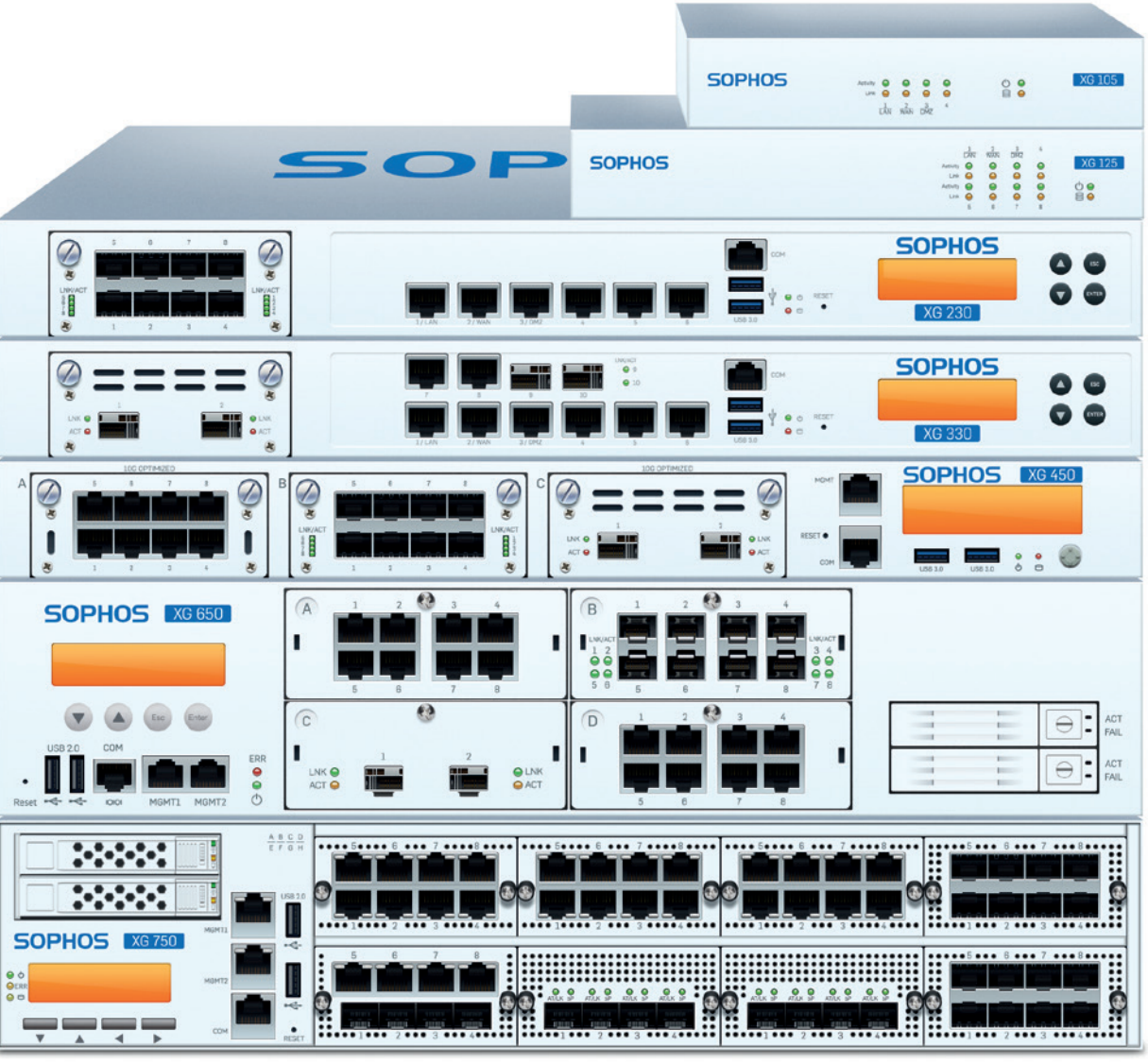
SOPHOS
Security made simple.

# Sizing Guideline

## Sophos XG Firewall – XG Series Appliances




Sophos Firewall OS 15.01.1 Sizing Guide for XG Series appliances

## Three steps to specifying the right appliance model

This document provides a guideline for choosing the right Sophos XG Series appliance for your customer. Specifying the right appliance is dependent on a number of factors and involves developing a usage profile for the users and the network environment.

For best results we recommend using the following step-by-step procedure:

1. **Identify the "Total UTM User" Number**
   Understand the customer's environment like browsing behavior, application usage, network and server infrastructure to get an accurate understanding of the actual usage an XG Series appliance will see at peak times.
2. **Make a first estimate**
   Based on the Total weighted User number.
3. **Check specific throughput requirements**
   Understand if any local factors like the maximum available internet uplink capacity will impact performance – check this against Sophos XG Firewall throughput numbers and adjust the recommendation accordingly.

Of course, the best way to understand if an appliance will meet a customer's needs is to test it in the customer environment and with Sophos XG Firewall you can offer a free on-site evaluation of the selected unit.

## 1. Identify the "Total Weighted User" number

Use the following table to first calculate the Total weighted User number that the appliance will need to handle.

a. Calculate the Weighted User Count number. Identify the user category (Average/ Advanced/Power) that best fits the average user behavior of the users, or estimate how many users fit each category. Use the criteria in table 1.2 to classify the type of users.

- Enter the User Counts in table 1.1, multiply them with the indicated factor, enter the results into the "Weighted User Count" boxes and sum it into the "Total Weighted User Count" box.

b. Identify the System Load Number. Use the criteria using table 1.3 to classify the load.

- Enter the System Load Number in the box "multiplied by System Load" in table 1.1, multiply it with the "Total Weighted User Count" and enter the result into the "Total weighted Users" box.

### 1.1

| Licenses names | User Count | Multiplied by | Weighted User Count |
|---|---|---|---|
| **Standard user** | | 1 | |
| **Advanced Users** | | 1.2 | |
| **Power Users** | | 1.5 | |
| **Total User Count** | | Total Weighted User Count | |
| | | multiplied by System Load | |
| | | **Total weighted Users** | |

## 1.2 User Category Criteria

Use the criteria described below to classify the type of users.

| | Average user | Advanced user (*1.2) | Power user (*1.5) |
|---|---|---|---|
| **Email usage (per 10h working day)** | | | |
| **Number of received emails in inbox** | < 50 | 50 to 100 | >100 |
| **Data volume** | Few MBytes | Multiple MBytes | Numerous MBytes |
| **Web usage (per 10h working day)** | | | |
| **Data volume** | Few MBytes | Multiple MBytes | Numerous MBytes |
| **Usage pattern** | Equally spread throughout the day | Various peaks | Many peaks |
| **Web applications used** | Mostly webmail / Google / news | Heavy surfing, moderate media transfer, business applications | Intensive surfing and media transfers (schools, universities) |
| **VPN usage** | | | |
| **VPN remote access usage** | Rarely – sporadically connected | Several times per week – connected at regular times | Every day – connected most of the time |

## 1.3 System Load Criteria

Identify any specific requirements that might increase the overall system load and hence the performance requirements for the system.

| | Average system usage | Advanced system usage (*1.2) | High system usage (*1.5) |
|---|---|---|---|
| **Authentication** | | | |
| **Active Directory in use** | No | Yes | Yes |
| **FW/IPS/VPN usage** | | | |
| **Variety of systems to be protected by IPS** | No IPS protection required | Mostly Windows PCs, 1-2 servers | Various Client Operating systems, browsers and multimedia apps, >2 servers |
| **Email** | | | |
| **Percentage of Spam** | <50% | 50-90% | >90% |
| **Reporting** | | | |
| **Report storage time and granularity requirement** | Up to 1 month web report only (per Domain) | Up to 3 months<br>Up to 5 reports (per Domain) | >3 months (per URL) |
| **Accounting storage time on appliance** | No | Up to 1 month | >1 month |

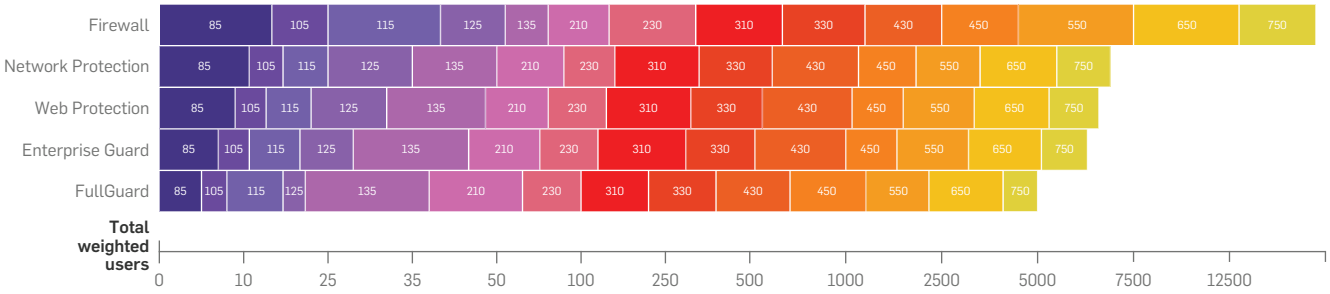
## 2. Make a first estimate — using the calculated "Total weighted User" number

Take the "Total weighted User" and make a first estimate for the required XG Series hardware appliance within the following diagram:

- Each line shows the range of users recommended when only using this single subscription.
- Please ensure all numbers include users connected via VPN, RED and wireless APs.

### Subscription Profile

Rule of thumb:




- Estimate that adding Webserver Protection or Email Protection to any of the subscription profiles mentioned above will decrease range by 5-10% each.

## 3. Check for specific throughput requirements

Depending on the customer's environment there might be specific throughput requirements driving an adjustment of your first estimate to a higher (or even lower) unit.

These requirements are typically based on the following two factors:

### The maximum available internet uplink capacity

The capacity of the customer's internet connection (up- and downlink) should match the average throughput rate that the selected unit is able to forward (depending on the subscriptions in use).

For instance if the download or upload limit is only 20 Mbps then there is no great benefit in using an XG 230 instead of an XG 210, even though the calculated total number of users is around 100. In that case even an XG 210 might be sufficient because it can perfectly fill the complete internet link even with all UTM features enabled.

However, data might not only be filtered on its way to the internet but also between internal network segments. Hence consider internal traffic that traverses the firewall as well in this assessment.

### Specific performance requirements based on customer experience or knowledge

If the customer knows their overall throughput requirements among all connected internal and external interfaces (e.g. based on their past experience) then check whether the selected unit is able to meet these numbers.

For instance the customer might have several servers located within a DMZ and want to get all traffic to those servers from all segments to be inspected by the IPS. Or the customer may have many different network segments that should be protected against each other (by using the FW packet filter and/or the Application Control feature). In this case consider that the unit must scan the complete internal traffic between all segments.

## Sizing Guideline

Further questions to ask in order to find out if there are any other performance requirements:

- How many site-to-site VPN tunnels are required?
- How many emails are being transferred per hour – on average/at peak times?
- How much web traffic (Mbps and requests/s) is being generated – on average/at peak times?
- How many web servers should be protected and how much traffic is expected – on average/at peak times?

The following section provides detailed performance numbers to help determine whether the selected appliance meets all individual requirements.

## Sophos XG Series Hardware performance numbers

The following table provides performance numbers by traffic type measured within Sophos testing labs. "Realworld" numbers represent throughput values achievable with a typical/real life traffic and protocol mix as defined by NSS Labs. Maximum numbers represent best throughput achievable under perfect conditions, e.g. using large packet sizes with UDP traffic only at full CPU load.

Please note that none of these numbers are guaranteed as performance may vary in a real life customer scenario based on user characteristics, application usage, security configurations and other factors. Hence these numbers should only be used as a rough sizing guideline.

## Small – Desktop

| Model | XG 85/w rev.1 | XG 105/w rev.2 | XG 115/w rev.2 | XG 125/w rev.2 | XG 135/w rev.2 |
|---|---|---|---|---|---|
| **Performance Numbers** | | | | | |
| **Firewall max.[1] (Mbps)** | 2,000 | 3,000 | 3,500 | 5,000 | 7,000 |
| **Firewall IMIX (Mbps)** | 780 | 1,040 | 1,330 | 1,750 | 2,750 |
| **Firewall Realworld[2] (Mbps)** | 360 | 430 | 580 | 750 | 1,500 |
| **Firewall max.[1] (packets per second)** | 162,500 | 243,800 | 284,500 | 406,000 | 569,000 |
| **IPS max.[3] (Mbps)** | 510 | 700 | 900 | 1,040 | 1,750 |
| **IPS Realworld[2] (Mbps)** | 75 | 86 | 103 | 180 | 232 |
| **Web Proxy – AV[5] (Mbps)** | 330 | 430 | 520 | 590 | 1,400 |
| **Web Proxy – AV Realworld[2] (Mbps)** | 75 | 187 | 234 | 307 | 427 |
| **IPS + Web Proxy – AV Realworld[2] (Mbps)** | 31 | 36 | 42 | 58 | 95 |
| **NGFW (IPS + App Ctrl + WebFilter) max.[3] (Mbps)** | 235 | 270 | 310 | 360 | 880 |
| **NGFW (IPS + App Ctrl + WebFilter) Realworld[2] (Mbps)** | 25 | 27 | 30 | 75 | 133 |
| **VPN AES max.[3] (Mbps) multiple tunnels/cores** | 200 | 300 | 350 | 410 | 950 |
| **VPN AES max.[3] (Mbps) single tunnel/core** | 200 | 250 | 290 | 290 | 600 |
| **VPN AES Realworld[2] (Mbps) multiple tunnels/cores** | 50 | 75 | 90 | 105 | 240 |
| **WAF Adv. Profile max.[6] (Mbps)** | N/A[6] | 12 | 18 | 22 | 44 |
| **Maximum recommended connections** | | | | | |
| **New TCP connections/sec** | 12,000 | 27,500 | 27,500 | 35,000 | 82,000 |
| **Concurrent TCP connections** | 2,000,000 | 3,200,000 | 6,000,000 | 6,200,000 | 8,200,000 |
| **Concurrent IPsec VPN tunnels** | 200 | 300 | 500 | 750 | 1,000 |
| **Concurrent SSL VPN tunnels** | 100 | 200 | 240 | 270 | 270 |
| **Concurrent Access Points** | 5 | 10 | 20 | 30 | 40 |
| **Concurrent REDs (UTM/FW)[4]** | 5/10 | 10/30 | 15/60 | 20/80 | 25/100 |
| **WAF Concurrent Virtual Servers** | 60[7] | 60[7] | 60[7] | 60[7] | 60[7] |
| **WAF max. conenctions/sec** | 700 | 750 | 780 | 950 | 2,600 |

1. 1518 byte packet size (UDP)
2. Average of Data Center, Enterprise Perimeter, Higher Education, European Mobile, Financial Network protocol mixes at 50% CPU Usage
3. HTTP traffic
4. UTM=Full content scanning of RED traffic on XG appliance, FW=packet filtering only
5. 512 KByte files
6. AV + all common threats filter active (no AV on XG85)
7. Hard coded limit

## Medium – 1U

| Model | XG 210 rev.2 | XG 230 rev.1 | XG 310 rev.1 | XG 330 rev.1 | XG 430 rev.1 | XG 450 rev.1 |
|---|---|---|---|---|---|---|
| **Performance Numbers** | | | | | | |
| **Firewall max.[1] (Mbps)** | 14,000 | 18,000 | 25,000 | 30,000 | 37,000 | 45,000 |
| **Firewall IMIX (Mbps)** | 4,900 | 6,110 | 8,530 | 11,230 | 12,950 | 15,650 |
| **Firewall Realworld[2] (Mbps)** | 2,060 | 2,250 | 3,800 | 6,100 | 6,900 | 7,650 |
| **Firewall max.[1] (packets per second)** | 1,137,800 | 1,463,000 | 2,031,860 | 2,438,200 | 3,007,200 | 3,657,400 |
| **IPS max.[3] (Mbps)** | 2,700 | 4,200 | 5,500 | 8,500 | 9,000 | 10,000 |
| **IPS Realworld[2] (Mbps)** | 309 | 361 | 539 | 733 | 893 | 1,159 |
| **Web Proxy – AV[5] (Mbps)** | 2,300 | 2,800 | 3,260 | 6,000 | 6,500 | 7,000 |
| **Web Proxy – AV Realworld[2] (Mbps)** | 538 | 670 | 1,140 | 1,220 | 1,440 | 1,690 |
| **IPS + Web Proxy – AV Realworld[2] (Mbps)** | 102 | 107 | 207 | 242 | 372 | 463 |
| **NGFW (IPS + App Ctrl + WebFilter) max.[3] (Mbps)** | 1,700 | 2,420 | 2,700 | 4,220 | 4,800 | 5,000 |
| **NGFW (IPS + App Ctrl + WebFilter) Realworld[2] (Mbps)** | 176 | 226 | 340 | 425 | 538 | 693 |
| **VPN AES max.[3] (Mbps) multiple tunnels/cores** | 1,350 | 1,500 | 2,500 | 3,200 | 4,800 | 5,500 |
| **VPN AES max.[3] (Mbps) single tunnel/core** | 760 | 950 | 990 | 920 | 950 | 990 |
| **VPN AES Realworld[2] (Mbps) multiple tunnels/cores** | 340 | 375 | 625 | 800 | 1,200 | 1,375 |
| **WAF Adv. Profile max.[6] (Mbps)** | 205 | 240 | 260 | 510 | 560 | 620 |
| **Maximum recommended connections** | | | | | | |
| **New TCP connections/sec** | 135,000 | 140,000 | 200,000 | 200,000 | 200,000 | 200,000 |
| **Concurrent TCP connections** | 8,200,000 | 8,200,000 | 17,500,000 | 17,500,000 | 20,000,000 | 20,000,000 |
| **Concurrent IPsec VPN tunnels** | 1,300 | 1,600 | 1,800 | 2,500 | 3,000 | 3,500 |
| **Concurrent SSL VPN tunnels** | 300 | 300 | 300 | 300 | 350 | 350 |
| **Concurrent Access Points** | 75 | 100 | 125 | 150 | 230 | 250 |
| **Concurrent REDs (UTM/FW)[4]** | 30/125 | 40/150 | 50/200 | 60/230 | 70/250 | 80/300 |
| **WAF Concurrent Virtual Servers** | 60[7] | 60[7] | 60[7] | 60[7] | 60[7] | 60[7] |
| **WAF max. conenctions/sec** | 3,700 | 4,200 | 5,000 | 9,000 | 14,000 | 15,500 |

1. 1518 byte packet size (UDP)
2. Average of Data Center, Enterprise Perimeter, Higher Education, European Mobile, Financial Network protocol mixes at 50% CPU Usage
3. HTTP traffic
4. UTM=Full content scanning of RED traffic on XG appliance, FW=packet filtering only
5. 512 KByte files
6. AV + all common threats filter active (no AV on XG85)
7. Hard coded limit

## Large – 2U

| Model | XG 550 rev.1 | XG 650 rev.1 | XG 750 rev.1 |
|---|---|---|---|
| **Performance Numbers** | | | |
| **Firewall max.[1] (Mbps)** | 60,000 | 80,000 | 120,000 |
| **Firewall IMIX (Mbps)** | 21,500 | 26,990 | 33,500 |
| **Firewall Realworld[2] (Mbps)** | 11,700 | 15,000 | 19,000 |
| **Firewall max.[1] (packets per second)** | 4,876,500 | 6,502,000 | 9,752,900 |
| **IPS max.[3] (Mbps)** | 13,000 | 20,000 | 22,000 |
| **IPS Realworld[2] (Mbps)** | 2,160 | 3,310 | 3,970 |
| **Web Proxy – AV[5] (Mbps)** | 10,000 | 13,000 | 17,000 |
| **Web Proxy – AV Realworld[2] (Mbps)** | 2,480 | 3,220 | 3,870 |
| **IPS + Web Proxy – AV Realworld[2] (Mbps)** | 808 | 1,109 | 1,330 |
| **NGFW (IPS + App Ctrl + WebFilter) max.[3] (Mbps)** | 8,000 | 9,000 | 11,800 |
| **NGFW (IPS + App Ctrl + WebFilter) Realworld[2] (Mbps)** | 1,190 | 1,730 | 2,070 |
| **VPN AES max.[3] (Mbps) multiple tunnels/cores** | 8,400 | 9,000 | 11,250 |
| **VPN AES max.[3] (Mbps) single tunnel/core** | 640 | 770 | 620 |
| **VPN AES Realworld[2] (Mbps) multiple tunnels/cores** | 2,100 | 2,250 | 2,800 |
| **WAF Adv. Profile max.[6] (Mbps)** | 1,020 | 1,700 | 2,460 |
| **Maximum recommended connections** | | | |
| **New TCP connections/sec** | 200,000 | 200,000 | 300,000 |
| **Concurrent TCP connections** | 20,000,000 | 20,000,000 | 30,000,000 |
| **Concurrent IPsec VPN tunnels** | 4,000 | 4,500 | 5,400 |
| **Concurrent SSL VPN tunnels** | 400 | 500 | 500 |
| **Concurrent Access Points** | 300 | 400 | 500 |
| **Concurrent REDs (UTM/FW)[4]** | 100/400 | 150/600 | 200/600* |
| **WAF Concurrent Virtual Servers** | 60[7] | 60[7] | 60[7] |
| **WAF max. conenctions/sec** | 18,000 | 21,000 | 24,000 |

*Technical limit

1. 1518 byte packet size (UDP)
2. Average of Data Center, Enterprise Perimeter, Higher Education, European Mobile, Financial Network protocol mixes at 50% CPU Usage
3. HTTP traffic
4. UTM=Full content scanning of RED traffic on XG appliance, FW=packet filtering only
5. 512 KByte files
6. AV + all common threats filter active (no AV on XG85)
7. Hard coded limit

## Sophos XG Firewall Software/Virtual Appliances

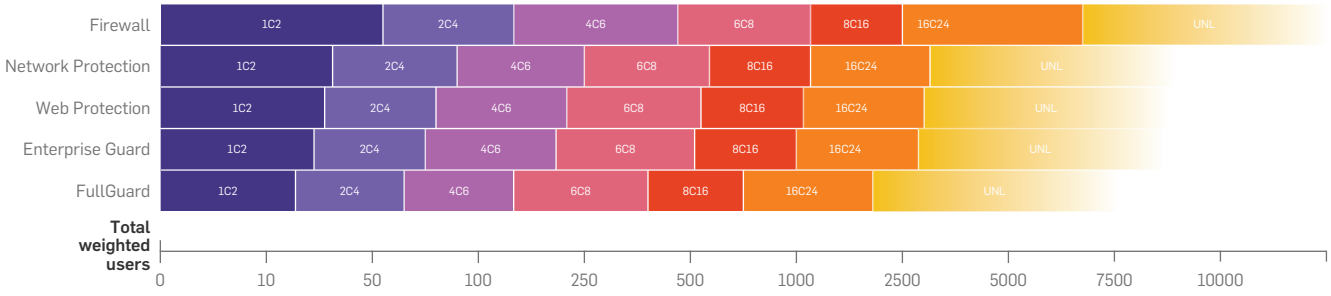
Sophos XG Firewall Software/Virtual Appliances are licenses by numbers of (virtual) cores and (virtual) RAM size. Licenses do not have to match exactly the number of available cores/RAM but will only activate the licensed cores/RAM to be used in the Software.

While the Software/Virtual Appliances might be used on various CPU types with various speeds the performance might vary significantly even if using the same number of cores/RAM size.

The following diagram provides a rough guidance of total weighted user ranges (according to the calculation in chapter 1) recommended for each Software model.

Numbers are based on the following assumptions:

- CPU speed = 2.5 GHz (higher speed can significantly increase throughput for most applications)
- CPU Type = Core I (up to 6C8), Xeon (8C16 and above)




## Subscription Profile

Rule of thumb:

- Using Sophos XG Firewall in a virtual environment has an estimated ~10% performance/user number decrease caused by the Hypervisor framework.

## On-site evaluations

While the procedure explained above is a good foundation for selecting the most appropriate model, it is only based on information received from the customer. There are many factors determining the behavior and performance of an appliance which can only be evaluated in a real life scenario. Therefore, an on-site evaluation within the customer's environment is always the best way to determine whether the selected appliance meets the actual performance requirements of the customer. For further assistance, staff within the Sophos pre-sales teams are ready to assist you with sizing and in selecting the right platform.

## Try it now for free

Register for a free 30-day evaluation at sophos.com/products.

United Kingdom and Worldwide Sales
Tel: +44 (0)8447 671131
Email: sales@sophos.com

North American Sales
Toll Free: 1-866-866-2802
Email: nasales@sophos.com

Australia and New Zealand Sales
Tel: +61 2 9409 9100
Email: sales@sophos.com.au

Asia Sales
Tel: +65 62244168
Email: salesasia@sophos.com



2016-09-21 SG-NA (DD)