

Содержание

| | |
|---|---|
| Hardware requirements and performance | 3 |
| <i>Minimum Requirements</i> | 3 |
| <i>Recommended Requirements</i> | 4 |
| <i>Requirements for Installation on a Virtual Machine</i> | 6 |
| <i>System requirements for Soft-Router</i> | 7 |

Hardware requirements and performance

Minimum Requirements

SSG software runs on general purpose computers. However, due to deep code optimization and integration with the hardware, the hardware configuration has to meet some specific requirements:



The CPU and RAM parameters are determined according to the required bandwidth. We advise you to look through the [Recommended Requirements](#) and agree on the choice of software server with VAS EXPERTS's representatives or our partners to install the software.

| | |
|-------------------------|--|
| CPU | One CPU supporting SSE 4.2 starting from Intel Nehalem and AMD EPYC Zen2 with 4 or more processor cores, 2.5 Ghz clockspeed and above. !SSG only works with one processor! |
| RAM | Not less than 8Gb, it is necessary to install memory modules in all processor channels on the motherboard |
| SSD Disks | To host the OS and SSG software, it is necessary to use 2 disks with a capacity of 256GB or more, combined in RAID 1 (mirror). It is necessary to use a hardware RAID controller. NVMe SSD disks (in M.2, U.2 form factor or PCI Express expansion cards) are a priority. If the platform does not support this type of media, we recommend using SATA/SAS SSD (DWPD \geq 1) instead of HDDs |
| Number of network ports | At least 3 ports are required : one for the remote management using SSH (any kind of chipset), the two other to process network traffic (network cards with DPDK support) |

| | |
|-------------------------|--|
| Supported network cards | <p>It is recommended to use only tested cards on Intel chipsets ¹⁾ with 2, 4 or 6 ports²⁾:</p> <p>1GbE interfaces</p> <ul style="list-style-type: none"> - e1000 (82540, 82545, 82546) - e1000e (82571, 82572, 82573, 82574, 82583, ICH8, ICH9, ICH10, PCH, PCH2, I217, I218, I219) - igb (82573, 82576, 82580, I210, I211, I350, I354, DH89xx) - igc (I225) <p>10GbE interfaces</p> <ul style="list-style-type: none"> - ixgbe (82598, 82599, X520, X540, X550) - mlx5 <p>25GbE interfaces</p> <ul style="list-style-type: none"> - i40e (XXV710) - mlx5 <p>10GbE and 40GbE interfaces, 40GbE port can handle no more than 30G, it is recommended to use only one port on a dual-port card.</p> <ul style="list-style-type: none"> - i40e (X710, XL710, X722, XXV710) <p>100GbE interfaces, 100GbE port can handle no more than 50G, it is recommended to use only one port on a dual-port card, a motherboard with PCIe 4.0 x16 slots is required</p> <ul style="list-style-type: none"> - mlx5 (Mellanox ConnectX-4, ConnectX-5, ConnectX-6) - ice (Intel E810) - we do not recommend it, there are problems in intel firmware on the card: it does not pass GRE tunnels |
| Bypass support | Bypass is supported for Silicom cards 100GbE , 40GbE , 10GbE and 1GbE |



SSG platform operates only under control of the [VEOS \(VAS Experts Operating System\)](#)

Recommended Requirements

Server performance is determined based on peak traffic volume value on the channel. When choosing a CPU, RAM, it is necessary to take into account that the calculation is presented for asymmetric traffic. This means that when installing "in-line" for peak incoming traffic of 12 Gbps (Max IN traffic), you need to purchase a SSG-20 license and a platform with parameters: 1 CPU 16 cores and more, RAM 64GB and more.



Equipment calculation depending on traffic and functionality

| Total traffic (in+out) Gbps | Max incoming traffic Gbps | Stingray SG Version | Number of cores per CPU with a frequency of 2.5 GHz | RAM, GB necessary to install memory modules in all processor channels on the motherboard | Minimal number of physical ports | Number of Public IPs in a NAT pool | Packet per second in Million base CPU frequency from 2,5GHz |
|-----------------------------|---------------------------|---------------------|---|--|----------------------------------|------------------------------------|---|
| 2 | 1,5 | SSG-2 | 4 | 12 | 4x1G, 2x10G | 100 | 1M pps |
| 4 | 3 | SSG-4 | 4 | 16 | 6x1G, 2x10G | 500 | 1,5M pps |
| 6 | 5 | SSG-6 | 6 | 32 | 2x10G | 1000 | 3-4M pps |
| 10 | 8 | SSG-10 | 12 | 48 | 2x10G | 2000 | 6M pps |
| 20 | 15 | SSG-20 | 16 | 64 | 4x10G | 3000 | 9M pps |
| 40 | 30 | SSG-40 | 18 Intel 6242R | 96 | 6x10G, 4x25G, 4x40G, 2x100G | 4000 | 12M pps |
| 60 | 45 | SSG-60 | 28 Intel 6258R, Intel 5320, 32 AMD 7502P | 128 | 10x10G, 4x25G, 4x40G, 2x100G | 5000 | 15M pps |
| 80 | 60 | SSG-80 | 64 AMD 7702P | 160 | 12x10G, 6x25G, 6x40G, 4x100G | 6000 | 18M pps |
| 100 | 75 | SSG-100 | 64 AMD 7702P | 192 | 20x10G, 8x25G, 8x40G, 4x100G | 7000 | 20M pps |
| 120 | 90 | SSG-120 | 64 AMD 9534 | 256 | 20x10G, 8x25G, 8x40G, 4x100G | 10000 | 22M pps |
| 160 | 120 | SSG-160 | 96 AMD 9654 | 384 | 24x10G, 16x25G, 10x40G, 6x100G | 12000 | 30M pps |
| 240 | 180 | SSG-240 | 128 AMD 9654 | 512 | 16x25G, 10x40G, 8x100G | 15000 | 45M pps |

Important when selecting a server:

1. **The Stingray SG uses only one processor** because of the impact on performance of **NUMA** for dual-processor configurations.

2. **When choosing a CPU, it is necessary to take into account the base frequency**, the higher the frequency, the greater the performance.

3. When using **Stingray SG as L2 BRAS (DHCP/ARP/PPPoE authorization)** it is necessary to take into account the additional load associated with the analysis of each





packet by additional parameters. This leads to an increase in CPU power consumption. **In such cases it is recommended to increase the number of CPU cores by 30%.** For a SSG-40 license implement the SSG-60 platform.

4. **The use of 100G** interfaces is possible only when the platform is delivered through a partner in order to control the server specification.

5. **Using the option Common and Virtual Channels Policing** involves additional internal locks, which reduces system performance to 40G of total traffic, regardless of the number of cores.

6. **Every 256 public IP addresses in NAT Pool (/24 subnet) consume 5GB of RAM. /22 = 10GB, /21 = 20GB, /20 = 80GB, /19 = 160GB.**

Requirements for Installation on a Virtual Machine

SSG software can be installed on a Virtual Machine (VM).

VM has the following requirements:

- Hypervisor: VMware, KVM
- CPU of at least 4 cores with a frequency of 2.5 GHz
- RAM of 8 Gb and more
- Storage space of 20 Gb and more

Check VM preparation for test:

OS CentOS: **cat /etc/redhat-release**

```
CentOS Linux release 8.5.2111 (Core)
```

OS VEOS: **cat /etc/*releas*** or **cat /etc/system-release**

```
VEOS release 8.7 (Sakhalin)
```

RAM: **cat /proc/meminfo**

```
MemTotal:      16254744 kB
```

Checking whether all cores belong to one CPU: **grep "physical id" /proc/cpuinfo |sort -u**

```
physical id    : 0
```

Number of cores: **grep "cores" /proc/cpuinfo |sort -u**

```
cpu cores     : 4
```

There must be at least three interfaces (two for traffic and one for administration): **lspci | grep Ethernet**

```
0b:00.0 Ethernet controller: VMware VMXNET3 Ethernet Controller (rev 01)
13:00.0 Ethernet controller: VMware VMXNET3 Ethernet Controller (rev 01)
1b:00.0 Ethernet controller: VMware VMXNET3 Ethernet Controller (rev 01)
```



For SSG to work in a virtual environment, in the Security settings of virtual networks in which in_dev and out_dev are composed, you need to enable:

- Promiscuous mode Accept
- MAC address changes Accept
- Forged transmits Accept

System requirements for Soft-Router

Depending on the amount of routing information, an additional 4-8 GB of memory will be required.

1)

if your card is not included in the list of tested, then software adaptation, additional development and testing will be required

2)

We do not provide a specific list of models, as there is a wide choice of manufacturers of these cards: from Intel to Huawei, HP, Dell, Silicom, Advantech, Lanner, Supermicro, Silicom and dozens of others, as well as the motherboard built-in cards or SOC.