large companies</td>
<td>(~500 users)</td>
<td>Large companies</td>
<td>(~500 users)</td>
<td>Large companies</td>
<td>(~500 users)</td>
<td>Large companies</td>
<td>(~500 users)</td>
<td>Large companies</td>
<td>(~500 users)</td>
<td>Large companies</td>
<td>(~500 users)</td>
<td></td>
</tr>
</tbody>
</table>

For a general overview of NETGEAR storage solutions, see page 14.
The diagram shows a reference design for 20 IP cameras and one ReadyNAS. All traffic is managed from a central switch. This is a typical structure for smaller environments. Depending on the application, different cameras may be used.

The advantages of this setup are:

**SIMPLICITY**

- The switch can be configured via a central, easy-to-use web interface. It can also be managed using an industry-standard command line interface
- The switch uses PoE to power all cameras (with a total power budget of 380 W)
- The ReadyNAS system in a scenario like this may be a two, four or six-bay system from the 300 or 500 desktop series with a total capacity of, for example, 6x3 TB
- Thanks to the preinstalled video monitoring software, the system is ready for use in the shortest possible time. Over 2000 camera models are supported
- The licensing model for the system is based on one, two or four cameras
- The modern GUI allows the NAS system to be set up intuitively in just a few minutes

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**Minimal Impact on Bandwidth in the Rest of the Network**

- The cameras transmit a unicast stream to the server, which then distributes multicast streams to the clients. This minimizes the load on the rest of the network
- The IGMP Querier and IGMP Snooper functions are integrated in the switch, enabling it to determine which ports have “interested” clients so that it can distribute all data to these ports. This eliminates unnecessary traffic and maximizes efficiency

**Failure Protection and Data Backup**

- Redundant power supply (RPS): The switch can be connected to an additional power source to ensure that the switch continues to operate 24/7
- External power supply (EPS): If the network’s power consumption exceeds the PoE power budget, additional power can be supplied via an EPS module
- The ReadyNAS system protects data using RAID protection. It is also possible to use rsync to replicate the data to a second NAS system and thus protect against fire or theft

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### Bandwidth and Power Requirements for 20 IP Cameras

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average bandwidth per camera</td>
<td>9.48 Mbit/s based on image resolution, compression type, frame rates and complexity</td>
</tr>
<tr>
<td>Total bandwidth for 20 cameras</td>
<td>9.48 Mbit/s x 20 = 190 Mbit/s</td>
</tr>
<tr>
<td>PoE class</td>
<td>1 (max. 2.7 W)</td>
</tr>
<tr>
<td>Total PoE power requirement</td>
<td>20 x 2.7 W = 54 W</td>
</tr>
</tbody>
</table>

### Key NETGEAR Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Model/Details/Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch</td>
<td>M4100-50-POE (48 Fast Ethernet ports, PoE 802.3af, Layer 2+)</td>
</tr>
<tr>
<td>Storage</td>
<td>ReadyNAS Desktop series 300 or 500 with two, four or six drives</td>
</tr>
<tr>
<td>NVR software</td>
<td>NETGEAR Surveillance, five 4-camera licenses</td>
</tr>
<tr>
<td>Redundant power supply</td>
<td>RPSS412 (optimum one-to-one unit) or RPS4000 (for up to four switches)</td>
</tr>
<tr>
<td>External power supply</td>
<td>RPS4000 (additional power supply for up to four switches)</td>
</tr>
</tbody>
</table>
The clients may be located in yet another subnet. Each access layer switch connects and powers up to 40 cameras. All cameras are fixed Fast Ethernet models with or without the PTZ function, but can be powered by PoE.

The design for 128 cameras consists of several IP subnets and associated VLANs without Layer 3 routing. All cameras are located in their own subnet, while the NAS systems are located in a separate subnet. The NETGEAR Surveillance monitoring software runs on the NAS system. Larger desktop systems are normally used, e.g. RN516 or RN716 (with a 10 GB connection) and the RN3220 and RN4220 rack-mount systems.

The advantages of this design are:

SIMPLICITY

- The option of “private VLANs” on NETGEAR switches considerably simplifies the design, as all cameras are on the same Layer 2 network
- The NETGEAR Surveillance video monitoring system allows simultaneous live viewing of up to 128 cameras via the surveillance software
- Each NAS system supports up to 64 cameras The licensing model for the system is based on one, two or four cameras
- Preinstalled software means that setting up and commissioning the system is straightforward
- The modern GUI allows the NAS system to be set up intuitively in just a few minutes
- If a DHCP server is available, there is no need to configure the individual cameras. Alternatively, the DHCP server included in NETGEAR switches (fully managed switches) can be used
- The redundant connections to the switches and servers allow advanced load balancing and seamless “trunked” failover in the event of an error
- The “multicast VLAN replication” (MVR) feature enables video streams from the access subnet to be distributed to any number of other subnets, completely avoiding the complexities of multicast routing to the clients
Sample Configuration
Up to 128 Cameras

Minimal Effect on Bandwidth in the Rest of the Network

- The "private VLANs" allow all cameras to work separately from each other. Avoiding unnecessary transfers between the devices also saves bandwidth.
- Additional bandwidth is saved by the IGMP Querier and IGMP Snooper functions.
- Avoiding the use of the Spanning Tree Protocol (STP) further improves efficiency, as all links are active and load balancing is enabled.

<table>
<thead>
<tr>
<th>Bandwidth and Power Requirements for 128 IP Cameras</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average bandwidth per camera</strong></td>
</tr>
<tr>
<td><strong>Total bandwidth for 40 cameras</strong></td>
</tr>
<tr>
<td><strong>PoE class</strong></td>
</tr>
<tr>
<td><strong>Total PoE power requirement</strong></td>
</tr>
</tbody>
</table>

Key NETGEAR Components

- **Distribution layer switch**: M5300-28GF3 (24-port Gigabit Fiber, 10 Gbit/s uplink, Layer 3)
- **Access layer switch**: M4100-50-POE (48-port Fast Ethernet, PoE 802.3af, Layer 2+)
- **Remaining network switches**: M5300-52G3 (48-port Gigabit Ethernet, 10 Gbit/s uplink, Layer 3)
- **Storage/video server**: E.g. ReadyNAS 3220 or 4220, or ReadyDATA 5200
- **NVR software**: NETGEAR Surveillance, up to 32 4-camera licenses
- **Redundant power supply**: RPS5412 (optimum one-to-one unit) or RPS4000 (for up to four switches)
- **External power supply**: RPS4000 (additional power supply for up to four switches)

Failure Protection

- Redundant power supplies protect against failure of the primary power supply for one of the switches and for the RN3220 and RN4220 rack-mount storage systems.
- The ReadyNAS system protects data using RAID protection. It is also possible to use rsync to replicate the data to a second NAS system and thus protect against fire or theft.
- This can be achieved for individual switches by installing the NETGEAR RPS5412 redundant power supply. If all switches are in the same rack, a NETGEAR RPS4000 can also be used to provide up to four switches with an alternative power supply.
- If more power is required than the 380 W provided by the M4100-50-POE switches, NETGEAR EPS external power supplies can provide up to 740 W.
- The redundant, stacked switches (two M5300-G28F3 switches and two M5300-52G3 switches), with switching times of less than one second, protect against hardware failure.

Configurations with More than 128 Cameras

NETGEAR network and storage components offer more than enough performance and capacity for surveillance systems with over 128 cameras. In this case, customers normally use third-party software solutions such as Milestone. Either NETGEAR ReadyNAS Rackmount or the Rackmount version of the ReadyDATA product family are used as storage platforms, offering a total capacity of up to 360 TB. Both ReadyNAS 4220 and ReadyDATA 5200 also provide 10 Gbit Ethernet ports. We would be happy to help you compile and configure the components to suit your requirements – just give us a call!
### Overview of NETGEAR PoE Switches

#### ProSAFE® SWITCHES WITH POE/POE+

<table>
<thead>
<tr>
<th>Model</th>
<th>Ports</th>
<th>PoE Ports</th>
<th>PoE Power Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS108P</td>
<td>8 x FE</td>
<td>4</td>
<td>53 W</td>
</tr>
<tr>
<td>FS116P</td>
<td>16 x FE</td>
<td>8</td>
<td>55 W</td>
</tr>
<tr>
<td>GS108P</td>
<td>8 x GbE</td>
<td>4</td>
<td>50 W</td>
</tr>
<tr>
<td>GS105PE</td>
<td>5 x GbE</td>
<td>2 (PoE pass through: 20 W with AT in, 8 W with AF in)</td>
<td>20W or 8W</td>
</tr>
<tr>
<td>GS108PE</td>
<td>8 x GbE</td>
<td>4</td>
<td>53 W</td>
</tr>
<tr>
<td>JGS516PE</td>
<td>16 x GbE</td>
<td>8</td>
<td>85 W</td>
</tr>
<tr>
<td>JGS524PE</td>
<td>24 x GbE</td>
<td>12</td>
<td>100 W</td>
</tr>
<tr>
<td>GS110TP</td>
<td>8 x GbE + 2 SFP</td>
<td>8</td>
<td>46 W</td>
</tr>
<tr>
<td>GS510TP</td>
<td>8 x GbE + 2 SFP</td>
<td>8 (PoE+)</td>
<td>130 W</td>
</tr>
<tr>
<td>GS516TP</td>
<td>16 x GbE</td>
<td>8 (ports 15/16 pass through, up to 22 W)</td>
<td>76 W</td>
</tr>
<tr>
<td>FS726TP</td>
<td>24 x FE + 2 x GbE</td>
<td>12</td>
<td>100 W</td>
</tr>
<tr>
<td>FS728TP</td>
<td>24 x FE + 4 GbE</td>
<td>24</td>
<td>192 W</td>
</tr>
<tr>
<td>FS752TP</td>
<td>48 x FE + 4 GbE</td>
<td>48 (4 PoE+)</td>
<td>384 W</td>
</tr>
<tr>
<td>GS728TP</td>
<td>24 x GbE and 4 GbE dedicated SFP</td>
<td>24 PoE+</td>
<td>384 W and up to 720 W with EPS</td>
</tr>
<tr>
<td>GS752TP</td>
<td>48 x GbE and 4 GbE dedicated SFP</td>
<td>48 (8 PoE+)</td>
<td>384 W</td>
</tr>
<tr>
<td>GS728TPSB (incl. AGC761 stacking cable)</td>
<td>24 x GbE and 2 Combo SFP and 4 dedicated 1 G/2.5 G SFP</td>
<td>24 (8 PoE+)</td>
<td>192 W</td>
</tr>
<tr>
<td>GS752TPSB (incl. AGC761 stacking cable)</td>
<td>48 x GbE and 2 Combo SFP and 4 dedicated 1 G/2.5 G SFP</td>
<td>48 (8 PoE+)</td>
<td>384 W</td>
</tr>
<tr>
<td>M4100-D10-POE (FSM5210P)</td>
<td>8 x FE + 2 x GbE Combo SFP</td>
<td>12</td>
<td>66 W</td>
</tr>
<tr>
<td>M4100-26-POE (FSM7226P)</td>
<td>24 x FE + 2 GbE Combo SFP</td>
<td>24</td>
<td>380 W</td>
</tr>
<tr>
<td>M4100-50-POE (FSM7250P)</td>
<td>48 x FE + 4 GbE Combo SFP</td>
<td>48</td>
<td>380 W and up to 720 W with EPS</td>
</tr>
<tr>
<td>M4100-D12G-POE+ (GSM5212P)</td>
<td>12 x GbE + 4 Combo SFP</td>
<td>12 (10 PoE+) and pass through, up to 25 W</td>
<td>125 W</td>
</tr>
<tr>
<td>M4100-12GF (GSM7212F)</td>
<td>12 x GbE with 12 shared SFP and 4 GbE PoE+</td>
<td>4 (PoE+)</td>
<td>150 W</td>
</tr>
<tr>
<td>M4100-12G-POE+ (GSM7212P)</td>
<td>12 x GbE + 4 Combo SFP</td>
<td>12 (12 PoE+)</td>
<td>380 W</td>
</tr>
<tr>
<td>M4100-26G-POE+ (GSM7226LP)</td>
<td>26 x GbE + 4 Combo SFP</td>
<td>24</td>
<td>192 W and up to 380 W with EPS</td>
</tr>
<tr>
<td>M4100-24G-POE+ (GSM7224P)</td>
<td>24 x GbE + 4 Combo SFP</td>
<td>24 (24 PoE+)</td>
<td>380 W and up to 720 W with EPS</td>
</tr>
<tr>
<td>M4100-50G-POE+ (GSM7248P)</td>
<td>50 x GbE + 4 Combo SFP</td>
<td>48 (48 PoE+)</td>
<td>380 W and up to 1,440 W with EPS</td>
</tr>
<tr>
<td>M5300-28G-POE+ (GSM7228P5)</td>
<td>24 GbE and 2 x 10GBASE-T (4 max.) and 2 x SFP+ (4 max.) and 4 Combo SFP</td>
<td>24 (24 PoE+)</td>
<td>380 W and up to 720 W with EPS</td>
</tr>
<tr>
<td>M5300-52G-POE+ (GSM7252P5)</td>
<td>48 GbE and 2 x 10GBASE-T (4 max.) and 2 x SFP+ (4 max.) and 4 Combo SFP</td>
<td>48 (48 PoE+)</td>
<td>380 W and up to 1,440 W with EPS</td>
</tr>
</tbody>
</table>

#### RPS/EPS OPTIONS

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>DESCRIPTION</th>
<th>ITEM NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPS4000</td>
<td>External/redundant power supply (up to four switches – RPS or EPS mode)</td>
<td>RPS4000-100NES/-100AJS</td>
</tr>
<tr>
<td>APS1000W</td>
<td>Power modules for RPS4000</td>
<td>APS1000W-100NES/-100AJS</td>
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</tbody>
</table>
## Overview of NETGEAR Storage

<table>
<thead>
<tr>
<th>Model</th>
<th>ReadyNAS 102</th>
<th>ReadyNAS 104</th>
<th>ReadyNAS 312</th>
<th>ReadyNAS 314</th>
<th>ReadyNAS 316</th>
<th>ReadyNAS 516</th>
<th>ReadyNAS 716</th>
<th>ReadyNAS EDA 500</th>
<th>ReadyNAS 2120</th>
<th>ReadyNAS 3220</th>
<th>ReadyNAS 4220S</th>
<th>ReadyNAS 4220X</th>
<th>ReadyDATA 5200</th>
<th>ReadyDATA 516</th>
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<tbody>
<tr>
<td><strong>Recommended number of cameras</strong></td>
<td>8</td>
<td>8</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>32</td>
<td>64</td>
<td>N/A</td>
<td>8</td>
<td>32</td>
<td>64</td>
<td>64</td>
<td>Depends on configuration</td>
<td>Depends on configuration</td>
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<tr>
<td><strong>CPU</strong></td>
<td>Marvell Armada 370, 1.2 GHz</td>
<td>Marvell Armada 370, 1.2 GHz</td>
<td>Intel Atom Dual Core 2.1 GHz</td>
<td>Intel Atom Dual Core 2.1 GHz</td>
<td>Intel i3 Dual Core, 3.3 GHz</td>
<td>Intel® Xeon Ivy Bridge E3-1265Lv2, 2.5 GHz (Turbo 3.5 GHz) Quad Core</td>
<td>N/A</td>
<td>Marvell Armada XP (78230), 1.6 GHz, Dual Core</td>
<td>Intel Ivy Bridge i3-3220v2 Dual Core, 3 GHz</td>
<td>Intel Ivy Bridge Xeon E3-1225v2 Quad Core, 3.2 GHz</td>
<td>Intel® Xeon® Xeon E3-1225v2 Dual Core, 3.2 GHz</td>
<td>Intel® Xeon® Xeon E3-1225v2 Quad Core, 3.2 GHz</td>
<td>Intel Xeon Quad Core, 2.66 GHz</td>
<td>Intel Core i3 Ivy Bridge, 3.3 GHz</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>512 MB</td>
<td>512 MB</td>
<td>2 GB</td>
<td>2 GB</td>
<td>2 GB</td>
<td>4 GB ECC</td>
<td>16 GB ECC</td>
<td>N/A</td>
<td>2 GB</td>
<td>4 GB ECC</td>
<td>8 GB ECC</td>
<td>8 GB ECC</td>
<td>16 GB ECC</td>
<td>16 GB ECC</td>
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<tr>
<td><strong>File system</strong></td>
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<td>BTRFS</td>
<td>BTRFS</td>
<td>ZFS</td>
<td>ZFS</td>
<td>ZFS</td>
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<tr>
<td><strong>Number of bays</strong></td>
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<td>4</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>12</td>
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<tr>
<td><strong>Recommended number of users</strong></td>
<td>1-4</td>
<td>1-4</td>
<td>5-25</td>
<td>5-25</td>
<td>5-25</td>
<td>26-250</td>
<td>100-500</td>
<td>N/A</td>
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<td>26-250</td>
<td>50-500</td>
<td>50-500</td>
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<tr>
<td><strong>1 GE ports</strong></td>
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<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<td>4</td>
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<td><strong>10 GE ports</strong></td>
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<td>0</td>
<td>2</td>
<td>N/A</td>
<td>0</td>
<td>2 (SFP+)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>Single</td>
<td>Single</td>
<td>Single</td>
<td>Single</td>
<td>Single</td>
<td>Single</td>
<td>Dual hot swappable</td>
<td>Dual hot swappable</td>
<td>Dual hot swappable</td>
<td>Dual hot swappable</td>
<td>Single</td>
<td>Single</td>
<td>Single</td>
<td>Single</td>
</tr>
<tr>
<td><strong>USB ports (3/2)</strong></td>
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<td>2/1</td>
<td>2/1</td>
<td>2/1</td>
<td>2/1</td>
<td>2/1</td>
<td>N/A</td>
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<td>2/2</td>
<td>2/2</td>
<td>2/2</td>
<td>2</td>
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<td>0</td>
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<tr>
<td><strong>eSATA ports</strong></td>
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<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total capacity</strong></td>
<td>12 TB</td>
<td>16 TB*</td>
<td>42 TB w/ EDA TB</td>
<td>84 TB w/ EDA TB</td>
<td>96 TB w/ EDA TB</td>
<td>126 TB w/ EDA TB</td>
<td>126 TB w/ EDA TB</td>
<td>30 TB</td>
<td>16 TB*</td>
<td>72 TB</td>
<td>72 TB</td>
<td>72 TB</td>
<td>240 TB</td>
<td>24 TB</td>
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<tr>
<td><strong>HDD types</strong></td>
<td>2.5” SSD/SATA or 3.5” SSD/SATA</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td>SSD, SAS, NL-SAS, SATA, SSD caching</td>
<td>SSD, SATA, SSD caching</td>
</tr>
</tbody>
</table>

* 16 TB per volume limit
Additional Resources

- NETGEAR video surveillance solution pages on our website:

- NETGEAR bandwidth calculator:

- Range of hardware products:

- List of supported cameras: