# SG3412 DEPLOYMENT GUIDE

# Table des matières

# 1 Introduction

StreamGroomer SG3410 series have been designed and optimized to leverage the Streamcore Suite of network performance management applications to ensure good user experience of your business applications at small remote locations with low link speeds.

As part of the SG3410 series, the StreamGroomer SG3412 appliance monitors, controls and accelerates application flows across the WAN. Deep Packet Inspection (DPI) and a library of well-known application protocols classify application flows for measurement, control and WAN optimization.

This document is intended to describe the possible deployment cases of the StreamGroomer SG3412 and supported network architectures.

This document also describes the initial configuration steps to register the appliance to the SGM and a list of elements to check in case of connectivity issues.

It is recommended to read this document before proceeding with the installation of the SG3412.

It is highly recommended to refer to the following Streamcore documentation:

- **StreamView User Guide**: for Site and StreamGroomer provisionning and configuration,
- **SGM User Guide (SGMConf)**: for securing the communication between the SGM and the StreamGroomer

# 2 Preparing the deployment of the SG3412

Installing the appliance inline on the network consists in a list of simple tasks. A preparation phase is required for a successful deployment.

## 2.1 TASK 1 - UNPACK THE SG3412

The appliance is delivered in a carton box. The serial number of the appliance is available on the bottom of the box.

## 2.2 TASK 2 – GATHER INFORMATION AND RESOURCES

Before deploying the appliance, a preparation task consists in gathering the following information:

- IP address, mask and gateway of the SGM. The gateway is required if the SGM and the SG are not located in the same subnetwork.
- If a backup SGM exists, the IP address of the backup SGM is also required.
- IP address, mask of the SG3412 also called Administrative IP address. If two SG3412 are deployed in Dual or Tandem mode, an IP address and mask must be assigned to each SG.
- DNS server IP address (used for manual requests from the boot menu such as ping…)
- Number of WAN links to monitor
- Method to insert the SG3412 in the network: as a single appliance, in DUAL mode or in Tandem mode.
- Security level of the communication between the StreamGroomer and the SGM: RSH, weak configuration or strong configuration. Check the SGM configuration (passphrase).
- Line mode of administration port (speed, duplex).
- Method to set the configuration of the SG: with a USB stick or with the command line

## 2.3 TASK 3 – CONFIGURE THE APPLIANCE

Then the appliance can be configured with the console cable connected to a PC. It is also possible to configure the SG with a file generated by the SGM.

Refer to chapter *Configuring Boot Parameters* for the details to configure the appliance.

### 2.4 TASK 3 – CHECK THE CONNECTIVITY

Refer to chapter *Check Connectivity* for this activity.

# 3 Description of the SG3412

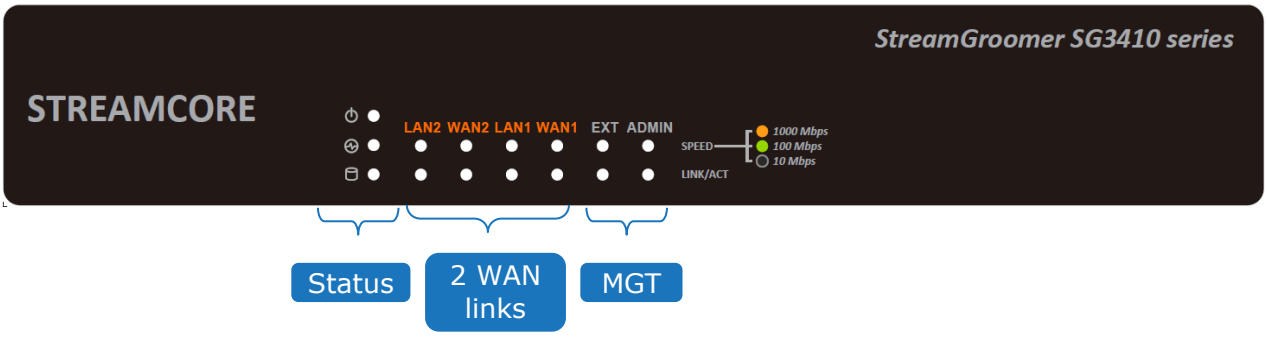
### 3.1 UNPACKING THE SG3412

The SG3412 carton contains the appliance and some accessories:

- 1 StreamGroomer SG3412
- 1 power supply cord and the power supply adapter
- 1 RJ45 console cable
- 1 gray straight cable
- 2 red crossover cables
- 4 runner feet

### 3.2 FRONT PANEL FEATURES

The front panel shows the status of the appliance with colored LEDs: power on/off, Ethernet interfaces located on the back panel and speed links.




The tables below describe every LED of the front panel.

Status of the appliance:

| Status of the appliance | |
|---|---|
| Power | If the LED is on it indicates that the system is powered on.<br>If it is off, it indicates that the system is powered off. |
| Status | If the LED is green, it indicates that the system's operational state is normal.<br>If it is red, it indicates that the system is malfunctioning. |
| HDD | If the LED blinks, it indicates data access activities; otherwise, it remains off. |

Status of the network interfaces:

| 2 WAN links - 4 GigaEthernet copper interfaces | |
|---|---|
| LAN1<br>WAN1 | These LEDs show the status of the LAN1 and WAN1 Ethernet ports.<br>LAN2 and WAN2 are associated with a LAN bypass. |
| LAN2 | These LEDs show the status of the LAN2 and WAN2 Ethernet ports. |

| | |
|---|---|
| WAN2 | LAN2 and WAN2 are associated with a LAN bypass. |

Status of the management interfaces:

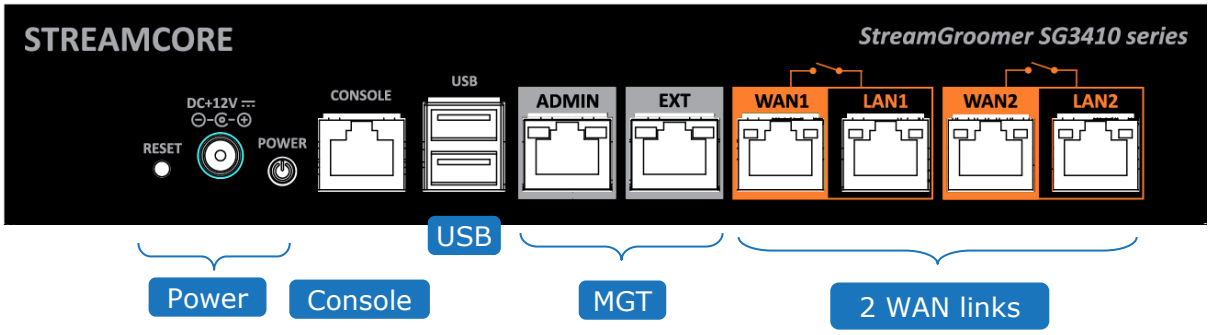
| Management ports - 2 GigaEthernet copper interfaces | |
|---|---|
| ADMIN | This led shows the status and activity of the ADMIN interface. |
| EXT | This led shows the status and activity of the EXT interface. |

The following table describes the meaning of the colours for the Ethernet ports of the back panel:

| Ethernet ports | | |
|---|---|---|
| SPEED | amber | The connection speed is 1000Mbps. |
| | green | The connection speed is 100Mbps. |
| | off | The connection speed is 10Mbps. |
| LINK/ACT | on | The port is active. |
| | blinks | There is traffic. |

## 3.3 REAR PANEL

The rear side is composed of the interfaces for power supply, network, USB and management console. The figure below represents the rear panel of the SG3412.




The tables below describe the interfaces of the rear panel:

- Power:

| Power (from left to right) | |
|---|---|
| Reset | The reset switch can be used to reboot the system without turning off the power. |
| Power-in socket | The system requires an ATX 60W Power Supply. |
| Power-on button | Use this button to power on the appliance when it has been halted by the software. |

- Interfaces for configuration:

| Console and USB | |
|---|---|
| Console | By using suitable rollover cable or RJ-45 to DB-9 console cable, you can connect to a computer terminal for diagnostic or configuration purpose.<br>Terminal Configuration Parameters: 115200 baud, 8 data bits, no parity, 1 stop bit, no flow control. |
| USB | The USB 2.0 ports are used to allow the SG to retrieve a configuration file from a storage device. The configuration file is generated with the SGM. |

- Interfaces for management:

| Management ports | |
|---|---|
| ADMIN | This interface is used as port to manage the SG3412 with the SGM.<br>An IP address will be assigned to this interface for that purpose. |
| EXT | This interface is used to connect a second SG3412 to the appliance in order build the DUAL and TANDEM configurations. |

- Interfaces for monitored WAN access links

| WAN access links | |
|---|---|
| LAN1<br>WAN1 | LAN1 and WAN1 are associated with a LAN bypass. |
| LAN2<br>WAN2 | LAN2 and WAN2 are associated with a LAN bypass. |

# 4 Configuring Boot Parameters

### 4.1

### 4.2 OVERVIEW

To configure the StreamGroomer, a computer equipped with a serial DB9 connector or USB connectors is recommended.

If the computer has no serial connector, it is possible to use a USB to DB9 serial adapter cable that will be connected to the USB port of the computer on one side and on the other side to the console cable provided with the StreamGroomer. In this case, it can be necessary to install the specific software to use the z on the computer.

There are two methods to configure the boot IP parameters of a SG:

- With a computer connected to the StreamGroomer with the asynchronous cable on the console port (and optionally the DB9 to USB converter): access to the boot menu of the SG
- With a USB key: reboot the SG on a USB key containing a configuration file prepared with the StreamView application. This method does not require a computer to configure the StreamGroomer.

Both methods are explained hereafter.

### 4.3 CONFIGURE STREAMGROOMER BOOT PARAMETERS WITH THE CONSOLE

### 4.3.1 Connect the computer to the SG3412

You have to connect a computer to on the console port of the StreamGroomer with the DB9 asynchronous cable (and the additional DB9 to USB adapter cable). The asynchronous cable is provided with the SG3412. The asynchronous cable has a RJ45 connector and a DB9 connector.

### 4.3.2 Configure the connection

To access the BOOT menu, you have to connect to the StreamGroomer through the asynchronous port via a DB9 asynchronous cable. The most well-known utilities are HyperTerminal, PuTTY or Teraterm for Windows. The configuration has to be done manually by entering the asynchronous port settings as follows:

- Speed **115200** bit/*s*,
- Parity: NO,
- Flow control: NO
- 1 stop bit,
- 8 bits of data.

Press Enter key. The following screen appears:

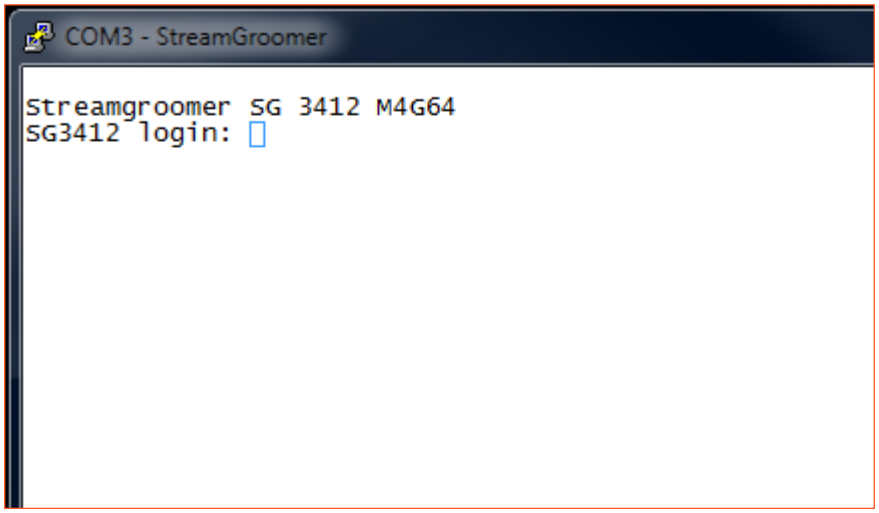



**Figure 1 - Initial login as boot user**

Log on with the user **boot** and the password **boot**.

Once entered in the boot menu, two modes are available:

**Maintenance mode**: This is the default mode. Type help to display the list of commands available in this menu.

**Configuration mode**. To enter the configuration mode, type the keyword `configure` (`config` is also recognized).

You can exit any menu with the `exit` command. Command completion is possible with the `TAB` key.

```
Streamgroomer SG 3412 M4G64
SG3412 login: boot
Password:
Welcome to Streamcore maintenance tool
[SG3412 > maintenance] help

Documented commands (type help <topic>):
========================================
configure  exit  ping  reset_configuration  restart  show  traceroute
```

```
Undocumented commands:
======================
EOF  help

[SG3412 > maintenance]
```

**Figure 2 - Available commands in Maintenance**

It is also possible to connect as user boot to the StreamGroomer with the boot menu by Telnet, RSH or SSH from the SGM. Only one user can be connected on the boot menu at a time.

### 4.3.3 Maintenance Menu

The following table lists the commands available in **Maintenance** menu:

| Commands | Description |
|---|---|
| `configure` | Enters configuration mode |
| `exit` | Leaves the current mode. If changes are pending, a confirmation is requested |
| `ping [IP_add]` | Sends ICMP ECHO_REQUEST to a network host. Specify an IP address as destination. |
| `reset_configuration` | All the operational software and configurations are thus deleted, the name of the StreamGroomer and the parameters of the interface providing access to the SGM are set on the default value attributed at the factory. This option requires certain precautions. |
| `restart [A/B/U]` | Restarts the SG in the chosen version (OPE A, B or Boot) |
| `show […]` | Displays various information about the SG and the admin network. See the table hereafter. |
| `traceroute [IP_add]` | Traces path to a network host. Specify an IP address as destination. |
| `help` | Lists the available commands |

The following table lists the parameters of the show command:

| Show command details | Description |
|---|---|
| `show arp` | Lists the entries of the ARP table |
| `show changes` | Presents the changes between the current configuration and the pending changes |
| `show conf` | Presents the current configuration |
| `show date` | Shows the system date and the last time update (every day at midnight) |
| `show interface` | Gives the active status of the interface with its IP Address, MAC Address, MTU and transmitted volume |
| `show iprouting` | Presents the admin routing table of the SG |
| `show version` | Presents the type of the SG, its serial number, the installed and activated version of the SG |

### 4.3.4 Examples

The following examples show the outputs of the **`show`** commands:

Example 1: Display the software versions installed on the SG:

```
[SG3412 > maintenance] show version
Running OS       : BOOT StreamCore-USINE-M4G64-S37-e1906c3689fe
SG flash type    : M4G64
SG type          : SG3412
```

```
Serial number    : X08C0600

Installed versions
Partition S      : StreamCore-USINE-M4G64-S37-e1906c3689fe
Partition A      : StreamCore-OPE-M4G64-6.2.08-2868f3829bd1
Partition B      : None
[SG3412 > maintenance]
```

Example2: Display the status of the ADMIN interface: The command displays DOWN when the SG is not connected to the network with the ADMIN interface. It cannot be managed by the SGM.

```
[SG3412 > maintenance] show interface
status : DOWN
```

Example 3: When the SG is connected to the network, the output gives details about the interface:

```
[SG3412 > maintenance] show interface
status      : UP 1000baseT-FD flow-control
address     : 192.168.8.34
HW address  : 00:90:0b:4e:d4:fe
MTU         : 1500
TX packets  : 5, errors : 0
RX packets  : 368, errors : 0
TX bytes    : 398 (0.00 MB)
RX bytes    : 22176 (0.02 MB)
```

Example 4: Show the configuration of the SG:

```
[SG3412 > maintenance] show conf
Last save date: Wed Aug 17 14:25:21 UTC 2016
version             : 1.1
name                : SG3412
admin_address       : 192.168.8.34
admin_mask          : 255.255.252.0
admin_gateway       :
admin_port_speed    : auto
sgm_address         : 192.168.8.32
sgm_address2        :
sgm_address3        :
sgm_address4        :
secure_com          : no
dns_server1         :
dns_server2         :
dns_suffix1         :
dns_suffix2         :
ssh_port            : 22
[SG3412 > maintenance]
```

Example 5: Show IP routing information:

```
[SG3412 > maintenance] show iprouting
Destination      Netmask          Gateway          Metric Use
192.168.8.0      255.255.252.0    0.0.0.0          0      0
[SG3412 > maintenance]
```

### 4.3.5 Configuration Menu

This figure details the possible actions to create a configuration and apply the changes. It is also possible to try a configuration with the possibility to commit or cancel the changes.

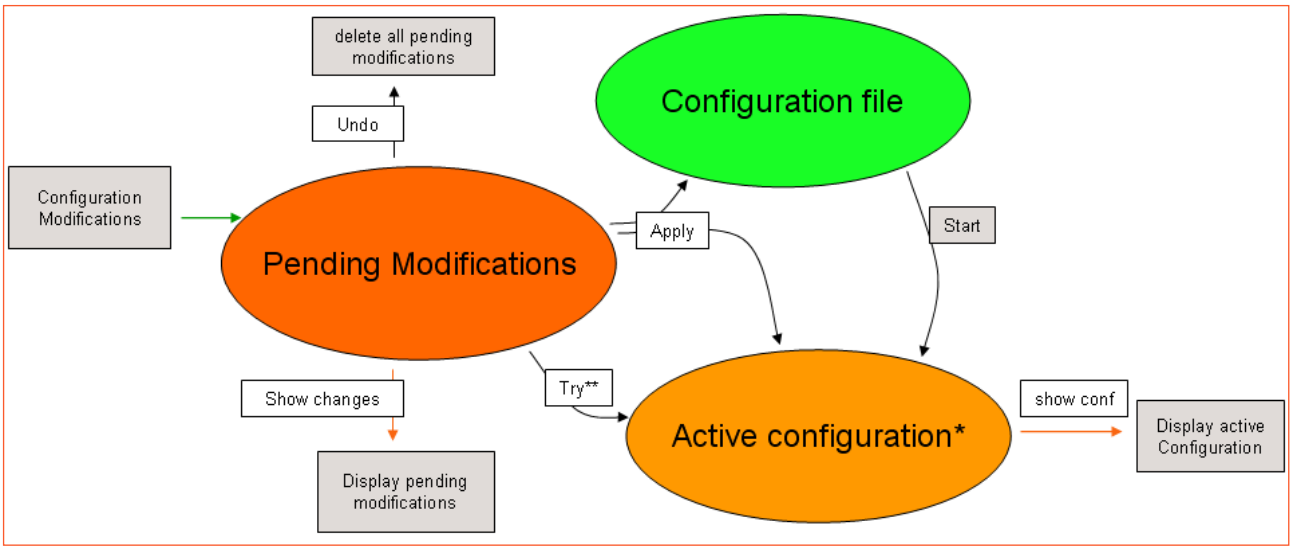



**Figure 3 - Configuration diagram**

* Configuration available in boot mode (unless security settings)

** If the `try` sequence is applied, pending configuration are saved (like an "apply"). If the `try` sequence is cancelled, active configuration is rebuilt from the Configuration file; pending configurations are still available.

Enter the **Configuration** menu.

Type the `help` command to get the list of available commands to configure the SG3412 as shown here:

```
[SG3412 > maintenance] configure
Welcome to Streamcore maintenance tool
[SG3412 > configuration] help

Documented commands (type help <topic>):
========================================
apply  boot_pwd  exit  no  secure_com  show  try  undo

Undocumented commands:
======================
EOF             admin_port_speed  dns_suffix2     sgm_address   ssh_port
admin_address   dns_server1       help            sgm_address2
admin_gateway   dns_server2       name            sgm_address3
admin_mask      dns_suffix1       public_key_sgm  sgm_address4
```

Available commands in **Configuration** mode are:

| Commands | Description |
|---|---|
| `help` | List the available commands |
| `apply` | Save and apply pending changes |
| `exit` | Leave the current mode |

| Commands | Description |
|---|---|
| `show […]` | Display various information about the SG and the admin network |
| `try` | Apply pending changes without saving them.<br>If the try is confirmed with apply, pending configuration are saved (like an "apply").<br>If the try is cancelled, the active configuration is rebuilt from the Configuration file; pending configurations are still available. |
| `undo […]` | Delete pending changes. You can specify a parameter to cancel.<br>If no parameter is given, all changes will be cancelled. |

The following table lists the parameters of the **show** command:

| Show command detail | Description |
|---|---|
| `show arp` | List the entries of the ARP table |
| `show changes` | Present the changes between the current configuration and the pending changes |
| `show conf` | Present the current configuration |
| `show date` | Show the system date and the last time update (every day at midnight) |
| `show interface` | Give the active status of the interface with its IP Address, MAC Address, MTU and transmitted volume |
| `show iprouting` | Present the routing table of the SG |
| `show version` | Present the type of the SG, its serial number, the installed and activated version of the SG |

The commands in the table below set the parameters of the SG:

| Configuration Commands | Description |
|---|---|
| `admin_address [IP_add]` | Define the IP address at which the StreamGroomer is accessible.<br>SG IP configuration and security configuration are only available in boot mode. |
| `admin_mask [mask]` | Define the IP network through which the admin of the StreamGroomer should pass.<br>SG IP configuration and security configuration are only available in boot mode. |
| `admin_gateway [IP_add]` | Identify the IP address of the gateway allowing you to contact the SGM from the SG.<br>SG IP configuration and security configuration are only available in boot mode. |
| `admin_port_speed [speed]` | Choose the speed of the interface:<br>• `100M-fd`<br>• `100M-hd`<br>• `10M-fd`<br>• `10M-hd`<br>• `1G-fd`<br>• `auto`<br><br>SG IP configuration and security configuration are only available in boot mode. |
| `boot_pwd` | Change the password of the user boot. |
| `dns_server1 [IP_add]` | DNS server used by the SG (for admin purpose). It is needed for the web caching feature. |
| `dns_server2 [IP_add]` | Second DNS server used by the SG in case the first one does not answer. |

| Configuration Commands | Description |
|---|---|
| `dns_suffix1 [domain_name]` | DNS suffix for local DNS query |
| `dns_suffix2 [domain_name]` | Second DNS suffix for local DNS query |
| `name [xxx]` | Name presented as prompt |
| `public_key_sgm […]` | Public key of the SGM used for the secured connection between SGM and SG. SG IP configuration and security configuration are only available in boot mode. |
| `secure_com [yes \| no]` | Activate/Deactivate secured communication between SGM and SG (SSH) |
| `sgm_address [IP_add]` | IP address of the SGM server which administers the SG |
| `sgm_address2 [IP_add]` | IP address of the first backup SGM server which administers the SG (optional) |
| `sgm_address3 [IP_add]` | IP address of the second backup SGM server which administers the SG (optional) |
| `sgm_address4 [IP_add]` | IP address of the third backup SGM server which administers the SG (optional) |
| `ssh_port [port]` | TCP port to use with the secured communication between SG and SGM (22 by default). SG IP configuration and security configuration are only available in boot mode. |

To remove a configuration value, use the `no` command following with the command name. The example shows how to use it in combination with the `undo` command:

```
[SG3412 > configuration] sgm_address2 192.168.8.37
[SG3412 > configuration] show changes
Pending changes:
sgm_address2       = 192.168.8.37
[SG3412 > configuration] undo
Done
[SG3412 > configuration] show changes
No pending changes
```

This sequence shows how to set the SG administration address and the address of the SGM that will manage the SG:

```
Welcome to Streamcore maintenance tool
[SG3412 > maintenance] config
[SG3412 > configuration] sgm_address 192.168.8.180
[SG3412 > configuration] admin_address 192.168.8.181
[SG3412 > configuration] admin_mask 255.255.255.0
[SG3412 > configuration] apply
Pending changes:
admin_address      = 192.168.8.181
admin_mask         = 255.255.255.0
sgm_address        = 192.168.8.180
Apply pending changes? ([y]/n) y
Done
[SG3412 > configuration] exit
[SG3412 > maintenance] show conf
Last save date: Thu Sep 29 15:23:18 UTC 2016
version            : 1.1
name               : SG3412
admin_address      : 192.168.8.181
admin_mask         : 255.255.255.0
admin_gateway      :
admin_port_speed   : auto
sgm_address        : 192.168.8.180
sgm_address2       :
sgm_address3       :
sgm_address4       :
```

```
secure_com          : no
dns_server1         :
dns_server2         :
dns_suffix1         :
dns_suffix2         :
ssh_port            : 22
```

## 4.4 CONFIGURE STREAMGROOMER BOOT IP PARAMETERS WITH A USB KEY

### 4.4.1 Procedure

The StreamGroomer boot IP parameters can also be automatically imported through a USB stick containing a boot configuration file. A boot file contains the login password and the StreamGroomer boot parameters. If the communication link between the SGM and the StreamGroomer is to be secured, it also contains the RSA public key of the SGM.

During the boot phase, the StreamGroomer is able to read its configuration from a file that has been prepared with the SGM.

With a web browser, connect to the SGM and enter in the StreamView application and go to the STREAMGROOMER section, and select the StreamGroomer:

1. Prepare the boot file in StreamView for the selected SG. If the site is supported by a Dual or Tandem configuration, a boot file has to be generated for each SG.
2. Download the boot file on the local desktop and save it on an USB key
3. Plug the USB key on the SG
4. Reboot the SG

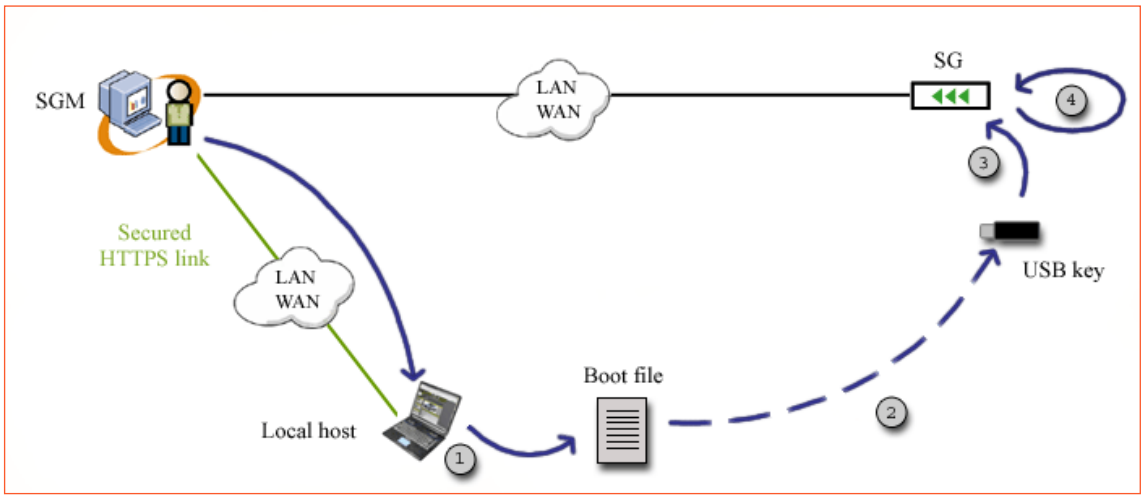



**Figure 4: Configure SG Boot**

These steps are detailed below.

### 4.4.2 Prepare the boot file

This sections describes how to create the boot file with StreamView.

When the database has been prepared on the SGM, boot files are ready to be downloaded for each StreamGroomer (see "StreamView Configuration Guide"). As a summary the following steps are necessary for each StreamGroomer:

- In the Smart Service Tree, add a new site.
- In the StreamGroomers Tree, add the StreamGroomer and fill all configuration information.

### 4.4.3 Download the boot file on the local host

In order to download a StreamGroomer boot file:

- Select StreamGroomer that has been created
- Select the **Parameters > Boot** file subtab
- Click Download the boot file on the local computer
- Select save to disk, which can be the USB key.
- Click OK and follow path to where the USB key is plugged in.

The boot file is named **`sgconfig_<sgname>.txt`**. It can be saved on the USB key:

- In the root directory or
- In a directory called **`Streamcore`**.

> **About the file `sgconfig_<sgname>.txt`**
> *There must be **only one file which name starts with `sgconfig_` on the USB device**. If several files match this criteria, the StreamGroomer will ignore them and boot parameters won't be updated.*

You also have access to the boot menu by Telnet, RSH or SSH to the SG from the SGM (use the boot user). Only one person can be connected on the boot menu at a time.

### 4.4.4 Load the SG configuration from the USB key

#### 1 STEPS TO LOAD THE SG CONFIGURATION FILE

In order to download boot parameters into a StreamGroomer from the USB key, follow the steps:

1. Set the StreamGroomer in Boot mode.
2. Insert the USB key into the StreamGroomer with the file **`sgconfig_<sgname>.txt`**.
3. Power down and up. The SG must reboot.
4. Wait for a few minutes until the StreamGroomer has booted entirely.
5. Unplug the USB key and check the **`sgstatus_<sgname>.txt`** file.

> **Set the SG in boot mode**
> *The StreamGroomer must be restarted in **Boot mode** in order to process the file sgconfig_<sgname>.txt. If StreamGroomer is not in Boot mode, the file on the USB device will be ignored and the parameters of the configuration file won't be applied.*

When a USB key is plugged in a StreamGroomer and it is rebooted, the following operations are automatically performed by the SG:

1. The SG detects the USB key and checks that it can write on the device.
2. The SG search on the device for a file named **`sgconfig_<sgname>.txt`**
3. It check and imports the security parameters (password, optional strong SSH authentication…)
4. The SG imports the other parameters.
5. Finally, the SG generates a status of the procedure in the file named **`sgstatus_<sgname>.txt`** on the USB key.

A StreamGroomer will produce different kinds of beeps at the end of these operations:

| Beep | Event |
|---|---|
| Double short high-pitched beep and then deep beep | The 5 steps described above have been successful. A status file summarizing the configuration has been pushed on the USB key. |
| Several short high-pitched beeps | A strong SSH authentication has been required and the StreamGroomer is generating its pair of public/private RSA keys during step 4. |
| Several long deep beeps | Step 1 has failed (USB key mount) |
| Single long deep beep | Step 2, 3 or 4 have failed.<br>If step 2 has failed, then a `sgstatus_ERROR.txt` file is pushed on the key. A typical reason can be for instance if the StreamGroomer has found several files starting with sgconfig).<br>If step 3 or 4 has failed, then a `sgstatus_<sgname>.txt` is pushed on the key and contains a message explaining the failure. |

### 4.4.5 Case of strong SSH authentication

In case of strong SSH authentication, the **`sgstatus_<sgname>.txt`** file contains the RSA public key of the StreamGroomer. This file must be imported to the SGM to complete the setup of the secured communication link between the SGM and the StreamGroomer.

To import the RSA public key into the SGM, connect to the SGM. With StreamView, go to the STREAMGROOMERS section and select the StreamGroomer in the tree menu.

In the Parameters tab, click on the button **Import**. Browse to search the **`sgstatus_<sgname>.txt`** and select the file. Refer to the StreamView User Guide for further details on how to secure the link between the SGM and the StreamGroomer.

# 5 Installing the SG3412 on the network

When the equipment is turned on for the first time, the bypasses of the pairs LAN1/WAN1 and LAN2/WAN2 are enabled. This means that SG acts as a straight cable: the network packets go directly from one LAN port to the WAN port of a pair (and the other way around) without being processed by the SG. No statistics are produced by the SG in Boot mode.

## 5.1 CONNECTING THE SG3412

The SG3412 manages 1 or 2 WAN access links.

### 5.1.1 Simple configuration – 2 WAN links

The figure below shows how the SG is connected to the switches and the routers of a company.

If only one link is to be managed, use the LAN1 and WAN1 interfaces and do not connect any cable on the LAN2 and WAN2 interfaces.

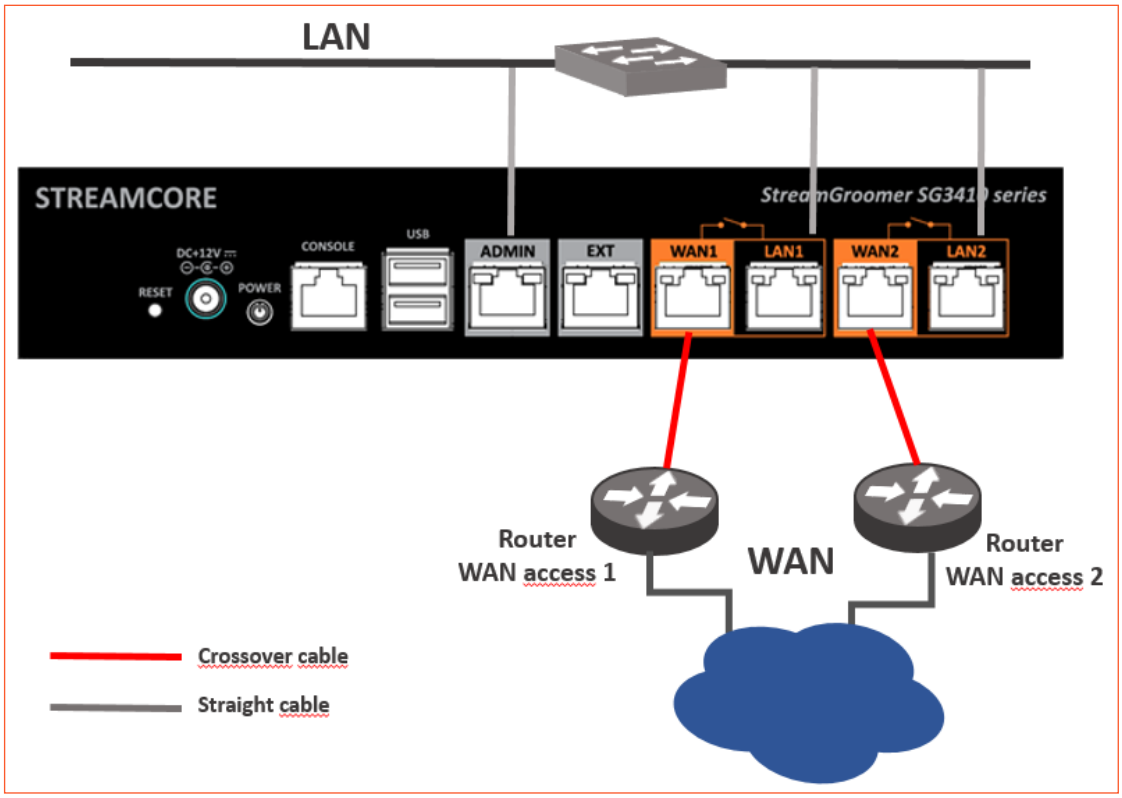



*Figure 5 – Deployment to manage 2 WAN links*

### 5.1.2 DUAL configuration

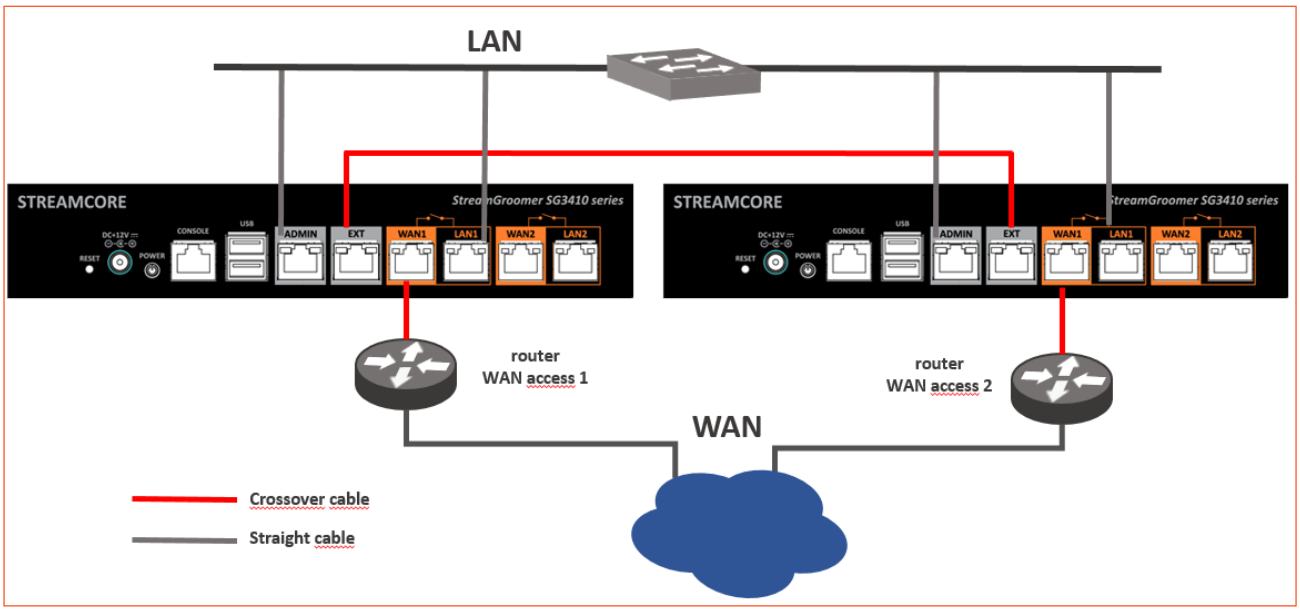
The figure hereafter shows how to connect 2 SG3412 to create a DUAL configuration.

**Case of Dual**

Note that only LAN1 and WAN1 interfaces are used in Dual mode. LAN2 and WAN2 ports are ignored by the Streamcore software in this configuration. It is not necessary to connect them to the network. Refer to StreamView User Guide for further details.

The StreamGroomers are connected with the interface EXT. They should belong to the same subnet to keep the communication as fast as possible between the 2 StreamGroomers.

Refer to the StreamView documentation for further details to declare a site supported by a pair of StreamGroomer configured and connected in Dual mode.




### 5.1.3 Tandem configuration

The figure below explains the wiring to create a tandem configuration. LAN2 and WAN2 interfaces are not used in this configuration.

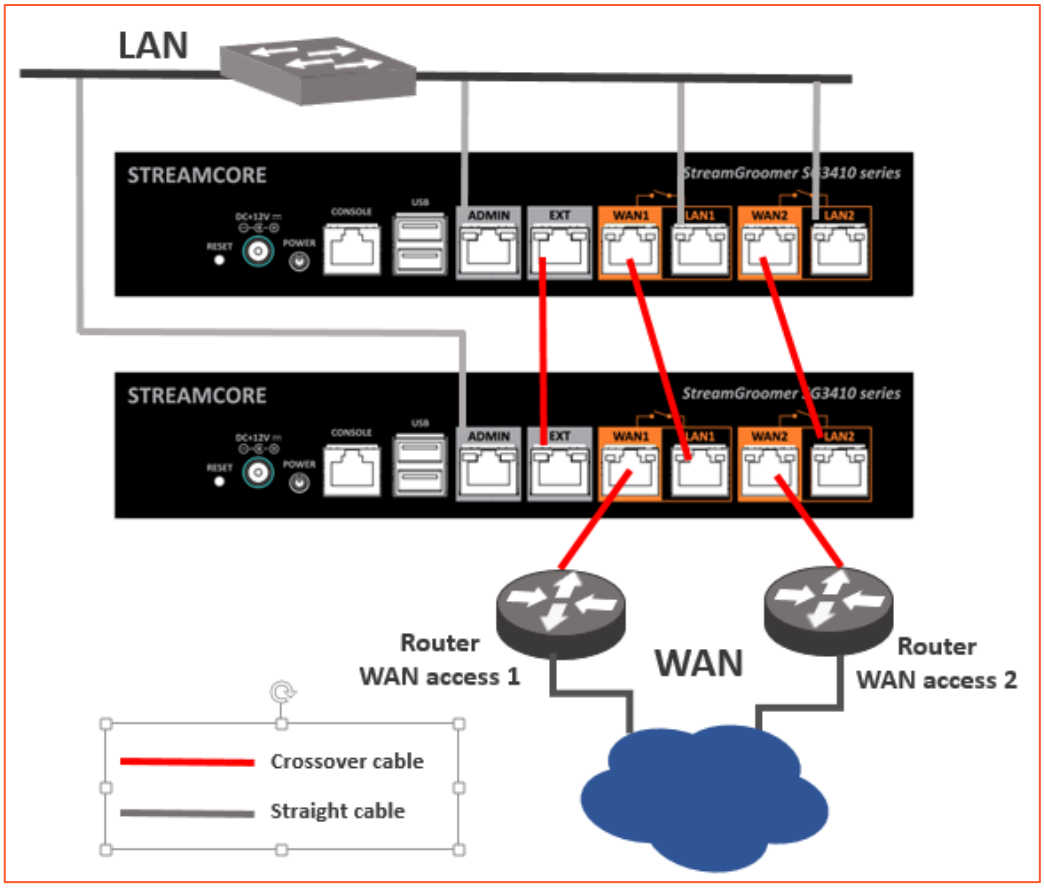



*Figure 7 - SG3412 in Tandem configuration*

## 5.2 DEPLOYING THE SG3412

This section describes where and how to connect the SG3412 to network equipments to comply with the network requirements.

It also describes the 4 configurations supported by Streamcore Software Suite, whatever the SG model.

### 5.2.1 Supported Network architectures

This sections lists the possible locations to install the SG in the network.

# 3 BETWEEN THE ROUTER AND THE LAN

A StreamGroomer is usually placed in an inline position **between the router and the LAN**:

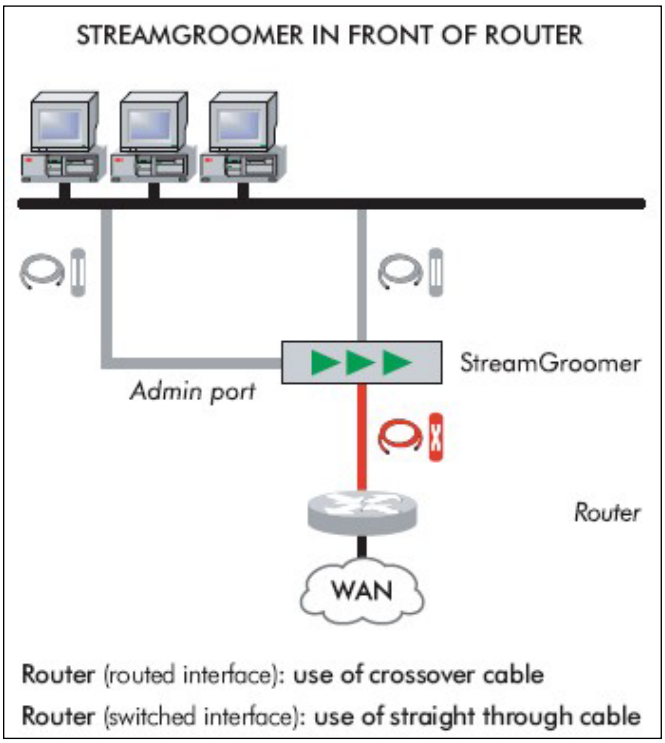



**Figure 8 - SG between the LAN and a router**

## 4 BETWEEN THE LAN AND THE SWITCH

A SG can be transparently inserted **in the LAN, in front of the switch**:

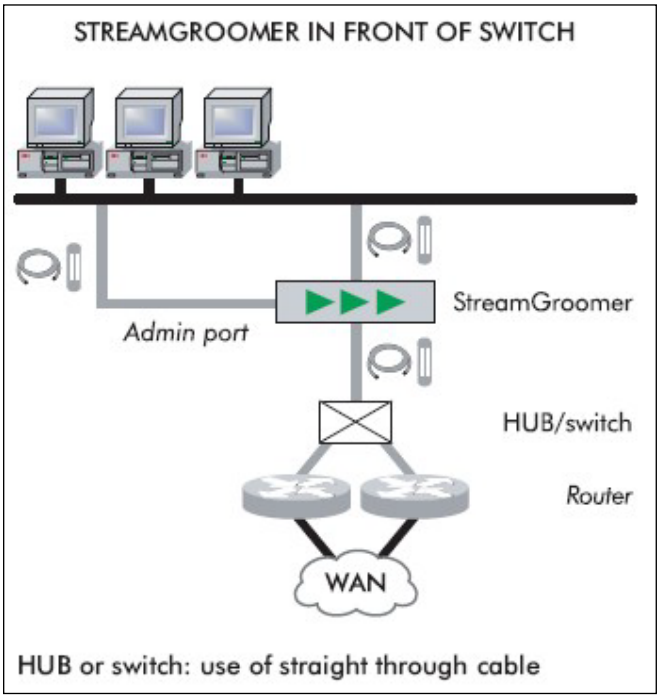



**Figure 9 - SG in front of a switch, in the LAN**

### Case of Dual and Tandem

If a Dual or Tandem is deployed in this network architecture, both SG must be aware that their LAN and WAN interfaces are connected to switches. A parameter of the SG named **Switch WAN side** is used for that purpose. It must be set to **Yes** for the two SG of the Dual or Tandem.
Refer to StreamView User Guide for further details.

# 5 BETWEEN THE ROUTER AND A FIREWALL

A SG can be transparently inserted **between the router and a firewall**:

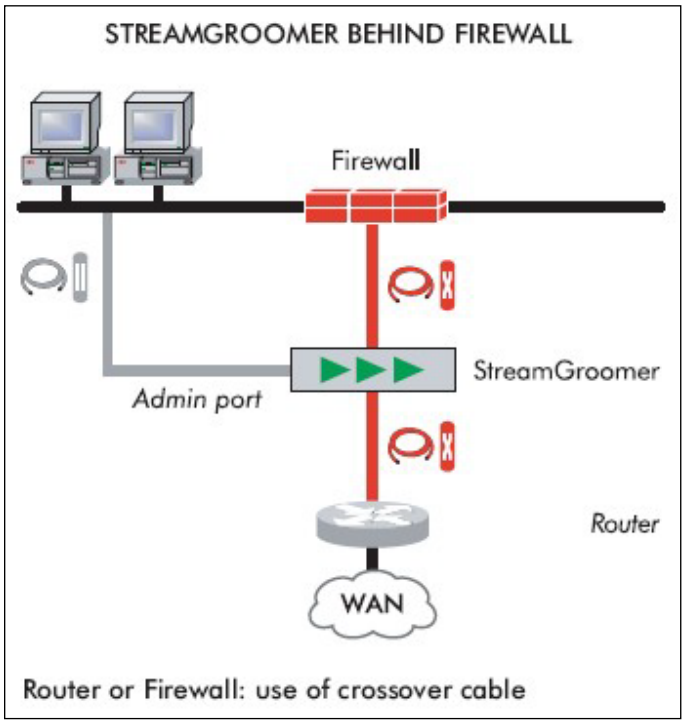



**Figure 10 - SG between a router and a firewall**

If there is a switch between the StreamGroomer and the router accessing the WAN, the crossover cable should be replaced with a straight-through cable. If the StreamGroomer is connected between two routers, or between a router and a firewall, 2 crossover cables should be used.

## 5.2.2 Manage a single WAN access link

In this section, one SG 3412 is installed to support a site with a WAN access link. This configuration is also called 2 ports. The pair of interfaces LAN1/WAN1 is used. LAN2 and WAN2 interfaces are not used.

Refer to the paragraph 5.1.1 Simple configuration – 2 WAN links to know how to connect the SG to the switch and router.

## 5.2.3 Manage 2 WAN access links

The SG 3412 can also be installed to support a site with 2 WAN access links. This configuration is also called *4 ports*. Both pairs LAN1/WAN1 and LAN2/WAN2 are used.

The figure below show a typical insertion of the SG3412:

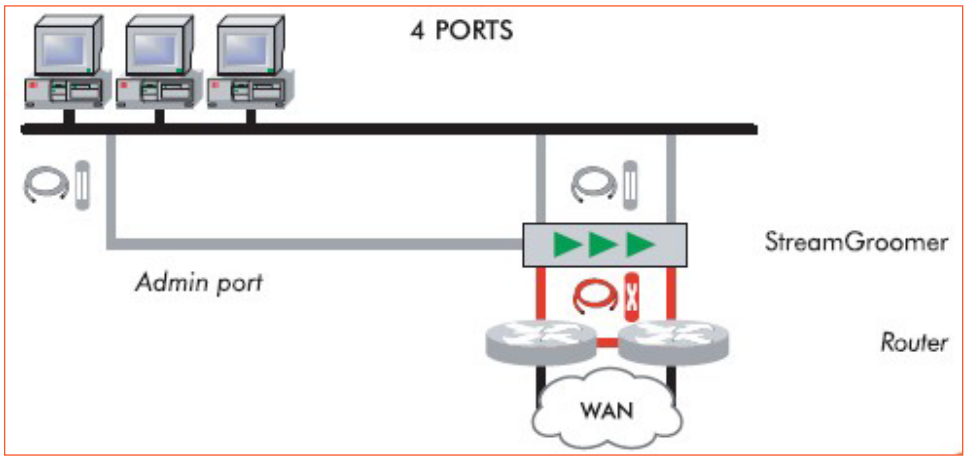



**Figure 11 - Manage a site with 2 WAN links**

Refer to the paragraph 5.1.1 Simple configuration – 2 WAN links to know how to connect the SG to the switch and router.

### 5.2.4 Implement High Availability (Tandem)

Tandem mode is an interesting feature to ensure that network monitoring, QoS and WAN acceleration features are always available. If the main SG fails, the secondary becomes active and continues operating on the network.

To implement high availability with the SG3412, two appliances SG3412 must be installed on the network. The figure below shows that the appliances are connected with the EXT interface. Use crossover cables between the 2 SG.

Refer to the paragraph *5.1.3 Tandem configuration* to know how to connect the SG to each other and also to the switch and router. Refer to the paragraph for further details on the interconnection with the EXT ports. Refer to the StreamView user guide for further details on this insertion mode.

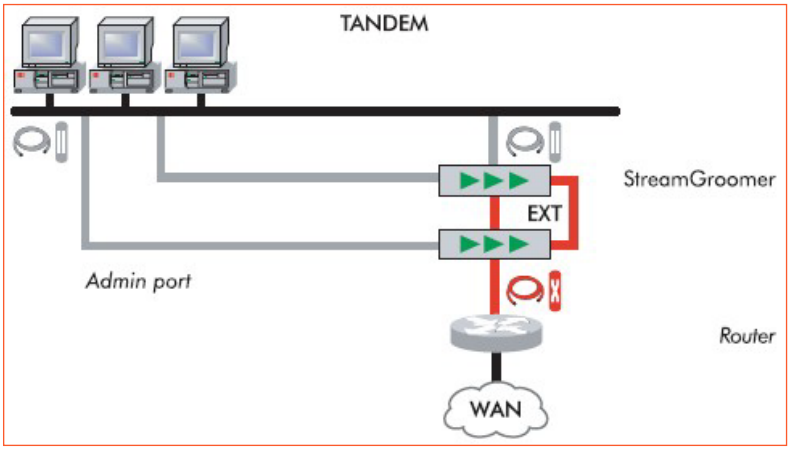



**Figure 12 - Tandem configuration with 2 StreamGroomers**

### 5.2.5 Implement Dual mode

This mode is interesting when a site manages 2 links that are physically far from each other. As for Tandem mode, the two SG3412 appliances are connected with the EXT interface.

Refer to the paragraph *5.1.2 DUAL configuration* to know how to connect the SG to each other and also to the switch and routers.

**Warning:** Refer to the paragraph below for further details on the interconnection with the EXT ports.

Refer to the StreamView User Guide for further details on this insertion mode.

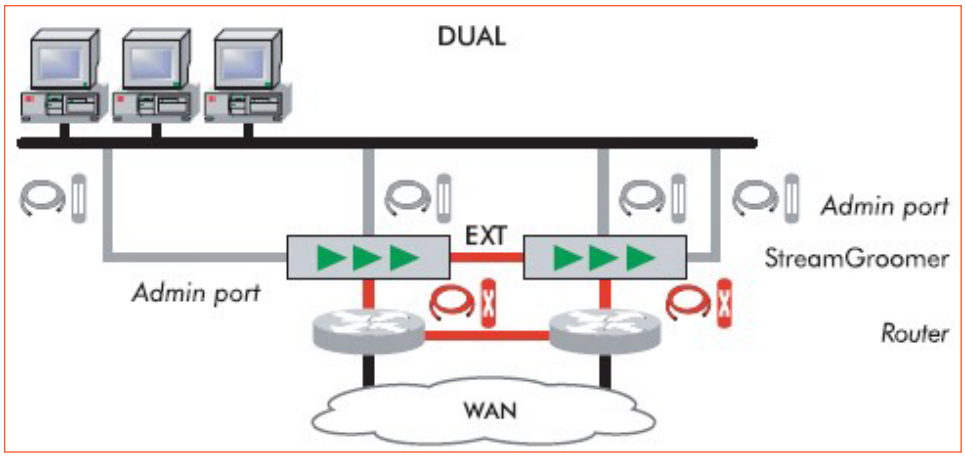



**Figure 13 - DUAL configuration**

### 5.2.6 Using the EXT interface

Please read carefully this paragraph if the StreamGroomers must be connected with the EXT interfaces.

This management link allows the primary SG to be monitored by the secondary SG in order to ensure high availability or monitor for the same site 2 WAN access links that are not close to each other.

When the SG executes the Streamcore software version 6.2 and earlier versions, the management link between the SG on the EXT interface uses a layer 3 protocol. Although not recommended, the StreamGroomers can be connected through a router.

From release 6.3, the SG communicate with a layer 2 protocol. This means that the StreamGroomers must belong to the same LAN.

# 6 Check Connectivity

## 6.1 CHECK CONNECTIVITY WITH STREAMVIEW

The SG must be declared in the SGM and configured with StreamView. The ADMIN address of the SG has to be defined. In StreamView, select the SG.

Go to the **Read status** tab or **Release Management** tab.

If the message **Cannot read statistics for this object** is displayed, the SGM cannot connect with the SG.

Possible reasons are:

- ☐ The IP address, mask and gateway of the SG configured in the SGM are not correct.
- ☐ The IP address of the SGM configured in the SG is not correct. The SG replies only to the SGM which IP address is specified by one of the parameters **sgm_address**, **sgm_address2**, **sgm_address3** or **sgm_address4**.
- ☐ The ADMIN port of the SG is not connected to the LAN.
- ☐ The SG is powered off.

- ☐ Check with the network and security administrators if the configured parameters are correct and if the communication is not blocked by a firewall.

### 6.2 CHECK CONNECTIVITY WITH PING

It is possible to check the availability of a StreamGroomer with a ping from any host.

It is also possible to check that the SG can communicate with the SGM and the backup SGM. Connect on the SG with the console port as **boot** user. Execute the commands in the Maintenance mode to check that the SGL is reachable from the SG.

`ping <SGM address>` or `ping <backup_SGM_address>`

Check with the network and security administrators if the configured parameters are correct and if the communication is not blocked by a firewall.

### 6.3 TROUBLESHOOTING

This procedure describes how to force the SG to return to BOOT mode.

It is useful when the SG is running in operational mode but is not reachable from the SGM and the technician cannot log on the appliance (forgotten password).

If a technician is present on site, he can execute the following steps respecting this order to force the SG to return to the BOOT mode:

1. Turn off the StreamGroomer using the on/off switch or unplug the power cable
2. Turn on the StreamGroomer using the on/off switch or plug the power cable
3. Wait for the operational software reboot and the opening of the bypass
4. Turn off the StreamGroomer
5. Turn on the StreamGroomer

The equipment will then automatically restart in boot software.

# 7 Technical Specifications

The characteristics of the SG3412 are listed in the following table:

| Model | SG3412 |
|---|---|
| Height | 4.4 cm |
| Width | 24 cm |
| Depth | 16,6.cm |
| Weight | 1.2 kg |
| Power and type | 36W Power AC adapter, 100-240V 50-60Hz |
| Operating Temperature | 0 to 40°C |
| Relative humidity | 5% to 90% |

| | |
|---|---|
| MTBF | > 45,000 hours |
| Network interfaces (to LAN/WAN) | 4 x 10/100/1000 Base-T<br>2 pairs with bypass integrated |
| EXT | 10/100/1000 Base-T |
| Administration interface | 10/100/1000 Base-T |
| Console interface | RJ45 |
| USB port | 2 x USB 2.0 |
| Compliances | CE<br>FCC Class A<br>RoHS<br>EMC |
| Miscellaneous | LITHIUM METAL BATTERY<br>The SG3412 uses a lithium metal battery. |