streamcore

SG2412DEPLOYMENTGUIDE_V2.0

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1 Introduction

StreamGroomer SC2410 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 SC2410 series, the StreamGroomer SG2412 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 SG2412 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 SG2412.

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

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

2 Preparing the deployment of the SG2412

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 SG2412

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 appliance also called Administrative IP address. If two SG2412 are deployed in Dual or Tandem mode, an IP address and mask must be assigned to each SG.
- ☐ The name of the StreamGroomer (the hostname). It must comply with the RFC1123.
- ☐ 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 appliance 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).
- ☐ Line mode of the LAN and WAN ports (speed, duplex).
- ☐ Method to set the configuration of the SG: with a USB stick or with the command line
- ☐ The driver **P210x USB to UART Bridge VCP** must be installed on the operator's computer to communicate with the appliance on the console port.

2.3 TASK 3 - INSTALL THE DRIVER

To configure the SG2412 with the console port with a PC running on Windows, a driver must be installed on the PC.

2.4 TASK 4 – 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.

2.5 TASK 5 – CHECK THE CONNECTIVITY

Refer to chapter *Check Connectivity* for this activity.

3 Description of the SG2412

3.1 UNPACKING THE SG2412

The SG2412 carton contains the appliance and some accessories:

- 1 StreamGroomer SG2412
- 1 power supply cord and the power supply adapter
- 1 USB Mini B cable
- 3 gray straight cables
- 1 rackmount kit
- 4 runner feet

Note: Streamcore assumes that routers, hubs and use now auto MDI-X for 10/100 Mbit connections and automatically switch to the proper configuration once a cable is connected. That's why only straight cables are provided with the SG2412. If the appliance is to be connected to an equipment that does not support auto MDI-X technology, replace the straight cable with a crossover cable.

3.2 FRONT PANEL

The front side is composed of the interfaces for power supply, network, USB and management console. The figure below represents the front panel of the SG2412.
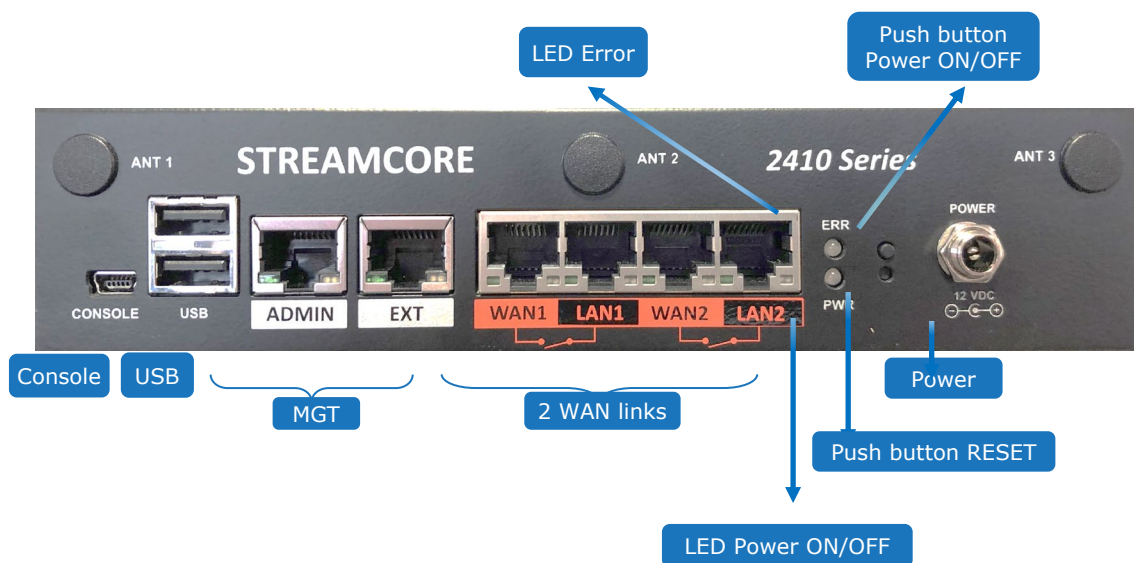
The tables below describe the interfaces of the front panel:

- Power:

Power	
Power-in socket	The system requires an ATX 60W Power Supply.
Power-on button	Use this small button to power on the appliance when it has been halted by the software.
Button RESET	Reset the appliance

- Interfaces for configuration:

Console and USB	
Console	By using USB console cable, you can connect to a computer terminal for configuration or diagnostic purpose. Terminal Configuration Parameters are: 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 SG2412 with the SGM. An IP address will be assigned to this interface for that purpose.
EXT	This interface is used to connect a second SG2412 to the appliance in order build the DUAL and TANDEM configurations.

- Interfaces for monitored WAN access links

WAN access links	
LAN1 WAN1	LAN1 and WAN1 are associated with a LAN bypass.
LAN2 WAN2	LAN2 and WAN2 are associated with a LAN bypass.

The tables below describe every LED of the front panel.

- Status of the appliance:

Status of the appliance

Power ON/OFF	If the LED is on it indicates that the system is powered on.
	If it is off, it indicates that the system is powered off.
ERR	If the LED is off, it indicates that the system's operational state is normal.
	If it is red, it indicates that the system is malfunctioning.

- Status of the network interfaces:

2 WAN links - 4 GigaEthernet copper interfaces	
LAN1 WAN1	These LEDs show the status of the LAN1 and WAN1 Ethernet ports. LAN1 and WAN1 are associated with a bypass. When blinking, the bypass is enabled.
LAN2 WAN2	These LEDs show the status of the LAN2 and WAN2 Ethernet ports. LAN2 and WAN2 are associated with a bypass. When blinking, the bypass is enabled.

- Colours for the Ethernet ports:

Ethernet ports		
Right light for SPEED	amber	The connection speed is 1000Mbps.
	green	The connection speed is 100Mbps.
	off	The connection speed is 10Mbps.
	blinking + green	The interfaces are set in bypass mode.
Left light for LINK/ACT	on	The port is active.
	blinking	There is traffic.

4 Configuring Boot Parameters

4.2 OVERVIEW

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

- With a computer connected to the StreamGroomer with the USB cable on the console port: 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 SG2412

To configure the StreamGroomer with the console port, a computer equipped a USB 2.0 or 3.0 connector is required. Use the USB cable to connect the computer to on the console port of the StreamGroomer.

In the following it is assumed that the PC is running the Windows operating system and the program PuTTY will be used to open a console window to connect with the appliance.

4.3.2 Install the driver on the computer

The driver **P210x USB to UART Bridge VCP** must be installed on the PC to allow the PC to communicate with the SC2412 on the console port as a COM port (serial port).

Open a web browser and follow this link: https://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers.

Download the package corresponding to the version of Windows, Linux, OSX or Linux running on the computer. For example, if the computer is running Windows 10, download the package named `CP210xUniversal_Windows_Driver.zip` on the computer. This file is an archive containing the program to install the driver on Windows (32bit and 64bit platforms). Extract the files of the archive in a dedicated file, for example `CP210xUniversal_Windows_Driver_v1.10.14`.
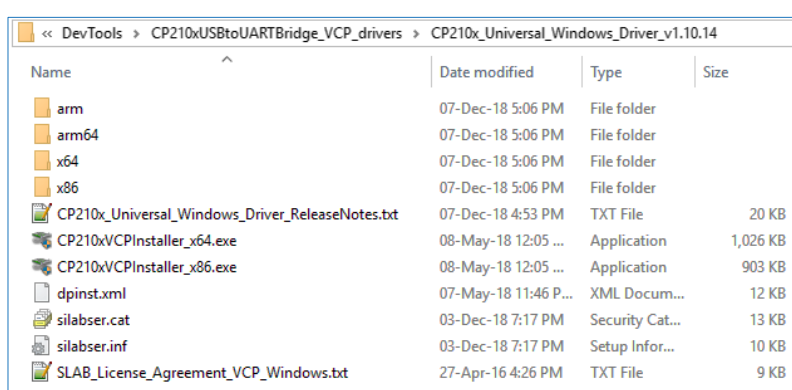
Figure 1 - Contents of the archive CP210xUniversal_Windows_Driver.zip

To install the driver, execute the program CP210xVCPInstaller_x64.exe (64-bit Windows) or CP210xVCPInstaller_x86.exe (32-bit Windows). You must be administrator of the PC to install the driver.

The installation takes a few seconds. Click on the push button Next and the close the device driver installer. The driver is installed.
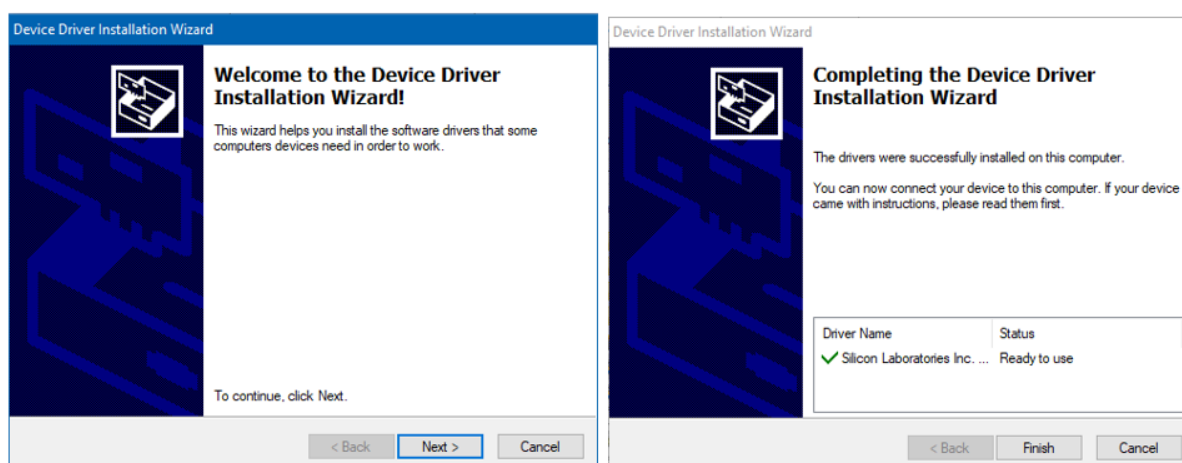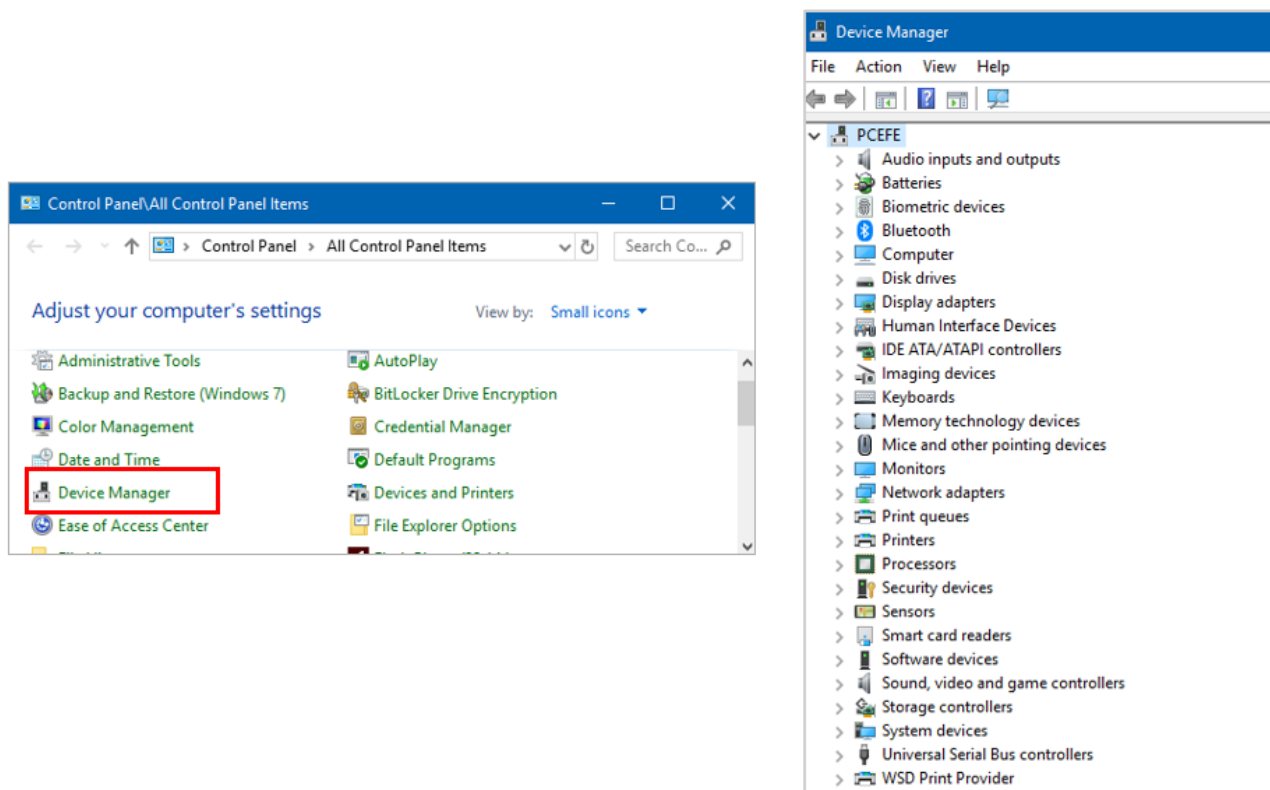

Figure 2 - Installation of the driver on Windows

Now, let's determine which serial COM port will be used by PuTTY to define the parameters of the serial connection. Open the *Control Panel* and start the *Device Manager* on the laptop.

Connect the PC to the SC2412 with the USB cable. In the *Device Manager* panel, a new item named **Ports (COM & LPT)** appears in the list. You can also refresh

Figure 3 - Launch the Device Manager

the device list by clicking on the item *Action → Scan for hardware changes*.
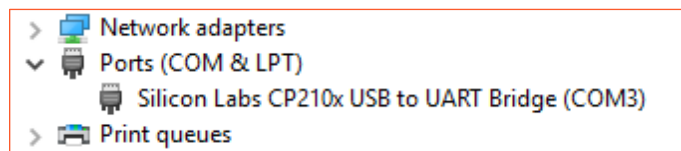
Figure 4 - The serial port COM3 is declared.

The device **Silicon Labs CP210x USB to UART Bridge** is added to the list of devices connected to the PC. The connection with PuTTY will use the **COM3** serial port. Note: the system may assign another index to the COM port depending on other serial devices already connected to the PC.

4.3.3 Configure the connection

To access the BOOT menu, you have to connect to the StreamGroomer on the console port. The most well-known utilities are HyperTerminal and PuTTY for Windows. The configuration has to be done manually by entering the 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 5 - 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.
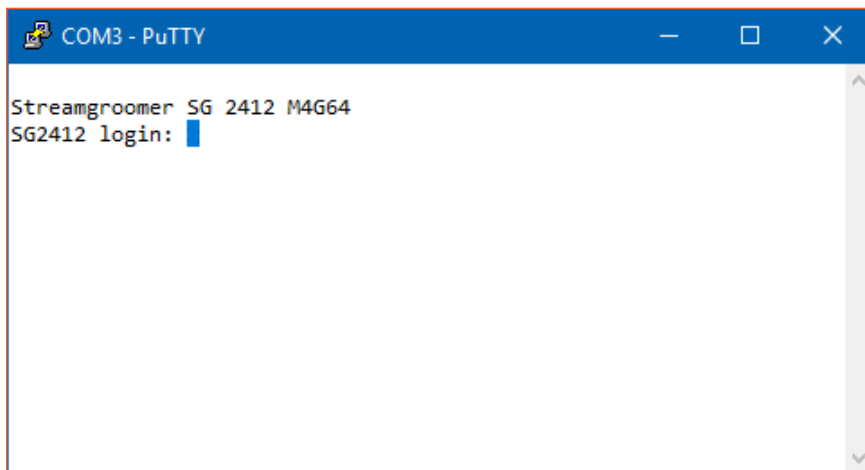
> **Configuration mode**. To enter the configuration mode, type the keyword `configure` (`config` is also recognized).

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

```
Streamgroomer SG 2412 M4G64
SG2412 login: boot
Password:
Last login: Mon Dec 17 19:05:17 CET 2018 on ttyS0
Welcome to Streamcore maintenance tool
[SG2412 > maintenance] help

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

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

[SG2412 > maintenance]
```

Figure 6 - 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.

4.3.4 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.
`drivers_rescue`	This command is to be used only if requested by the Streamcore Technical Support team.
`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

4.3.5 Examples

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

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

```
[SG2412 > maintenance] show version
Running OS      : BOOT StreamCore-USINE-M4G64-S45-eae2b5b7cde4
SG flash type   : M4G64
SG type         : SG2412
Serial number   : SC1121180030

Installed versions
Partition S     : StreamCore-USINE-M4G64-S45-eae2b5b7cde4
Partition A     : StreamCore-OPE-M4G64-6.3.26-d4ddfc3e98ce
Partition B     : StreamCore-OPE-M4G64-6.4.12-9ca18188355a
[SG2412 > maintenance]
```

Example 2: 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.

```
[SG2412 > maintenance] show interface
status : DOWN
```

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

```
[SG2412 > maintenance] show interface
status     : UP 1000baseT-FD flow-control
address    : 192.168.15.168
HW address : 00:08:a2:0d:ae:48
MTU        : 1500
TX packets : 17, errors : 0
RX packets : 1660, errors : 0
TX bytes   : 1270 (0.00 MB)
RX bytes   : 116675 (0.12 MB)
[SG2412 > maintenance]
```

Example 4: Show the configuration of the SG:

```
[SG2412 > maintenance] show conf
Last save date: Mon Dec 17 18:05:40 CET 2018
version           : 1.1
name              : SG2412
admin_address     : 192.168.15.168
admin_mask        : 255.255.255.0
admin_gateway     : 192.168.15.254
admin_port_speed  : auto
sgm_address       : 192.168.15.150
sgm_address2      :
sgm_address3      :
sgm_address4      :
secure_com        : no
dns_server1       :
dns_server2       :
dns_suffix1       :
dns_suffix2       :
ssh_port          : 22
[SG2412 > maintenance]
```

Example 5: Show IP routing information:

```
[SG2412 > maintenance] show iprouting
Destination      Netmask          Gateway          Metric Use
192.168.15.0     255.255.255.0    0.0.0.0          0      0
0.0.0.0          0.0.0.0          192.168.15.254   0      0
[SG2412 > maintenance]
```

4.3.6 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.
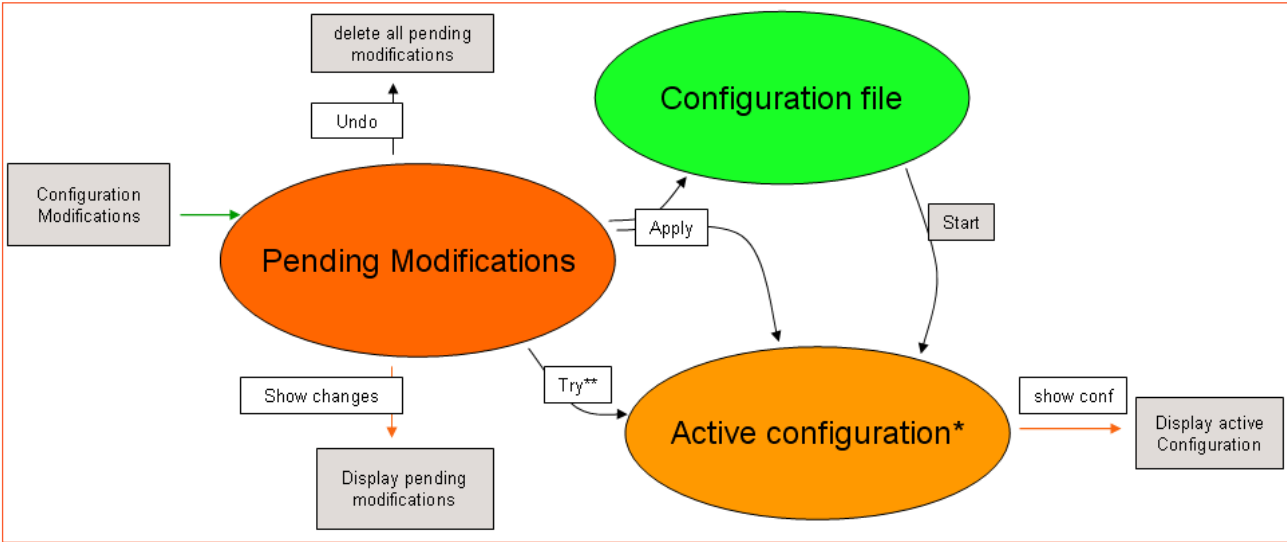

Figure 7 - Configuration diagram

* 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 SG2412 as shown here:

```
[SG2412 > maintenance] configure
[SG2412 > 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
show [...]	Display various information about the SG and the admin network
try	Apply pending changes without saving them. If the try is confirmed with apply, pending configuration are saved (like an "apply").

Commands	Description
	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.
	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. 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. 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. SG IP configuration and security configuration are only available in boot mode.
admin_port_speed [speed]	Choose the speed of the interface: • 100M-fd • 100M-hd • 10M-fd • 10M-hd • 1G-fd • auto 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.
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.

Configuration Commands	Description
`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.

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
[SG2412 > maintenance] config
[SG2412 > configuration] sgm_address 192.168.15.150
[SG2412 > configuration] admin_address 192.168.15.168
[SG2412 > configuration] admin_mask 255.255.255.0
[SG2412 > configuration] apply
Pending changes:
admin_address     = 192.168.8.168
admin_mask        = 255.255.255.0
sgm_address       = 192.168.8.180
Apply pending changes? ([y]/n) y
Done
[SG2412 > configuration] exit
[SG2412 > maintenance] show conf
[SG2412 > configuration] show conf
Last save date: Mon Dec 17 18:05:40 CET 2018
version           : 1.1
name              : SG2412
admin_address     : 192.168.15.168
admin_mask        : 255.255.255.0
admin_gateway     : 192.168.15.254
admin_port_speed  : auto
sgm_address       : 192.168.15.150
sgm_address2      :
sgm_address3      :
sgm_address4      :
secure_com        : no
dns_server1       :
dns_server2       :
dns_suffix1       :
dns_suffix2       :
ssh_port          : 22
```

To cancel a modification, use the `undo` command as shown in this example:

```
[SG2412 > configuration] sgm_address2 192.168.8.37
[SG2412 > configuration] show changes
Pending changes:
sgm_address2      = 192.168.8.37
[SG2412 > configuration] undo
Done
[SG2412 > configuration] show changes
No pending changes
```

To set a specific parameter with no value, use the `no <parameter>` command. Here is an example with the *dns_server2* parameter:

```
[SG2412-secured > maintenance] show conf
Last save date: Wed Dec 19 15:13:23 CET 2018
version          : 1.1
name             : SG2412-secured
admin_address    : 192.168.15.168
admin_mask       : 255.255.255.0
admin_gateway    : 192.168.15.254
admin_port_speed :
sgm_address      : 10.0.3.15
sgm_address2     :
sgm_address3     :
sgm_address4     :
secure_com       : yes
dns_server1      : 84.14.137.66
dns_server2      : 172.16.0.1
dns_suffix1      :
dns_suffix2      :
ssh_port         : 22
[SG2412-secured > maintenance] conf
[SG2412-secured > configuration] no dns_server2
[SG2412-secured > configuration] apply
Pending changes:
dns_server2      =
Apply pending changes? ([y]/n) y
Done
[SG2412-secured > configuration] exit
[SG2412-secured > maintenance] show conf
Last save date: Thu Dec 20 10:18:21 CET 2018
version          : 1.1
name             : SG2412-secured
admin_address    : 192.168.15.168
admin_mask       : 255.255.255.0
admin_gateway    : 192.168.15.254
admin_port_speed :
sgm_address      : 10.0.3.15
sgm_address2     :
sgm_address3     :
sgm_address4     :
secure_com       : yes
dns_server1      : 84.14.137.66
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
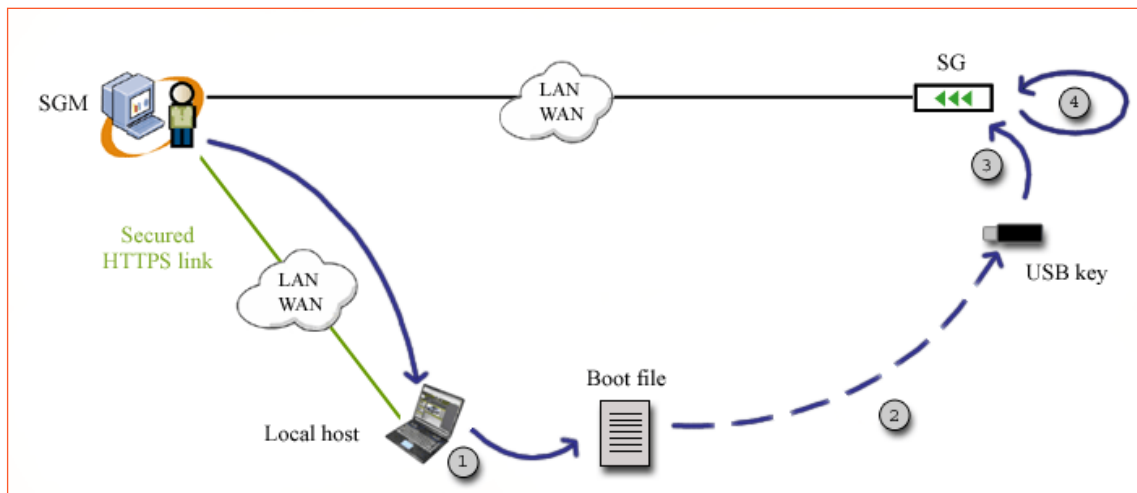3. Plug the USB key on the SG
4. Reboot the SG

Figure 8 - 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 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**.

> (i) **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 on your laptop.

> **(i) 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 checks 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.

The `sgstatus_<sgname>.txt` is created by the SG. It is a copy of the initial file `sgconfig_<sgname>.txt` to which the following information is added:

```
## OLD_BOOT_VALUES {
##
##   SECURE_COM=n
##   CONFIG_EQUIPT_NAME=SG2412
##   PUBLIC_KEY_SGM=
##   DNS_SERVER_1=
##   DNS_SERVER_2=
##
## }

## INFORMATIONS
##
## STATUS_MSG : OK
## DATE_MODIF : Wed Dec 19 15:52:21 2018
## SERIAL : SC1121180030
## MODEL : SG2412
## DEMAND : U
```

2 STATUS OF THE PROCEDURE

The `sgstatus_<sgname>.txt` is created by the SG on the USB stick. It is a copy of the initial file `sgconfig_<sgname>.txt` plus addition information, shown hereafter:

```
## OLD_BOOT_VALUES {
##
##   SECURE_COM=n
##   CONFIG_EQUIPT_NAME=SG2412
##   PUBLIC_KEY_SGM=
##   DNS_SERVER_1=
##   DNS_SERVER_2=
```

```
##
## }

## INFORMATIONS
##
## STATUS_MSG : OK
## DATE_MODIF : Wed Dec 19 15:52:21 2018
## SERIAL : SC1121180030
## MODEL : SG2412

## DEMAND : U
```

In case of errors, 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`).

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 specified with the keyword PUBLIC_KEY_SG. In the following example,
the public key is replaced with a series of dots:
…
## OLD_BOOT_VALUES {
##
##   SECURE_COM=no
##   CONFIG_EQUIPT_NAME=SG2412-test
##   DNS_SERVER_1=8.8.8.8
##   DNS_SERVER_2=84.14.137.65
##   CONFIG_STREAMCORE_SGM_ADDRESS=192.168.15.150
##
## }
##
## PUBLIC_KEY_SG="ssh-rsa ........... root@master-SG"

## INFORMATIONS
##
## STATUS_MSG : OK
## DATE_MODIF : Wed Dec 19 16:13:27 2018
## SERIAL : SC1121180030
## MODEL : SG2412
## DEMAND : U
```

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 SG2412 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 SG2412

The SG2412 manages up to 2 WAN access links.

5.1.1 Simple configuration – 1 or 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.
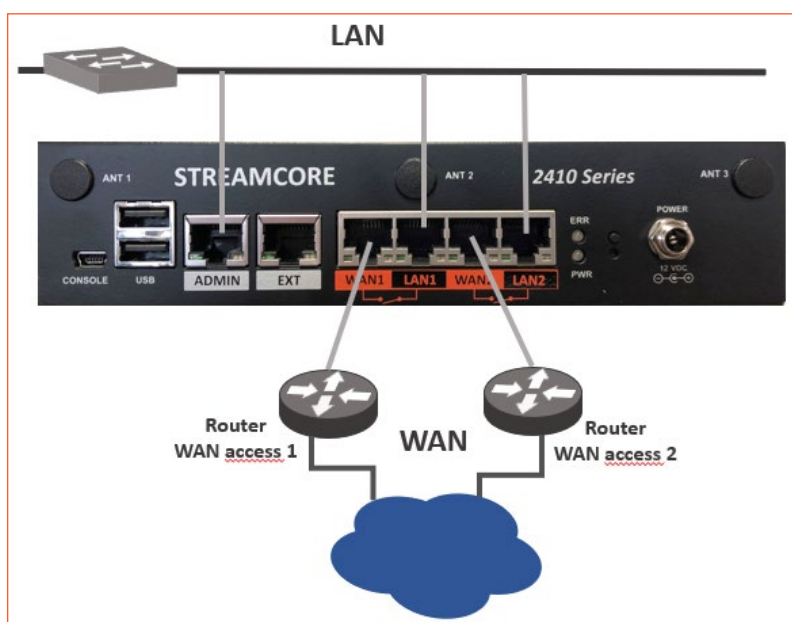

Figure 9 – Deployment to manage 2 WAN links

5.1.2 Dual configuration

This mode is interesting when a site manages 2 WAN access links that are physically far from each other. The Dual configuration monitors WAN access links as active/passive, active/active or an aggregate of the 2 links.

In Dual mode, both StreamGroomers must be connected with their interfaces EXT. This management link allows the primary SG to monitor the network flows received on the secondary access link. It is also used by the secondary SG in order to monitor the status of the primary SG. Both SG communicate though their EXT interfaces with a layer 2 protocol. This means that the StreamGroomers must belong to the same LAN.

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

The figure hereafter shows how to connect 2 SG2412 to create a DUAL configuration.
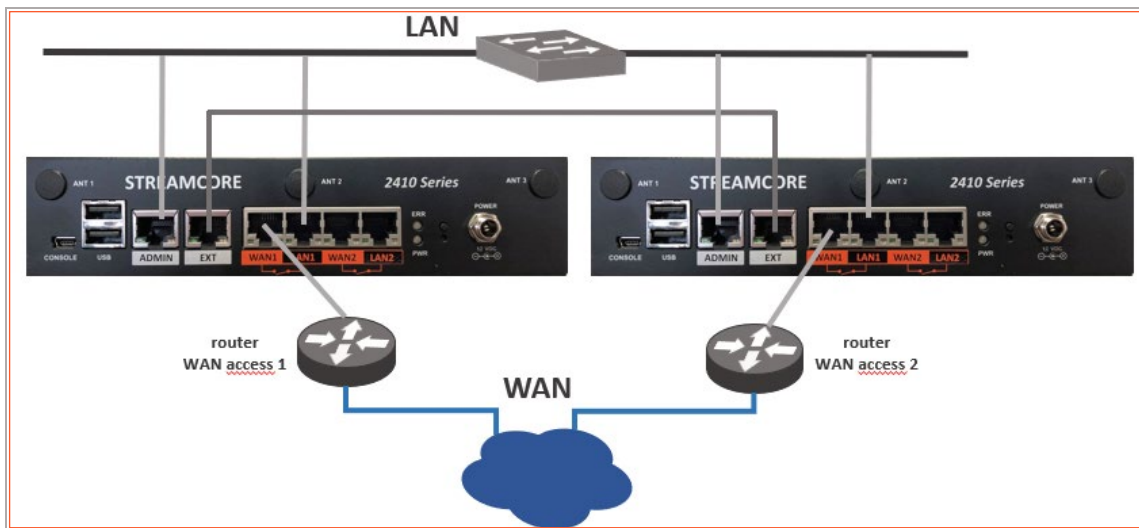
Figure 10 - DUAL configuration

> ℹ **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.

> ℹ **Case of a switch installed on the WAN side**
> If the WAN1 interfaces of the SG are connected to a switch, the SG parameter named **Switch WAN side** must be set to **Yes** for the two SG of the Dual.
> Refer to StreamView User Guide for further details.

5.1.3 Tandem configuration

Tandem mode is an interesting feature to ensure *high availability* of the Streamcore services, i.e. that network monitoring, QoS and WAN acceleration features are always available. The Tandem configuration monitors WAN access links as active/passive, active/active or an aggregate of the 2 links.

To implement high availability, two appliances SG2412 are required. They must be connected with their EXT interfaces to communicate. The secondary SG monitor the primary SG through the EXT link. If the main SG fails, the secondary becomes active and continues operating on the network.

> ℹ **Case of a switch installed on the WAN side**
> If the WAN1 and WAN2 interfaces of the SG are connected to a switch, the SG parameter named **Switch WAN side** must be set to **Yes** for the two SG of the Tandem.
> Refer to StreamView User Guide for further details.

A Tandem of 2 ports consists in using only the LAN1 and WAN1 interfaces of both appliances to manage a single WAN access link.

A Tandem of 4 ports consists in using LAN1 and WAN1 of both appliances for a first WAN access link and LAN2 and WAN2 interfaces of both appliances for the second WAN access link.

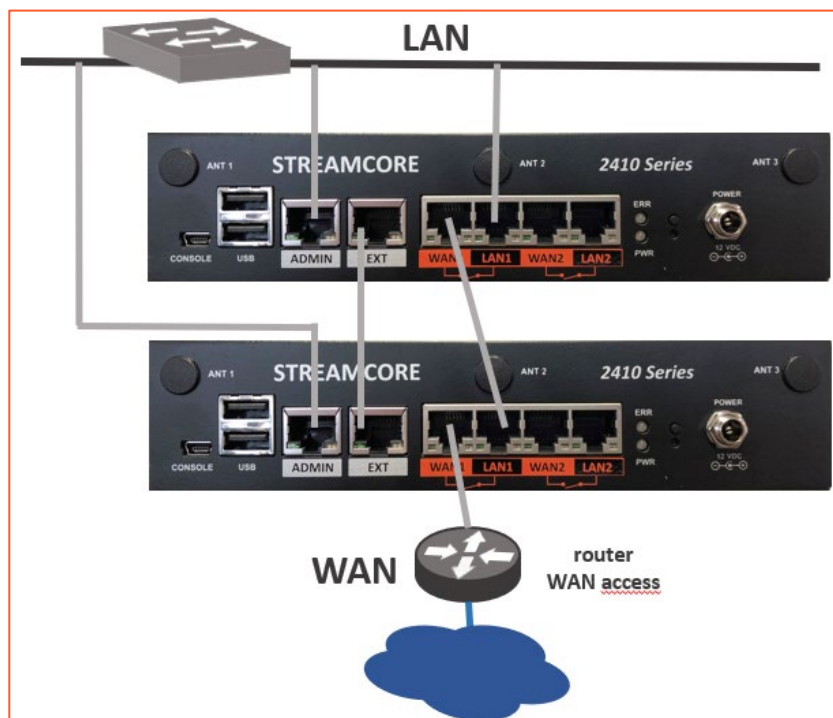The figures below explain the wiring to create the 2 Tandem configurations.

Figure 11 – SG2412 in Tandem of 2 ports configuration (1 WAN access link)
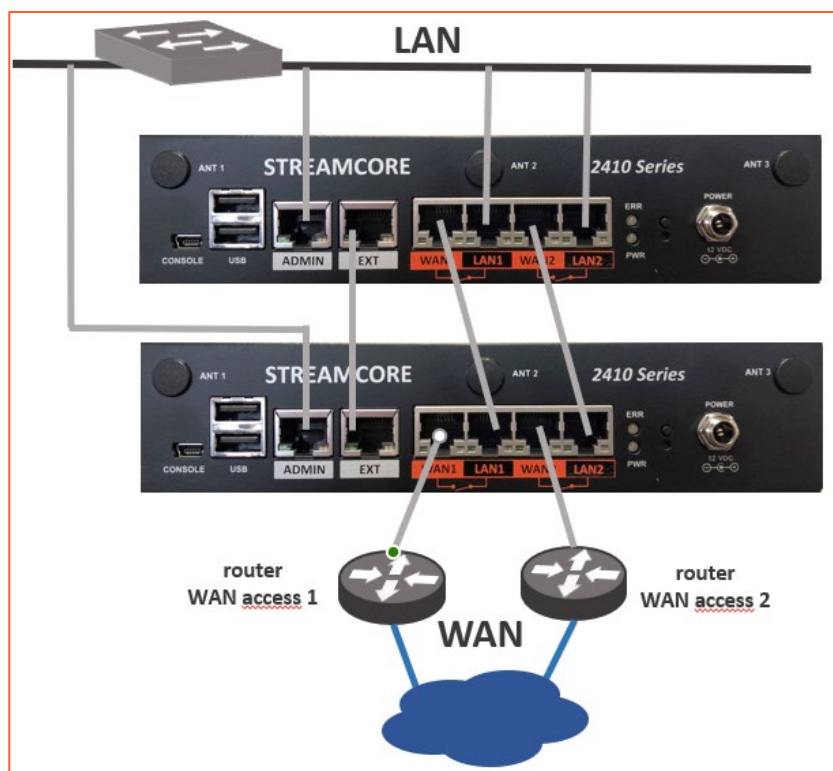
Figure 12 – SG2412 in Tandem of 4 ports configuration (2 WAN access links)

5.1.4 SG inserted between the LAN and a switch

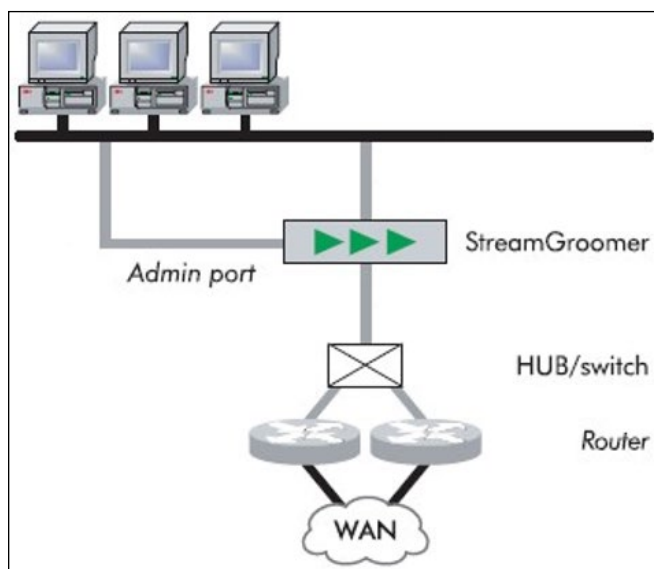A SG can be transparently inserted **in the LAN, in front of a switch**:

Figure 13 - 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.

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.

☐ Check the **speed and duplex** parameters (check visually the LEDs of the physical interfaces).

6.2 CHECK CONNECTIVITY WITH PING

It is possible to check the availability of a StreamGroomer with the *ping* command 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 below in the Maintenance mode to check that the SGM is reachable from the SG.

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

Use Ctrl-C to stop the execution of the *ping* command. 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 SG2412 are listed in the following table:

Model	SG2412
Height	4,3 cm
Width	19 cm
Depth	25 cm
Weight	2 kg
Fan	Fanless
Power and type	60W Power AC adapter, 100-240V 50-60Hz EU power plug CEE 7/7 or 7/16 compatible
Rackmount	Rackmount kit provided
Operating Temperature	0°C to 65°C
Storage temperature	-20°C to 85°C
Relative humidity	5% to 90%
MTBF	> 85000 hours
Network interfaces (LAN1, WAN1, LAN2, WAN2)	4 x 10/100/1000 Base-T 2 pairs with bypass integrated

Management for Dual and Tandem modes (EXT)	10/100/1000 Base-T
Administration interface (ADMIN)	10/100/1000 Base-T
Console interface	USB Type Mini-B
USB ports	2 x USB Type A
Compliances	CE Class B FCC Part 15 Class A IC Class A IEC-60950 RoHS/WEEE EMC
Battery	LITHIUM METAL BATTERY The SG2412 uses a lithium metal battery (CR2032).