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# IxStream Headend

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Quick Guide - Begin working with the IxStream headend



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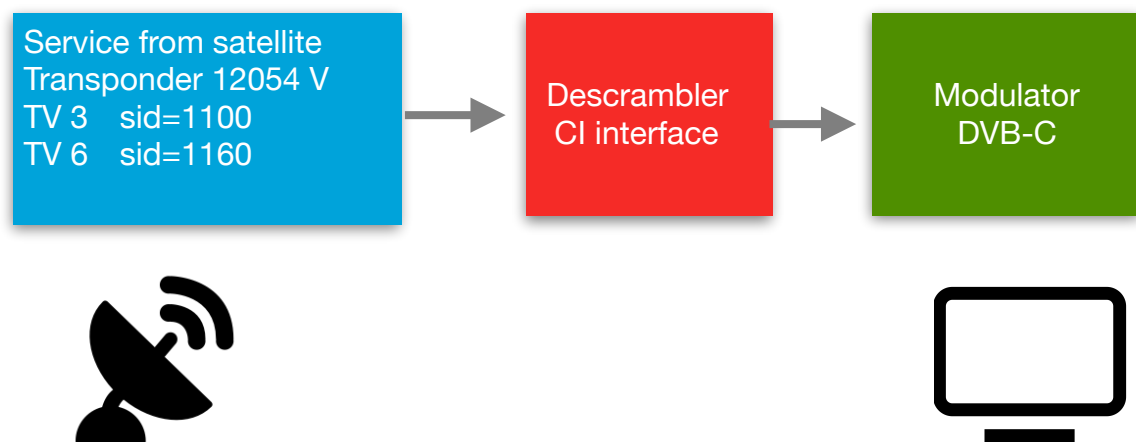
# Introduction

This guide describes how to quickly get started with the IxStream headend.

With IxStream you can setup a complete headend to broadcast TV services through an IP/Cable network. The IxStream headend receives TV services from DVB-S or DVB-T etc. and transmits those to connected tv's or set-top boxes.

## *Example setup*

The example setup used throughout this guide document consists of two TV services received from satellite, they are descrambled using a CA module and then transmitted out over coax as DVB-C.



# Access the headend

To access the web-interface, connect your computer to the LAN port on the headend with an Ethernet cable:

Default IP settings:

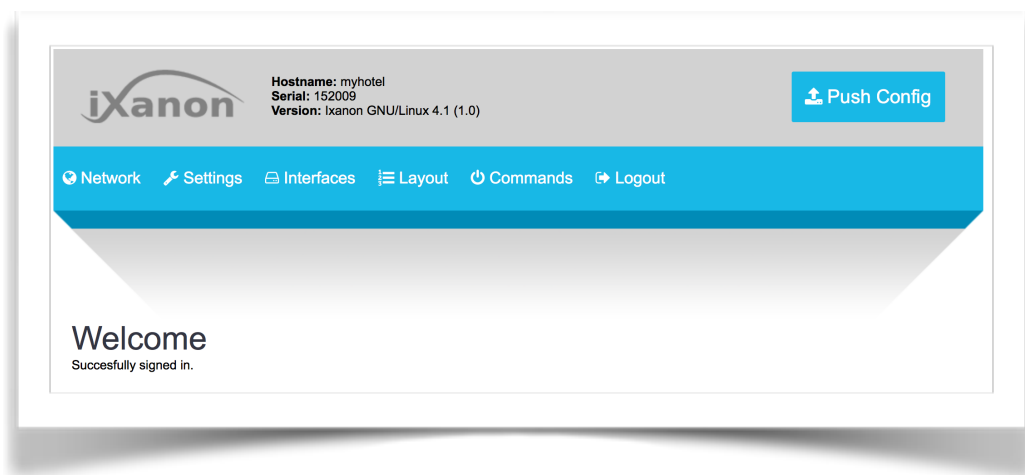
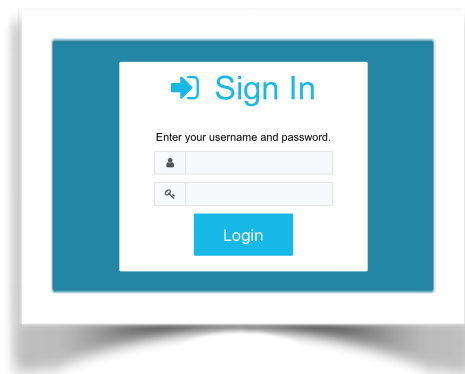
eth0 `http://192.168.0.99:8080/ixui`

eth1 `http://172.16.0.1:8080/ixui`

Default login settings:

Username `admin`

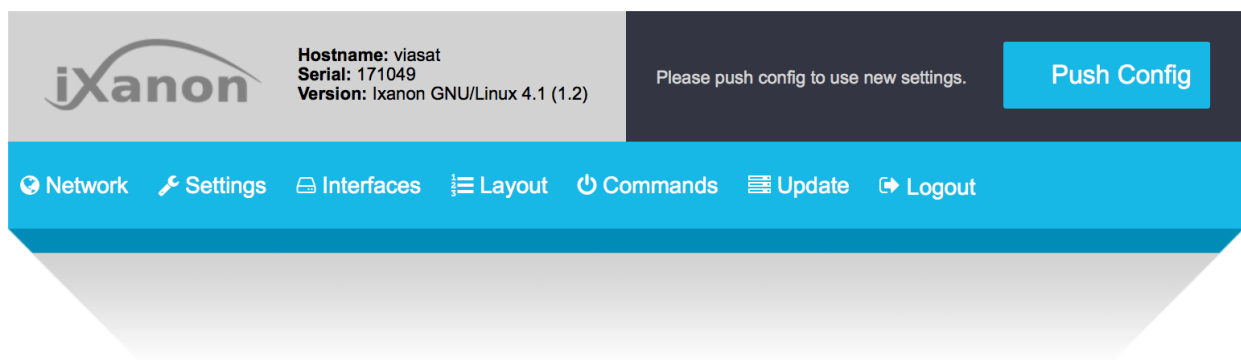
Password `password`



# Important Concepts

## *Push Config*

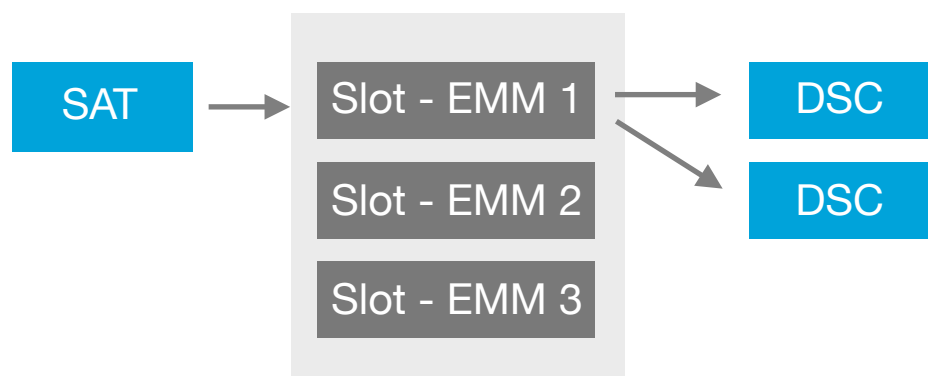
Whenever the configuration has been changed (for example add a service or change frequency) it has to be “pushed” to the system in order to take effect. The “Push Config” button is located in the top right corner of the web interface.



## *EMM*

The descrambler modules needs a emm feed in order to work. The IxStream headend defines three so called emm slots (emm-1, emm-2, emm-3). These are used to distribute emm feeds inside the system.

- The satellite receiver interface acting as emm source is configured to output it's emm on one of the three emm slots.  
*In a typical setup one of the sat interfaces is selected to be the emm source and set to output its emm feed on emm slot 1.*
- Each descrambler interface is configured which of the emm slots to listen on.  
*In a typical setup all descrambler modules are set to listen on emm slot 1.*



# *Routing*

In order for the system to know how the TV signals shall be routed between the interfaces it needs routing configuration. What is important to know is that all signals are handled independently of each other. This means it is allowed to connect services from multiple sat interfaces to the same descrambler or modulator interface. The Routing/Layout process is described more in section Step 4 - Layout.

- TV services are received by the receiver cards in the chassi (DVB-S/S2, DVB-T/T2).
- TV services are descrambled using separate CI descrambler cards in the chassi.
- TV services are transmitted on a DVB-C output mux. A modulator card in the chassi holds 8, 16 or 24 muxes.

# Step 1

## *IP Network Configuration*

In this section the IP network parameters for the headend is set so it can be connected to the LAN.

**#1 Select “Network” from the main menu.**

**#2 Enter the parameters for your network and then press the Save button.**

*The parameters used in this example is shown on the pictures below.*

In the example below the server will be accessible on eth0 at address 192.168.0.99.



Note! For the changes to take effect the server must be rebooted. The reboot button is located under the “Commands” menu.

### Network

**Common Settings:**

Hostname	myhotel
Default Gateway	192.168.0.1
Multicast Route	eth0
DNS1	8.8.4.4
DNS2	8.8.8.8

**Device Settings:**

Type	Protocol	Onboot	IP	Netmask
eth0	static	yes	192.168.0.99	255.255.255.0
eth1	static	yes	172.16.0.1	255.255.255.0

**Save**

# Step 2

## Transmission Parameter Settings

In this section the network transmission parameters are set.

#1 Select “Settings” from the main menu.

#2 Enable DVB-C and/or IPTV output and set the parameters for your network and then press the Save button.

The parameters used in this example is shown on the pictures below.



NOTE! For the changes to take effect the configuration needs to be pushed.

### DVB-C Output Settings

This section holds the transmission parameters for DVB-C.

### IP Output Settings

This section holds the transmission parameters for IPTV.

DVB-C Output Settings:	
Enabled	true
Start Frequency (MHz)	330
Symbolrate	6900000
QAM Constellation	QAM-256
Attenuation (dBuv)	20
Network ID	41001
Original Network ID	41001
Network Name	Net

### Descrambler Settings (used for layout usage calculation)

Max Services: Maximum number of services the CA module can handle.

Max Bitrate: Maximum bitrate the CA module can handle.

### Bitrate Settings (used for layout usage calculation)

TV\_SD: The bitrate for a normal SD service.

TV\_HD: The bitrate for a normal HD service.

RADIO: The bitrate for a normal Radio service.



# Step 3

## Satellite Input Configuration

In this section the satellite input interface is setup to receive the required TV services.

#1 Select “Interfaces” from the main menu.

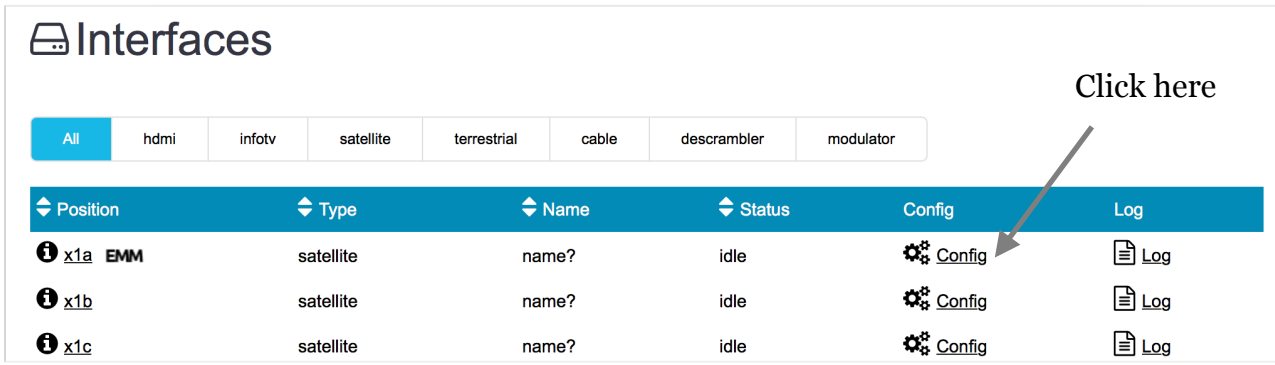
#2 Click on the “Config” link on the first free satellite interface (x2a in this example).

#3 Enter the tuner parameters for the transponder (see pictures below).

#4 Click the Scan button. The list of available services is displayed.

#5 Select the services to receive (tv 3 and tv 6 in this case) and then click on the “Save Services” button.

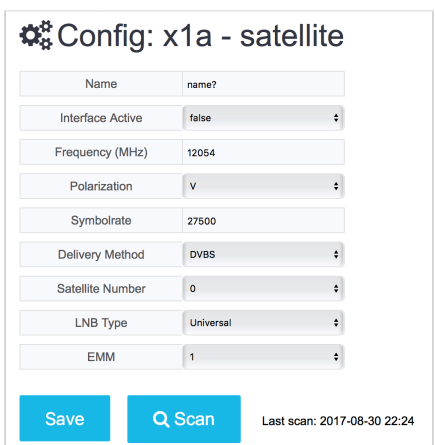
*Note! In the Lang column a specific language can be selected for the service.*



**Interfaces**

Click here

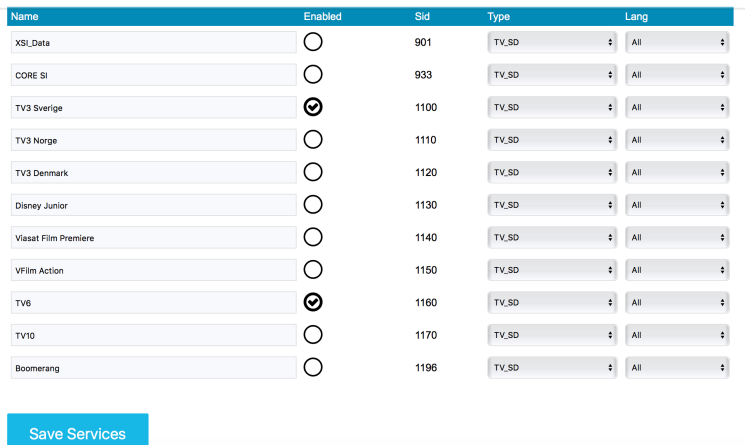
Position	Type	Name	Status	Config	Log
x1a EMM	satellite	name?	idle	Config	Log
x1b	satellite	name?	idle	Config	Log
x1c	satellite	name?	idle	Config	Log

**Config: x1a - satellite**

Name	name?
Interface Active	false
Frequency (MHz)	12054
Polarization	V
Symbolrate	27500
Delivery Method	DVBS
Satellite Number	0
LNB Type	Universal
EMM	1

Save Scan Last scan: 2017-08-30 22:24

Name	Enabled	Sid	Type	Lang
XSI_Data	<input type="checkbox"/>	901	TV_SD	All
CORE SI	<input type="checkbox"/>	933	TV_SD	All
TV3 Sverige	<input checked="" type="checkbox"/>	1100	TV_SD	All
TV3 Norge	<input type="checkbox"/>	1110	TV_SD	All
TV3 Denmark	<input type="checkbox"/>	1120	TV_SD	All
Disney Junior	<input type="checkbox"/>	1130	TV_SD	All
Viasat Film Premiere	<input type="checkbox"/>	1140	TV_SD	All
VFilm Action	<input type="checkbox"/>	1150	TV_SD	All
TV6	<input checked="" type="checkbox"/>	1160	TV_SD	All
TV10	<input type="checkbox"/>	1170	TV_SD	All
Boomerang	<input type="checkbox"/>	1196	TV_SD	All

Save Services

# Step 4

## Layout

This section describes how the TV services are routed/connected. Each service needs to be configured with a LCN number, the CI interface used for descrambling and the output modulator/mux it is transmitted on.

The bottom part of the page shows calculated usage for the descrambler and modulator resources.

#1 Select "Layout" from the main menu.

#2 Set the LCN, Descrambler and Modulator/Mux for each of the services. The name of the service can also be changed.

#3 Press the Save button.

The parameters used in this example is shown on the pictures below.



NOTE! For the changes to take effect the configuration needs to be pushed.

### Layout

Service	Interface	LCN	Descrambler	Modulator	Out SID	Out IP
TV3 Sverige	x1a	3	x3a	x11a	1100	239.1.1.80:10000
TV6	x1a	6	x3a	x11a	1160	239.1.1.140:10000

Type	Interface	Services	Calculated Bitrate	Calculated Usage
Descrambler	x3a	2	10.00 Mbps	17%
Modulator	x11a	2	10.00 Mbps	20%

[Save](#)

# Status and Control

## Satellite interface


Each interface has a detailed view with status and control information.

To view detailed status on sat interface x1a:

#1 Select “Interfaces” from the main menu.

#2 Click on the “x1a” text next to the “Info” icon on the x1a satellite interface.

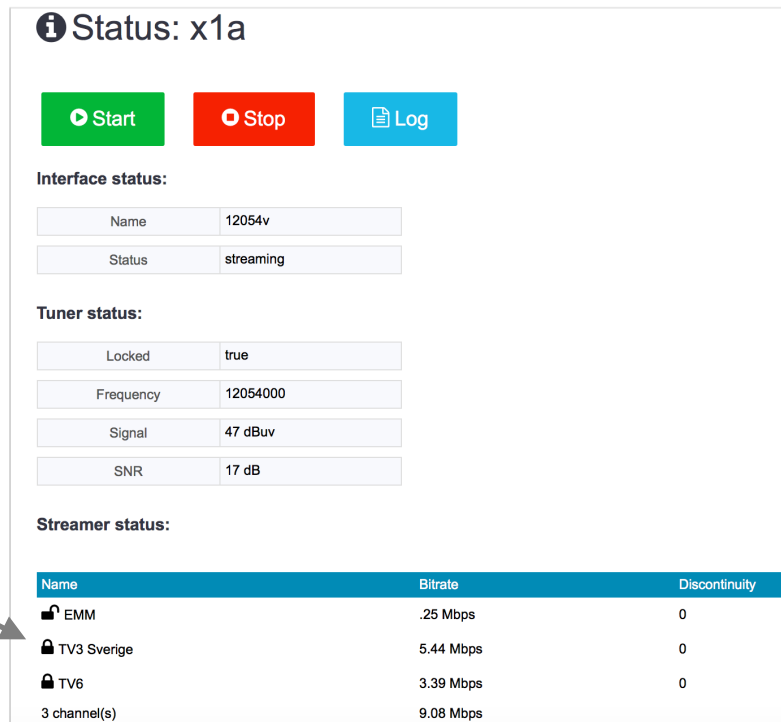
Click here



Position	Type	Name	Status
<b>i</b> x1a ▶ EMM	satellite	12054v	streaming
<b>i</b> x1b	satellite	name?	idle
<b>i</b> x1c	satellite	name?	idle

*Start, Stop: Buttons to manually start/stop the interface.*

*Log: View detailed log's*



**i** Status: x1a

**Start** **Stop** **Log**

**Interface status:**

Name	12054v
Status	streaming

**Tuner status:**

Locked	true
Frequency	12054000
Signal	47 dBuv
SNR	17 dB

**Streamer status:**

Name	Bitrate	Discontinuity
<b>i</b> EMM	.25 Mbps	0
<b>i</b> TV3 Sverige	5.44 Mbps	0
<b>i</b> TV6	3.39 Mbps	0
3 channel(s)	9.08 Mbps	

*Padlock indicates whether the service is scrambled or clear.*

*Discontinuity: Number of missed TS packets (sequence number)*

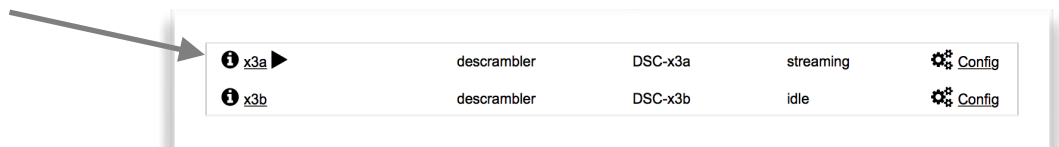
# Descrambler interface

To view detailed status on descrambler interface x3a:

#1 Select “Interfaces” from the main menu.

#2 Click on the “x3a” text next to the “Info” icon on the x3a descrambler interface.

Click here



*CI status:*

*CAM: CA module detected*

*CA-PMT: Communication with the CA module is working*

*CI Text: Type of CA module*

*CI Message: Message from the CA module*

*Receiving EMM: true if the emm feed is received.*

*Multiplex Usage: Percentage of the usage. Current and max.*

*Descrambler Usage: Number of sid's and pid's*

*Padlock indicates whether the service is scrambled or clear.*

*Discontinuity: Number of missed TS packets (sequence number)*

*The CI Menu button opens up the menu to the CA module.*

A screenshot of the detailed status page for interface x3a. The page has a title 'Status: x3a' and four buttons: 'Start', 'Stop', 'Log', and 'CI Menu'. Below the buttons are several sections: 'Interface status' with fields for Name (DSC-x3a) and Status (streaming); 'CI status' with icons for CAM and CA-PMT, and fields for Receiving EMM (true), CI Text (Videoguard CA), and CI Message; 'Streamer status' with fields for Multiplex Usage (11 (max 22) %) and Descrambler Usage (2 service(s) and 8 pids); and a table for streamer details. The table has columns for Name, Bitrate, Discontinuity, and Mux Load.

Name	Bitrate	Discontinuity	Mux Load
TV3 Sverige	4.62 Mbps	0	6 (max 9) %
TV6	3.04 Mbps	0	5 (max 9) %
2 channel(s)	7.66 Mbps		

**- CA Diagnostics, Page 1:**

- HW: 4.0.3
- Bootloader: 1.2.0, L11, 0x400
- Firmware: 3.3.5.5 M Mar 17 2015 13:15
- S/N: OQK81511000651
- CAM-ID: 0270 8875 311
- Verifier: 3.117.200.42.2 Jul 8 2015 17:38
- Smart card status: READY
- Smart card ID: 17005084516
- CAS ID: 940
- Next page...
- Cancel

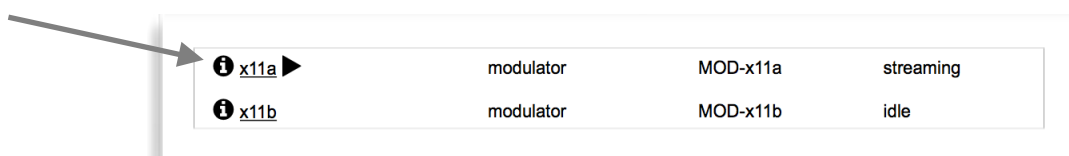
# Modulator interface

To view detailed status on modulator interface x11a:

#1 Select “Interfaces” from the main menu.

#2 Click on the “x11a” text next to the “Info” icon on the x11a descrambler interface.

Click here

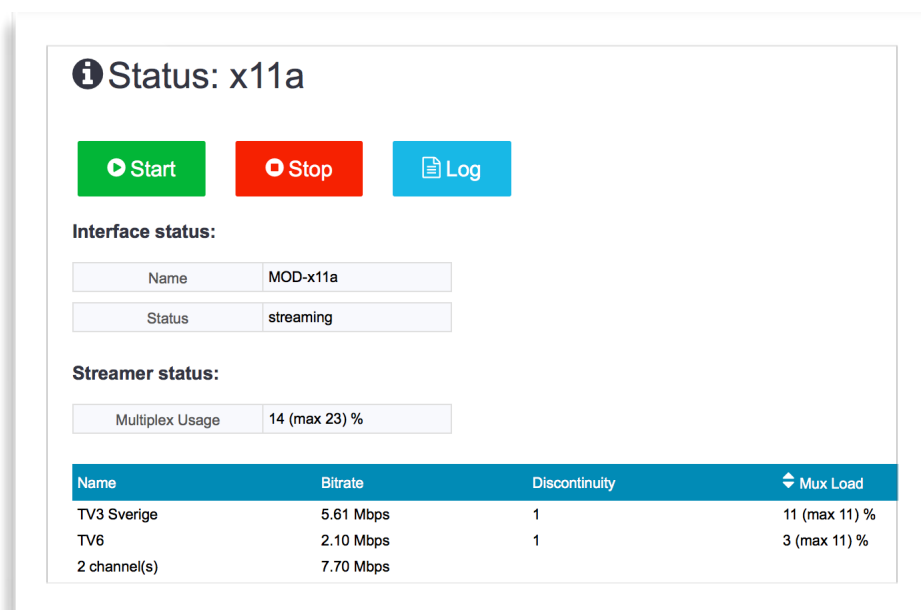


A screenshot of a web interface showing a list of modulator interfaces. An arrow points from the text 'Click here' to the 'x11a' entry. The list contains two entries:

<b>i</b> x11a ▶	modulator	MOD-x11a	streaming
<b>i</b> x11b	modulator	MOD-x11b	idle

*Multiplex Usage:*  
Percentage of the usage.  
Current and max.

*Discontinuity:* Number of  
missed TS packets (sequence  
number)



A screenshot of the detailed status page for modulator interface x11a. The page title is 'Status: x11a'. It features three buttons: 'Start' (green), 'Stop' (red), and 'Log' (blue). Below the buttons, the 'Interface status' section shows 'Name: MOD-x11a' and 'Status: streaming'. The 'Streamer status' section shows 'Multiplex Usage: 14 (max 23) %'. At the bottom, there is a table with columns: Name, Bitrate, Discontinuity, and Mux Load.

Name	Bitrate	Discontinuity	Mux Load
TV3 Sverige	5.61 Mbps	1	11 (max 11) %
TV6	2.10 Mbps	1	3 (max 11) %
2 channel(s)	7.70 Mbps		

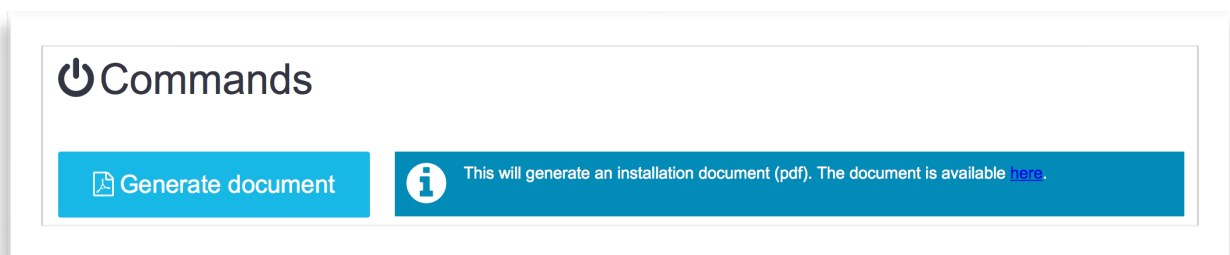
# Installation Documentation

When the installation/configuration is ready a pdf document can be generated. The document contains information about the configuration and will serve as an installation document.

#1 Select “Commands” from the main menu.

#2 Click on the “Generate Document” button.

#3 Click on the link to the right of the button (The document is available here)



**Installation Documentation** 2017-09-07

**System Configuration**

Hostname: viasat  
Serial Number: 171049  
Eth0 MAC: 00:18:7d:ae:a5:71      Eth0 IP: 192.168.0.99  
Eth1 MAC: 00:18:7d:ae:a5:72      Eth1 IP: 172.16.0.1

**Input Configuration**

Interface	Name	Interface	Name
x1a	12054v		

# Software Update

The head-end software is divided into packages and each package can be updated to a newer version using the software update function.

#1 Select “Updates” from the main menu.

#2 Click on the “OK” button to search for updates.

#3 Select the software packages (if any) to update then click the Update button to do the update.

## Update



Check for available updates. This might take several minutes

OK

## Update

Update	Name	Version
<input checked="" type="checkbox"/>	imaengine.x86_64	2.2.1-3840.ix41



Update selected packages. This might take several minutes

Update