

Televes®



coax
DATA
1Gbps HDTV

EN

Ref.769330
CoaxBox User Guide

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Important Safety Instructions



Before handling or connecting the equipment, please read this manual!

This equipment has been built in accordance with international safety standards.

Dispose of electronic devices you no longer need in a respectful way with the environment and in accordance with the relevant regulations.

Please read the following safety tips carefully.

POWER:

Adapter ~ 108-254V 50 / 60Hz, 12V output 0.7A.

The base socket must be near the equipment and easily accessible.

OVERLOAD:

No overload electrical, extensions or adapters to avoid the risk of fire or electric shock.

LIQUIDS:

Do not expose the adapter to the fall or splashing water.

Not place containers containing liquids near of equipment.

SMALL OBJECTS:

Avoid proximity of small metal objects. They could enter in slots or connectors on the computer and cause serious damage.

CLEANING:

Unplug the network adapter before cleaning.

Using a soft cloth, moistened in water (without detergents) to clean the outside of the machine.

VENTILATION:

Place the computer in a place all right ventilated with uncovered slots.

Avoid exposure to sunlight, heat sources or flames (such as burning candles).

Do not place other equipment on top.

CONNECTIONS:

Perform only recommended to prevent possible damage connections.

LOCATION:

Place equipment in a protected inner place to avoid electric shocks, rain or direct sunlight.

COMPLIANCE IN RELATION TO HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

Safety information

This product has been evaluated in relation to RF exposure in humans with reference to the limits set by the ICNIRP (International Commission on Radiation Protection Non-Ionizing). For low power transmissions, evaluation was based on EN 62479. For other wireless transmissions, evaluation has been based on EN 50385, determining a limit under 20 cm.

Installation instructions

Install the device with a minimum distance separation of 20 cm from the areas where people normally remain sure.



This symbol indicates that equipment meets the safety requirements for Class II equipment



This symbol indicates that the equipment meets the safety requirements for Class II equipment



This symbol indicates that equipment meets the CE marking requirements

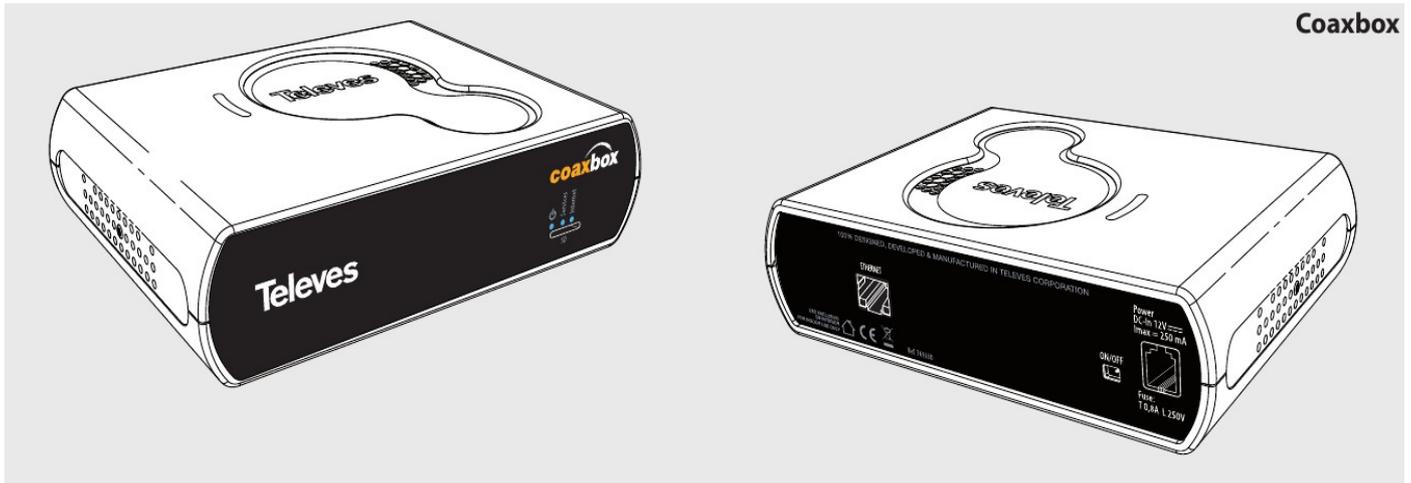


This symbol indicates that this product can not be treated as conventional household waste. Make sure product is disposed of correctly.

Introduction

CoaxData CoaxBox

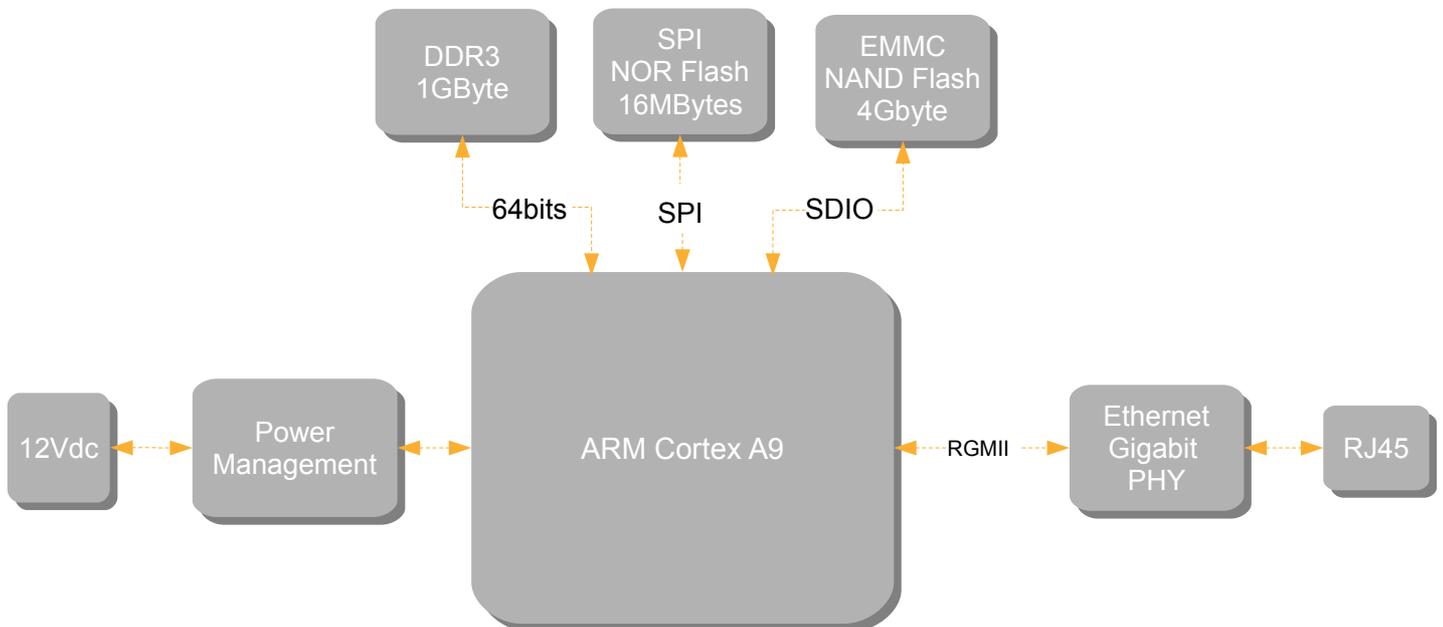
CoaxBox, ref.769330, is a device with preinstalled software to manage CoaxData networks. It allows the provisioning and monitoring of Coaxdata networks in a simple and intuitive way.



ENGLISH

Technical feature:

- CoaxBox incorporates a powerful iMX.6 ARM quad-core CPU at 1Ghz that allows management and monitoring of one or more CoaxData networks.
- Gigabit Ethernet connector 1000BASE-T to connect device to the installation
- RJ9 power connector, with a flange which prevents accidental disconnection.



Ref.769330 Block Diagram

Main features

- Monitoring the state of coaxial network through the Access Control application.
- Monitoring and provisioning of the devices 769301 by CoaxProv application.
- It has three LEDs to indicate that the device is properly accessing Internet and indicates services are running correctly.

System Requirements

- The system is Plug and Play and requires no additional software or driver.
- To use this device requires a PC with an Ethernet interface.
- Support HTML5 Web browser. Mozilla Firefox or Google Chrome are strongly recommended.

Other CoaxData devices

Ref.769330 complements CoaxData 1Gbps products family:

- Ref.769201 CoaxData™ 1Gbps-HDTV
- Ref.769202 CoaxData™ 1Gbps SFP-HDTV With
- Ref.769203 CoaxData™ 1Gbps-HDTV 1xEth
- Ref.769301 CoaxData™ 1Gbps-HDTV Coax + Wifi
- Ref.769220 CoaxData™ TV-Data Filter diplexer 2-68 MHz / 87-2150 MHz
- Ref.769210 CoaxData™ SFP optical adapter 1000 Base-X 2 FO



**Ref.769201 CoaxData™
1Gbps HDTV**



**Ref.769202 CoaxData™
1Gbps HDTV con SFP**



**Ref.769203 CoaxData™
1Gbps HDTV 1xEth**



**Ref.769301 CoaxData™
1Gbps-HDTV Coax + Wifi**



**Ref.769210 CoaxData™
SFP Module 1000 Base-X**



**Ref.769220 CoaxData™ 1Gbps
diplexer filter TV-Data 2-68 MHz /
87-2150 MHz**

CoaxBox Package content



1	CoaxData CoaxBox
2	12VDC power supply with RJ9 connector

Knowing CoaxBox

Device Connections



1xEthernet RJ-45

Ethernet connector 1000BASE-T for Connect CoaxBox to a PC or laptop. It allows autonegotiation with the host for maximum link speed and Auto-MDIX which avoids using Ethernet crossover cables.

RJ9 Power connector

12Vdc connector powers the device for operation. RJ9 connector is equipped with a flange which prevents power being accidentally disconnected.

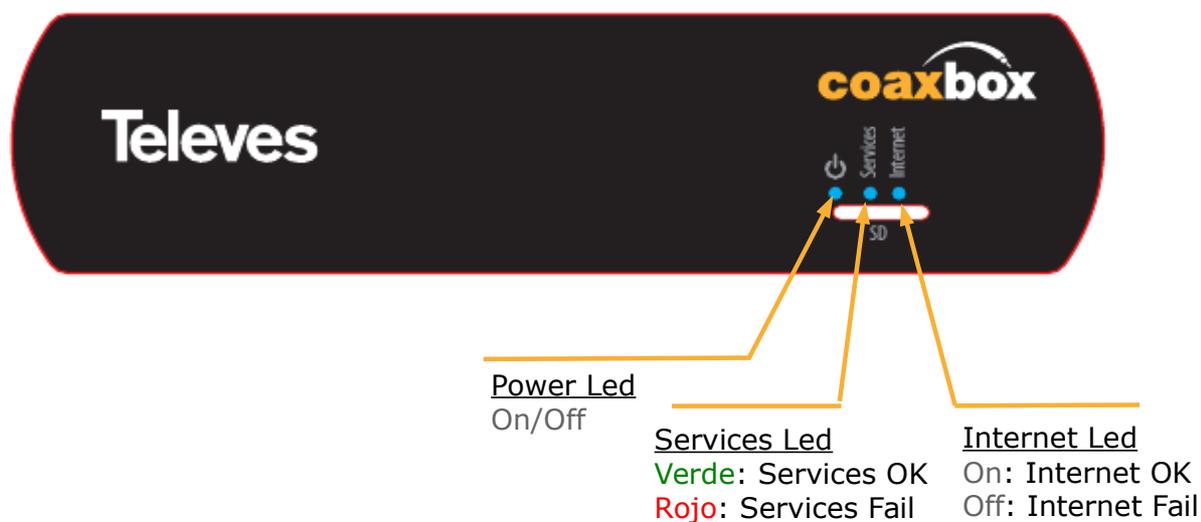
Power Switch Off

Use power switch to turn on/off device. LED on the front that indicates when device is on and working.

SDCard Expansion Slot

Allows to increase storage capacity of the CoaxBox. By default, storage capacity is 4GB corresponding to internal eMMC. Use this slot to increase capacity.

LED device



Power Led

It indicates that device is correctly power:

- **Green:** The device is on and working.
- **Off:** The device is not on. Check switch position and device is powered via RJ9 connector supply.

Led Services

This LED indicates that CoaxBox services are running correctly:

- **Green:** Host Services are running OK.
- **Red:** Management Services are failing or are not running properly.

Led Internet

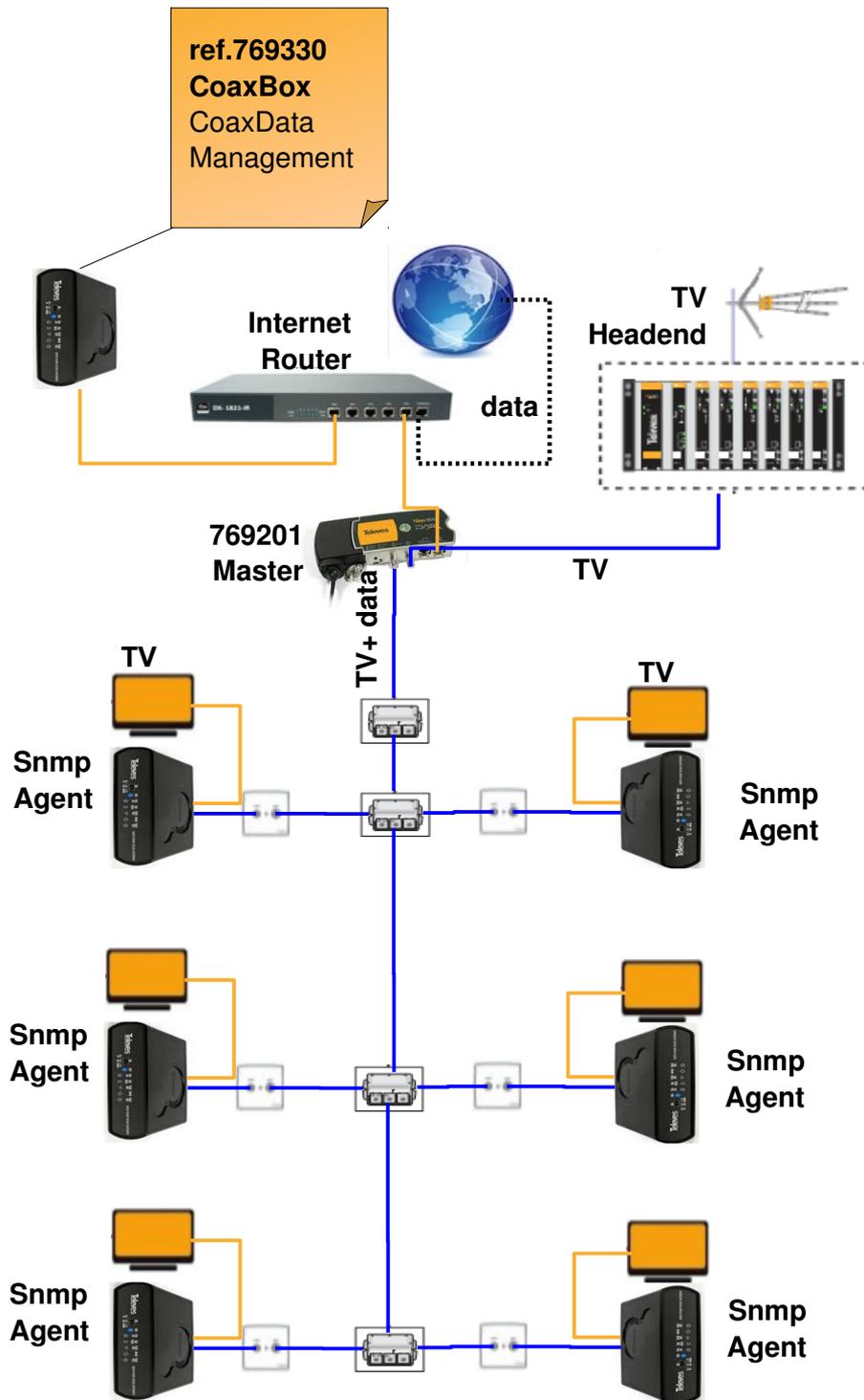
This LED indicates status of internet connection:

- **Green:** Indicates that device has Internet access.
- **Off:** Indicates that the device does not have Internet access. Check device connections, if LED still keep off check Internet access provided by your ISP.

Installing CoaxBox

The figure shows an installation example of CoaxBox in a managed CoaxData network

- CoaxBox is installed at the coaxial headend and connected directly to the CoaxData master or via an Ethernet switch. CoaxBox will search for devices and process the received reports to send alarms to installer via email or SNMP.
- ref.769301 Slave devices has an active SNMP Agent. It should be configured to send reports to the CoaxBox.



Configure CoaxBox

Device has an Ethernet interface with two IP addresses:

- eth0: Interface is pre-configure as active DHCP client.
- eth0:1 : Alias Interface with fixed 169.254.1.254 IP Address.

Acceso Basico del producto/Basic Product Access

Direccion IP/IP Address:

169.254.1.254/24

Servicios/Services CoaxBox

Web Interface: <http://169.254.1.254>
ssh (root/76Coax93Box30): root@169.254.1.254
Admin Web (Admin/Televes1): <http://169.254.1.254:157>
CoaxProv (Admin/Televes1): <http://169.254.1.254:15710>
AccessControl (Admin/Televes1): <http://169.254.1.254:15708>



CoaxBox Web

Device has a Web Service running on port 80, all services running inside CoaxBox are available on this web and redirect to proper service when click on button.

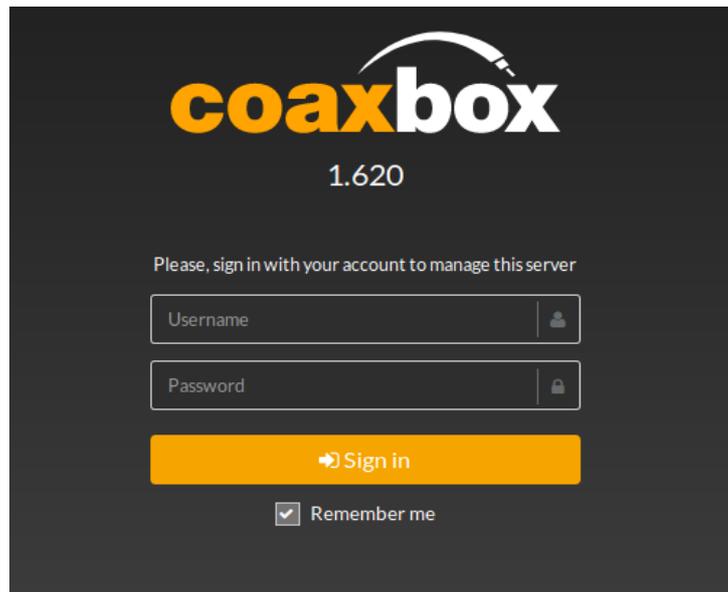
Following services are available:

- **Administration Web:** Redirects browser to CoaxBox Web Administration(port 15712)
- **CoaxProv:** 769301 Device Management (port 15710)
- **AccessControl:** Coaxdata Device Management (port 15708)



CoaxBox Administration Web.

For device network configuration and another administration tasks, a Web service running on 15712 port is available.



Use the following account to access to CoaxBox web service

CoaxBox Management Web

Web: <http://169.254.1.254:15712>

Usuario/User: Admin

Password: Televes1



Device access via ssh

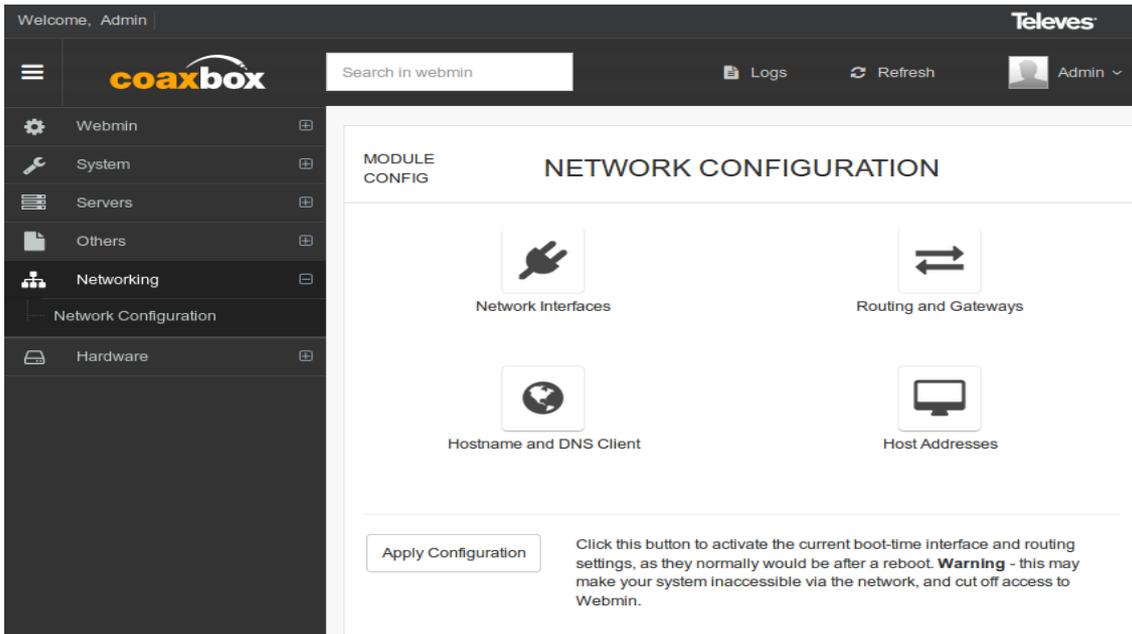
The most immediate way to access to device is via ssh. To do this configure the host IP 169.254.1.253/24 and perform the following ssh command to access.

```
$ sshpass -p 76Coax93Box30 ssh -o StrictHostKeyChecking = no root@169.254.1.254  
coaxdataservices root @: ~ #
```

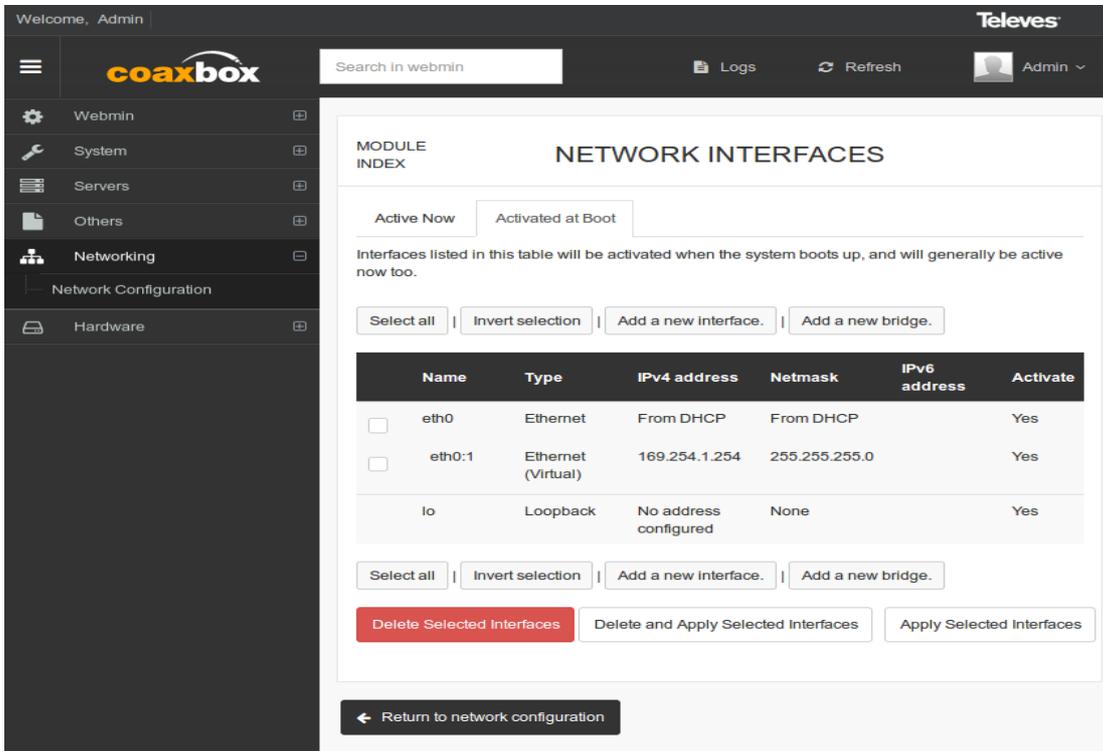
SSH Terminal can execute any command on the CoaxBox such as install new packages, remove/add services or restart device.

Configure network interfaces

To change the configuration of the eth0 interface to assign an static IP instead of DHCP interface; Go to **Network>Network Interfaces** on Web interface



This shows device interface's list



Click on eth0, select the static settings and press **Save** to save interface configuration

Boot Time Interface Parameters

Name: eth0

Activate at boot? Yes No

IPv4 address configuration: No address configured From DHCP From BOOTP Static configuration

Static configuration details:
 IPv4 address: 192.168.254.117
 Netmask: 255.255.255.0
 Broadcast: Automatic []

IPv6 addresses configuration: IPv6 disabled From IPv6 discovery Static configuration

Static configuration details:
 IPv6 address: []
 Netmask: 64

MTU: Default []

Virtual interfaces: 1 (Add virtual interface)

Hardware address: Default []

Buttons: Save, Delete and Apply, Delete

On the menu **Network Interfaces**, select eth0 and click **Apply Selected Interfaces**, to apply previously saved configuration.

Welcome, Admin Televés

coaxbox Search in webmin Logs Refresh Admin

MODULE INDEX **NETWORK INTERFACES**

Active Now Activated at Boot

Interfaces listed in this table will be activated when the system boots up, and will generally be active now too.

Select all | Invert selection | Add a new interface. | Add a new bridge.

Name	Type	IPv4 address	Netmask	IPv6 address	Activate
<input checked="" type="checkbox"/> eth0	Ethernet	From DHCP	From DHCP		Yes
<input type="checkbox"/> eth0.1	Ethernet (Virtual)	169.254.1.254	255.255.255.0		Yes
<input type="checkbox"/> lo	Loopback	No address configured	None		Yes

Select all | Invert selection | Add a new interface. | Add a new bridge.

Delete Selected Interfaces | Delete and Apply Selected Interfaces | **Apply Selected Interfaces**

[Return to network configuration](#)

Security Considerations

Please note that access to the CoaxBox should be restricted.

- The firewall has not been enabled.
- Admin access account root/76Coax93Box30 is public, as this manual. Changing this password should be done prior to any further configuration.
- User Access Account Admin/Televés1 is public, as this manual. Changing this password should be done prior to any further configuration.

Operating Considerations

Consider the following notes about CoaxBox services:

- Maximum number of reports that CoaxBox can process is 600 reports/minute. Please check number of CoaxData devices and report interval to avoid exceeding this value.
- If you install multiple CoaxBox in your CoaxData network, only one CoaxData AccessControl can be running on each broadcast domain. Enable Access Control only on one CoaxBox.

User Account Management

For security reasons use could consider to change user/system account's password. Please, go to **System** > **Change Passwords** on Web management.

SELECT A USER TO CHANGE HIS OR HER PASSWORD			
root	daemon	bin	sys
sync	games	man	lp
mail	news	uucp	proxy
www-data	backup	list	irc
gnats	nobody	ntp	sshd
messagebus	zabbix	mysql	Admin

Select account, and change the password

Changing Unix user password

Changing password for: root (root)

New password:

New password (again):

Force user to change password at next login?

Change password in other modules?

CoaxBox services

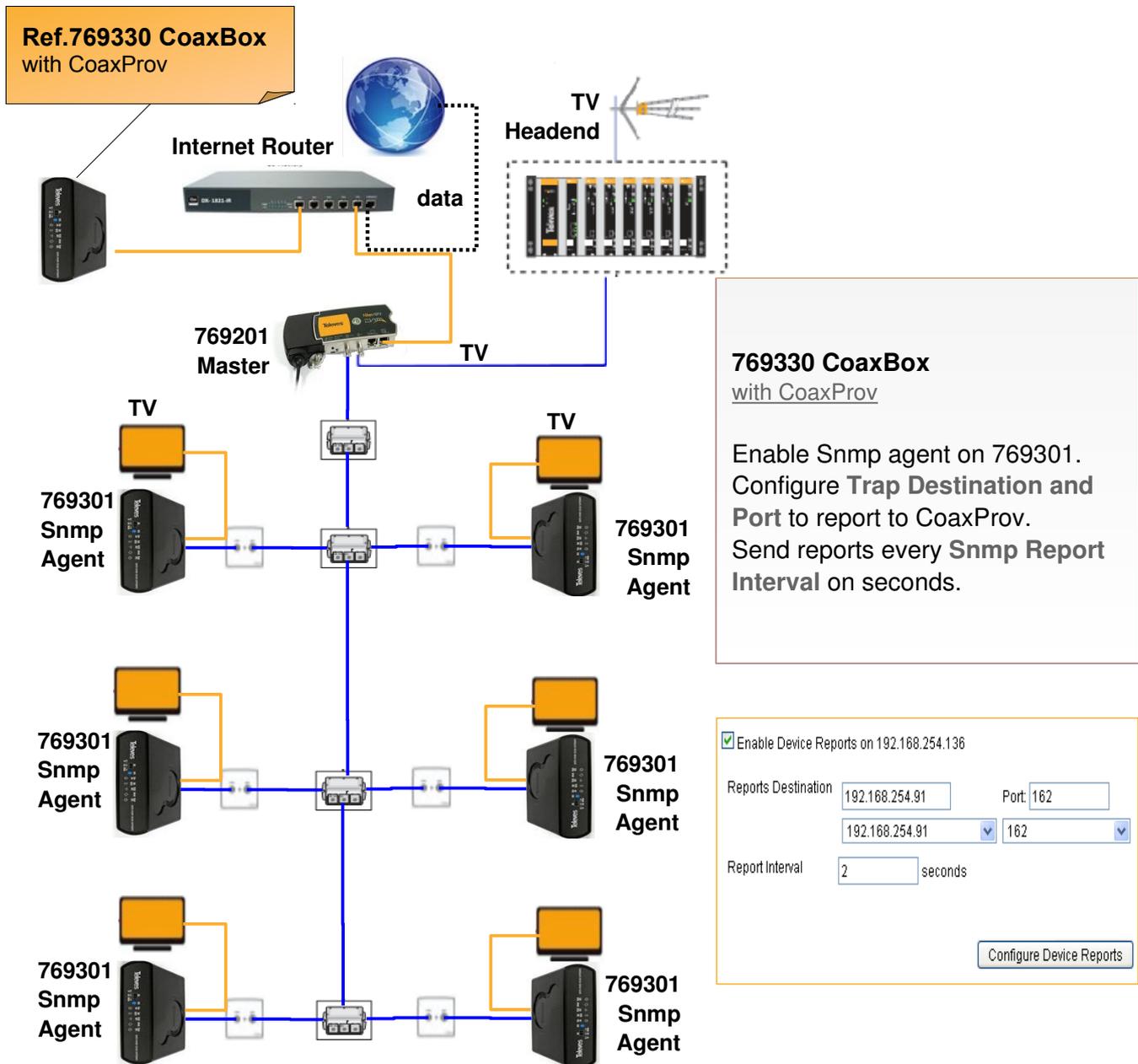
CoaxBox comes with several preinstalled services:

- **CoaxProv**: Application for ref.769301 management.
- **CoaxData AccessControl**: Application for CoaxData management .

CoaxProv

CoaxProv™ is a tool to manage ref.769301 devices. With CoaxProv™ provision and monitor 769301 devices is easy. You can also check status of coaxial and wireless networks as well and generate alarms when a malfunction is detected.

This application is developed specifically for OEMs and network operators who need to remotely manage CoaxData devices and check the status of the network in real time.Installation diagram



Main features CoaxProv™

- Upgrade 769301 firmware and configuration.
- Support for massive operations to upgrade firmware or configuration of multiple devices.
- Embedded TFTP server to Provision device with DHCP protocol options 66 and 67.
- Discovery of local 769301 devices with LLDP layer-2 protocol.
- Discovery of remote devices with IP scanning.
- Configure devices to send reports to CoaxProv and record reports on an internal database.
- Monitor device wifi links and provide info of device VAPs and Wifi stations connected.
- Monitor device resources like interfaces, CPU, memory and disk.
- Monitor Coaxial links and provide info of Coaxial Rate, Signal to noise and Attenuation.
- Monitor Wifi links and provide info of stations connected to VAPs and VAP state.
- Monitor device status and provide list with CPU, memory and disk usage.
- Create Graphics with all device info collected.
- Generate device alarms when device stop to send reports to CoaxProv or cannot load device configuration. Track device activity with device events.
- **Automatic generation of e-mails or snmp traps** that enable propagate alerts to operator monitoring system for major incidents. To avoid alarm flooding, email or trap alarm must match rule on alarm filters, so only specific alarms are propagated to external monitor system.
- Device Groups. Grouping devices help to track and avoids long lists with a lot of devices, also help to locate device when grouping by building block or hotel floors.



Number of device reports cannot exceed 600 reports/minute!

In your monitoring needs exceed that amount, It is recommended the installation of multiple CoaxBox devices on your network and segment network management.



Calculate storage needs for application or use an external SD!

Ref.769330 box has an internal 4GB eMMC. Depending on the number of reports/minute and time to keep reports in database, device storage capacity can be exceeded. If storage needs exceed capacity, CoaxProv detects it and sends an alarm, eliminating the oldest reports. Use an external microSD to avoid this. Simply insert the microSD card into expansion slot and restart your system. On boot, internal DB is copied automatically to external microSD card and new reports are stored on it.

microSD Card **must have only one partition** with **Ext4** filesystem.

Web interface

The first step you must take the installer is set CoaxProv. This step is performed via Web port 15710.

- Opening a browser and indicate the address: http://<CoaxBox_IP>:15710
- Use the following account

user: **Admin**

password: **Televés1**

Identificación requerida

http://192.168.254.117:15710 solicita su nombre de usuario y contraseña. El sitio dice: "restricted area, WARNING!!"

Nombre de usuario:

Contraseña:

Calculation of storage capacity

An important parameter of CoaxProv is the calculation of storage needs. Ref.769330 has a 4GB on internal eMMC, but in the case that available space is exhausted the CoaxProv emits an alarm and deletes the oldest records. This capability is controlled by the configuration parameters of the [Provision Database> Provision Configuration> Database Configuration](#)

DATABASE CONFIGURATION

Device Database Configuration. Changes Maximum device database storage size on disk, Display Interval on Charts or maximum number of events on database.

Keep Records For Last	<input type="text" value="24 hours"/>	<small>How long database stores device info (by default 24 hours) This value indicates how many time device registers are kept on database and controls database storage disk usage (1KB per device report). Use with Caution!! 200 devices reporting every minute uses 200 MB per day.</small>
Chart Display Interval	<input type="text" value="1 hour"/>	<small>Interval range to display values on charts (default 1 hour) High display ranges causes javascript engine on Web Browser takes long time to create charts.</small>
Max. Events	<input type="text" value="5000"/>	<small>Maximum Number of events stored on database.</small>
Unprocessed Reports Threshold	<input type="text" value="400"/>	<small>Unprocessed devices reports Threshold. When NMSLite cannot process all received device reports sends event named TLV_EXCEEDS.To solve, increase this threshold value, change report interval on devices or segment management system and install more nmslite applications on installation and configure devices to send reports to several nmslites.</small>

Repair NMSLite Database. Delete all records and restart services again

As seen in the image, device reports are stored for 24 hours. The consumption of each report in the database is 1KByte/report. So if we have a system with 600 devices, sending a report every minute, the storage capacity per day will be:

$1\text{KB/report} \times 600 \text{ reports/minute} \times 60 \text{ min/hour} \times 24 \text{ hhour} = 864000 \text{ KB} = 864\text{MB/day}$

Changing the time that reports are stored on system (Keep Records For Last) from 24h to 1 week, the need for storage will be:

$864\text{MB/day} \times 7\text{days} = 6,04\text{GB}$

The value required for storage is 6GB, exceeding the internal capacity of 4GB.

To increase the storage capacity insert an external microSD into the expansion slot of the device. microSD Card **must have only one partition** with **Ext4** filesystem. Reboot the system using the Administration Web on port 15712: [System>Boot And Shutdown>Reboot System](#).

On boot system will detect that there is an microSD and will install internal database on EMMC on SD, without risk of information will be lost.

Install/Uninstall CoaxProv service

By default the CoaxProv starts when the unit does. Service configuration can be performed via Web Administration interface on port 15712.

Go to **System > Bootup and Shutdown**, select service called **provisioning**

<input checked="" type="checkbox"/>	provisioning	Yes	
<input type="checkbox"/>	rc.local	Yes	Run /etc/rc.local if it exist
<input type="checkbox"/>	rc_gpu.S	No	
<input type="checkbox"/>	rc_mxc.S	No	
<input type="checkbox"/>	run-postlnsts	No	
<input type="checkbox"/>	sgw_t_coaxbox_ledsd	Yes	
<input type="checkbox"/>	snmpd	Yes	
<input type="checkbox"/>	sshd	Yes	
<input type="checkbox"/>	xinetd	Yes	

Create a new bootup and shutdown action.

- **Start/Stop/Restart** to start / stop the service.
- **Start on Boot:** Starts the service at boot
- **Disable On Boot:** Disables the service at boot
- **Start Now and On Boot:** Starts the service at startup and now.
- **Stop Now and On Boot:** Starts the service at startup and now.

The same task can be performed through an SSH connection. Commands below shows how to configure this service through a terminal.

```
# To start the service
coaxdataservices root @: ~ # /etc/init.d/provisioning start
# To stop the service
coaxdataservices root @: ~ # /etc/init.d/provisioning stop
# To install the service (it will start when CoaxBox is started)
coaxdataservices root @: ~ # update-rc.d provisioning 50 defaults 20
# To remove the service (service will not start when you start CoaxBox)
coaxdataservices root @: ~ # update-rc.d -f provisioning remove
```

Documentation

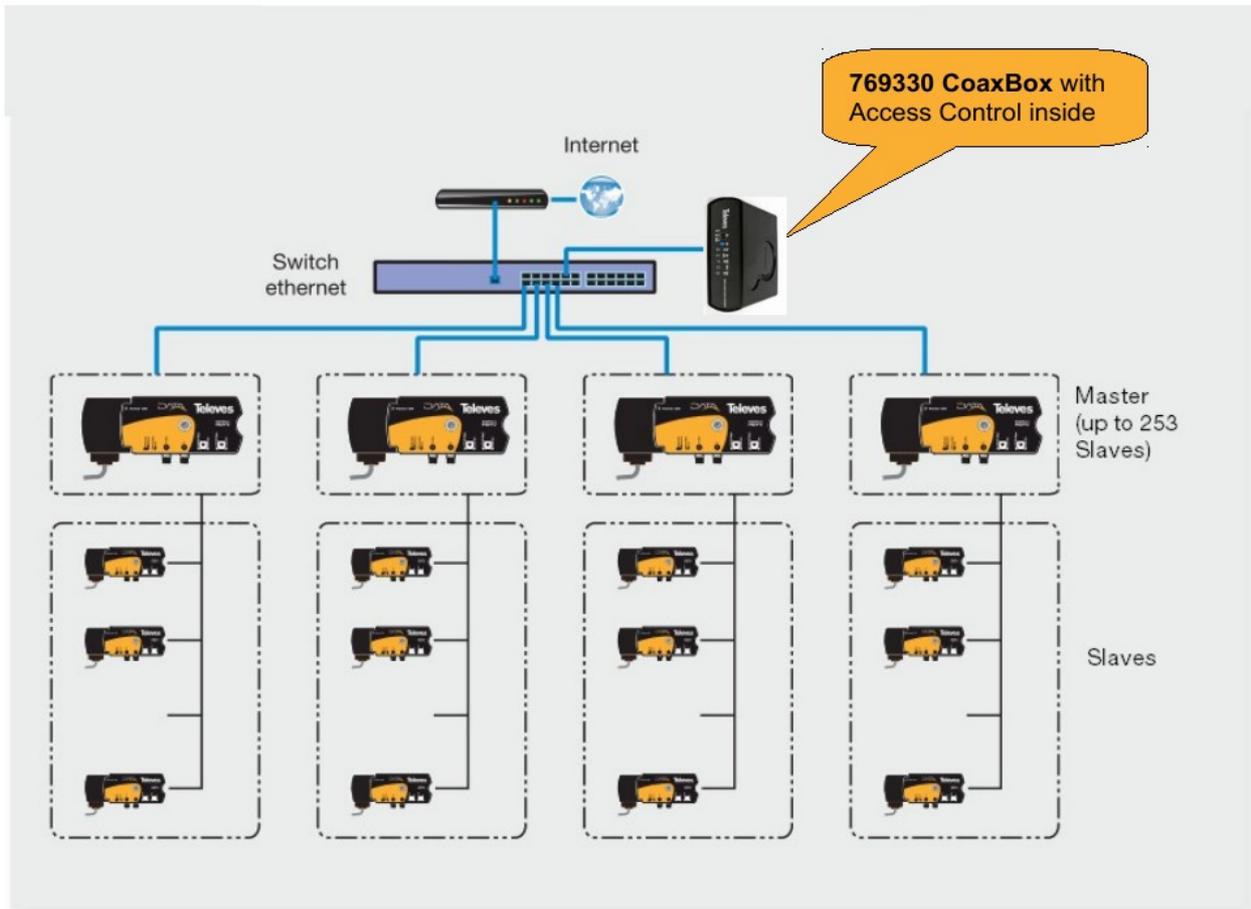
Next table shows CoaxProv documentation for Web interface and 769301 SNMP agent. Check your CoaxData documentation or contact with your Televés support.

Document	Language	Description
CoaxProv_User_Guide_003_ES	SPANISH	Manual CoaxProv
CoaxProv_User_Guide_003_EN	ENGLISH	Manual CoaxProv (EN)
DoC-AN_CoaxData_ref769301_Snmp_Support_002_ES	SPANISH	Ref.769301 SNMP Agent
DoC-AN_CoaxData_ref769301_Snmp_Support_002_EN	ENGLISH	Ref.769301 SNMP Agent (EN)

CoaxData AccessControl

The application **CoaxAccessControl™** allows setting **CoaxData™** devices in a simple and intuitive way to establish different parameters of access to coax medium, check installation status and link quality between devices.

Installation diagram



Main Features

- ◆ Configure the access mode of the coaxial modems **CoaxData1Gbps** the medium such that can enable / disable a device and set parameters such as access bandwidth and user limit modem.
- ◆ check **installation status** determining the rate links between different devices.
- ◆ **Alarm generation** to notify the user of any impact on the system as a link loss of a device or poor quality, and access to the current network situation by implementing an SNMP agent.
- ◆ The system configuration can be done by **SNMP protocol** or through a simple Web interface for users without technical knowledge of this protocol. For this it provides a complete specification MIB defines all SNMP objects implemented by SNMP agent.
- ◆ **Automatic generation of e-mails** that enable ongoing monitoring and warning for major incidents in both the management system itself as devices to manage.



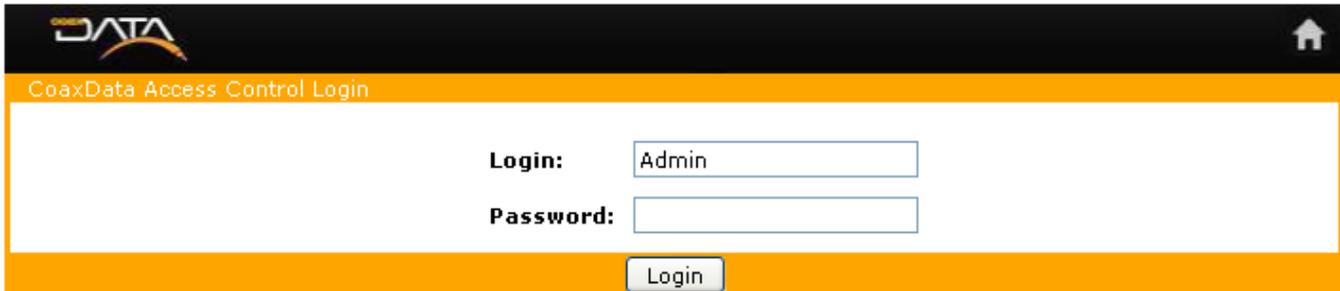
Multiple CoaxData AccessControl on the same network segment are not allowed!

Depending on the characteristics of your network, you may need to segment the monitoring and install several CoaxBox in your installation. **Only one AccessControl can be enabled.** See below instruction to enable/disable AccessControl con CoaxBox.

AccessControl Web interface

The first step required of the installer is to configure the access control system indicating operating parameters. This step is performed via un port Web.

- Opening a browser and indicate the address: http://<CoaxBox_IP>:15708



- Use the following account to access.
user: **Admin**
password: Televes1.

Enable/Disable AccessControl Service

By default CoaxBox start AccessControl service at startup.

Use the Web management to configure this CoaxBox service. Go to **System > Bootup and Shutdown** select service called coaxdataaccesscontrol and click on start/stop/install/uninstall button.

Action	At boot?	Description
<input type="checkbox"/>	No	
<input type="checkbox"/>	Yes	The Apache HTTP Server is an extensible server
<input type="checkbox"/>	No	
<input checked="" type="checkbox"/>	Yes	
<input type="checkbox"/>	Yes	cron is a standard UNIX program that runs user-specified
<input type="checkbox"/>	Yes	D-Bus is a simple interprocess messaging system, used



Multiple CoaxData AccessControl on the same network segment are not allowed!

In case there are several AccessControl applications running on the same network segment, use service options to disable service on all CoaxBox except one.

Service can also be configured through ssh terminal.

```
# To start the service
coaxdataservices root @: ~ # /etc/init.d/coaxdataaccesscontrol start
# To stop the service
coaxdataservices root @: ~ # /etc/init.d/coaxdataaccesscontrol stop
# To install the service (it will start on CoaxBox bootup)
coaxdataservices root @: ~ # update-rc.d coaxdataaccesscontrol 50 defaults 20
# To remove the service (it will not start on CoaxBox bootup)
coaxdataservices root @: ~ # update-rc.d -f coaxdataaccesscontrol remove
```

Documentation

AccessControl has documentation for Web interface and SNMP agent. Consult your CoaxData documentation or contact with Televes Support to get following docs:

Document	Language	Description
AccessControl-Manual_Web_001-ES	SPANISH	Web Access Control Manual
AccessControl-Manual_Web_001-EN	ENGLISH	Web Access Control Manual (EN)
AccessControl-Manual_Snmp_Agent_001-ES	SPANISH	Access Control Snmp Manual
AccessControl-Manual_Snmp_Agent_001-EN	ENGLISH	Access Control Snmp Manual (EN)

CoaxBox Characteristics

CPU	Processor	Cortex A9 Dual Core (i.MX6 DualLite)
Storage	DDR	1 GByte DDR3
	eMMC	4GBytes eMMC (solid-state drive)
	Flash	16MBytes NOR SPI (Boot)
Interfaces	Feeding	RJ9 12V DC
	Ethernet	RJ45 10/100/1000 Base-T Ethernet. Autocrossover.
	Micro SD Slot	Micro SD connector
Leds	Led	Led Power
	Led	Led Internet
	Led	Led Service
Services		CoaxProv™ CoaxData AccessControl™
Directives	CE	UNE-EN 60950-1: 2007 / AC: 2012: product safety UNE-EN 55022: 2008 radio interference UNE-EN 55024: 2011 immunity requirements
account access	Default IP address	169.254.1.254
	root account	user:root Password:76Coax93Box30
	Admin account	User: Admin Password: Televes1
OS	Linux	Linux kernel 3.10.53 or higher
Power	Power Adapter	108 - 254V ~ 50 / 60Hz /// 12V - 0.7A
	Consumption	12V - 250mA, 4W
Temp range.		-5 ... +45 ° C
Dimensions		165 x 120 x 48 mm
Weight		475 g

European technology **Made in**  **EU rope**