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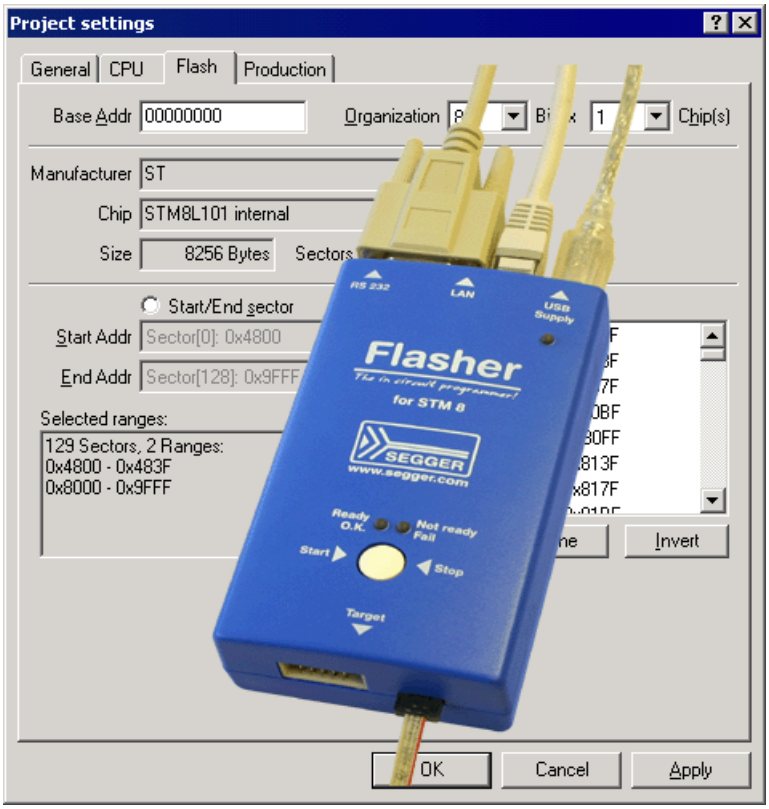
Flasher STM8

User guide of the stand-alone SWIM programmer for STM8 Cores



Manual Rev. 1

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Document: UM05006

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Revisions

This manual describes the Flasher STM 8 device.

For further information on topics or routines not yet specified, please contact us.

Revision	Date	By	Explanation
1	100401	OO	Chapter "Working with Flasher STM8": - Added information about setup multiple Flasher on one PC Chapter "Hardware": - Declared 10-pin connector as obsolete interface
0	091210	OO	Initial version.

About this document

This document describes the Flasher STM 8. It provides an overview over the major features of the Flasher STM 8, gives you some background information about SWIM, STM8 general and describes Flasher STM 8 related software packages available from Segger. Finally, the chapter *Support and FAQs* on page 59 helps to troubleshoot common problems.

Typographic conventions

This manual uses the following typographic conventions:

Style	Used for
Body	Body text.
`Keyword`	Text that you enter at the command-prompt or that appears on the display (that is system functions, file- or pathnames).
Reference	Reference to chapters, tables and figures or other documents.
GUIElement	Buttons, dialog boxes, menu names, menu commands.

Table 1.1: Typographic conventions

SEGGER Microcontroller GmbH & Co. KG develops and distributes software development tools and ANSI C software components (middleware) for embedded systems in several industries such as telecom, medical technology, consumer electronics, automotive industry and industrial automation.

SEGGER's intention is to cut software development-time for embedded applications by offering compact flexible and easy to use middleware, allowing developers to concentrate on their application.

Our most popular products are emWin, a universal graphic software package for embedded applications, and embOS, a small yet efficient real-time kernel. emWin, written entirely in ANSI C, can easily be used on any CPU and most any display. It is complemented by the available PC tools: Bitmap Converter, Font Converter, Simulator and Viewer. embOS supports most 8/16/32-bit CPUs. Its small memory footprint makes it suitable for single-chip applications.

Apart from its main focus on software tools, SEGGER develops and produces programming tools for flash microcontrollers, as well as J-Link, a JTAG emulator to assist in development, debugging and production, which has rapidly become the industry standard for debug access to ARM cores.

Corporate Office:
http://www.segger.com

United States Office:
http://www.segger-us.com

EMBEDDED SOFTWARE (Middleware)

emWin
Graphics software and GUI

emWin is designed to provide an efficient, processor- and display controller-independent graphical user interface (GUI) for any application that operates with a graphical display. Starterkits, eval- and trial-versions are available.

embOS
Real Time Operating System

embOS is an RTOS designed to offer the benefits of a complete multitasking system for hard real time applications with minimal resources. The profiling PC tool embOSView is included.

emFile
File system

emFile is an embedded file system with FAT12, FAT16 and FAT32 support. emFile has been optimized for minimum memory consumption in RAM and ROM while maintaining high speed. Various Device drivers, e.g. for NAND and NOR flashes, SD/MMC and CompactFlash cards, are available.

emUSB
USB device stack

A USB stack designed to work on any embedded system with a USB client controller. Bulk communication and most standard device classes are supported.

SEGGER TOOLS

Flasher
Flash programmer

Flash Programming tool primarily for microcontrollers.

J-Link
JTAG emulator for ARM cores

USB driven JTAG interface for ARM cores.

J-Trace
JTAG emulator with trace

USB driven JTAG interface for ARM cores with Trace memory. supporting the ARM ETM (Embedded Trace Macrocell).

J-Link / J-Trace Related Software

Add-on software to be used with SEGGER's industry standard JTAG emulator, this includes flash programming software and flash breakpoints.

Table of Contents

Chapter 1

Introduction

This chapter gives a short overview about the Flasher STM 8.

1.1 Flasher STM 8 overview

Flasher STM 8 is a programming tool for microcontrollers with on-chip Flash memory and STM8 core. Flasher STM 8 is designed for programming flash targets with a PC program or stand-alone.
Flasher STM 8 connects via USB, via ethernet or via RS232 interface to a PC, running Microsoft Windows 2000, Windows XP, Windows 2003, Windows Vista or Windows 7. Flasher STM 8 has a built-in 10-pin interface connector and a built-in 4-pin interface connector, which are compatible with the debug connectors used by STM8 eval systems.

1.1.1 Features of Flasher STM 8

- Three boot modes: PC mode, stand-alone mode, MSD mode
- Stand-alone SWIM programmer (Once set up, Flasher can be controlled without the use of PC program)
- No power supply required, powered through USB
- Support for all STM8 devices
- 128 MB memory for storage of target program
- Serial in target programming supported
- Data files can be updated via PC program

1.1.2 Working environment

General

Flasher STM 8 can be operated from a PC with an appropriate software like J-Flash or in stand-alone mode.

Host System

IBM PC/AT or compatible. CPU: Pentium with at least 192MB of RAM, running Microsoft Windows 2000, Windows XP, Windows 2003, Windows Vista or Windows 7. It needs to have an USB, ethernet or RS232 interface available for communication with Flasher STM 8.

Power supply

Flasher requires 5V DC, min. 100mA via USB connector. If USB is not connected, the USB connector is used to power the device. Supply voltage is the same in this case. Please avoid excess voltage.

Installing Flasher STM 8 PC-software J-Flash

The latest version of the J-Flash software, which is part of the Flasher STM 8 software and documentation package, can be downloaded from our website: *http://www.segger.com*. For more information about using J-Flash please refer to the *J-Flash STM 8 User Guide* which is also available for download on our website.

1.2 Specifications

1.2.1 Specifications for Flasher STM 8

The following table gives an overview about the specifications (general, mechanical, electrical) for Flasher STM 8.

General	
Supported OS	Microsoft Windows 2000 Microsoft Windows XP Microsoft Windows XP x64 Microsoft Windows 2003 Microsoft Windows 2003 x64 Microsoft Windows Vista Microsoft Windows Vista x64 Windows 7 Windows 7 x64
Electromagnetic compatibility (EMC)	EN 55022, EN 55024
Operating temperature	+5°C ... +60°C
Storage temperature	-20°C ... +65 °C
Relative humidity (non-condensing)	Max. 90% rH
Size (without cables)	121mm x 66mm x 30mm
Weight (without cables)	122g
Mechanical	
USB interface	USB 2.0, full speed
Ethernet interface	100MHz full duplex
RS232 Host Interface	RS232 9-pin
Target interface	SWIM (either via 10-pin connector or 4-pin connector depending on target hardware)
SWIM Interface, Electrical	
Power supply	USB powered, 100mA for Flasher STM 8. 500mA if target is powered by Flasher STM 8.
Target interface voltage (V_{IF})	1.2V ... 5V
Target supply voltage	4.5V ... 5V (if powered with 5V on USB)
Target supply current	Max. 300mA
LOW level input voltage (V_{IL})	Max. 40% of V_{IF}
HIGH level input voltage (V_{IH})	Min. 60% of V_{IF}

Table 1.1: Flasher STM 8 specifications

1.3 Flasher STM 8 features

- USB 2.0 interface
- Full duplex 100Mbit ethernet interface
- Any STM8 core supported
- No power supply required, powered through USB
- Target voltage can be measured
- Fully plug and play compatible
- Standard 4-pin SWIM connector
- USB, ethernet, RS232 and 4-pin ribbon cable included
- TCP/IP server included in Flasher STM 8, which allows using Flasher via TCP/IP networks
- Flash programming software (J-Flash) available
- Integrated optical isolation between host and target system
- Target power supply via pin 1 of the 4-pin interface (up to 300mA to target with overload protection)

1.4 Supported CPU cores

Flasher STM 8 has been designed and tested with the following cores, but should work with any STM8 core. If you experience problems with a particular core, do not hesitate to contact Segger.

- STM8A
- STM8L
- STM8S

Chapter 2

Setup

This chapter describes the setup procedure required in order to work with Flasher STM 8. Primarily this includes the installation of the Flasher STM 8 software and documentation package.

2.1 Installing the Flasher STM 8 software and documentation pack

Flasher STM 8 is shipped with a bundle of applications, corresponding manuals and some sample projects and the kernel mode USB driver.

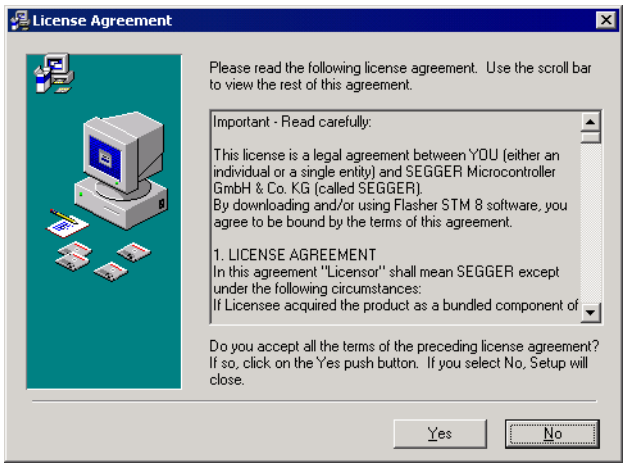
Refer to chapter *Flasher STM 8 related software* on page 25 for an overview about the Flasher STM 8 software and documentation pack.

2.1.1 Setup procedure

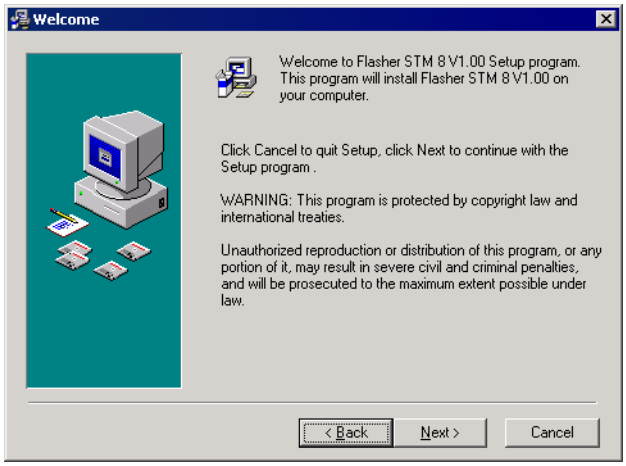
To install the Flasher STM 8 software and documentation pack, follow this procedure:

Note: We recommend to check if a newer version of the Flasher STM 8 software and documentation pack is available for download before starting the installation. Check therefore the Flasher STM 8 related download section of our website.

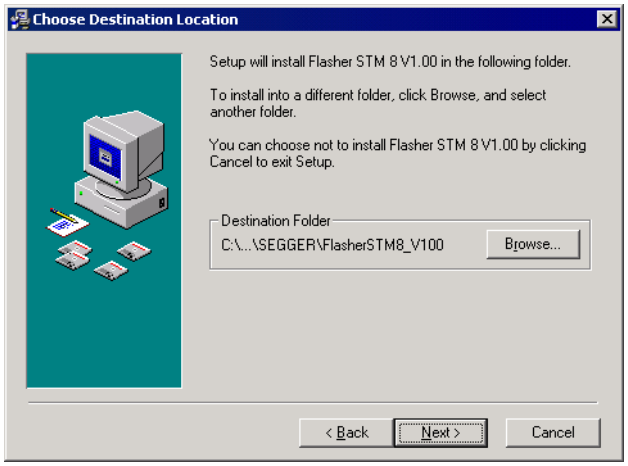
Before you plug your Flasher STM 8 into your computer's USB port, extract the setup tool `Setup_FlasherSTM8_V<VersionNumber>.zip`. The setup wizard will install the software and documentation pack that also includes the certified J-Link USB driver. Start the setup by double clicking `Setup_FlasherSTM8_V<VersionNumber>.exe`. The **license Agreement** dialog box will be opened. Accept the terms with the **Yes** button.



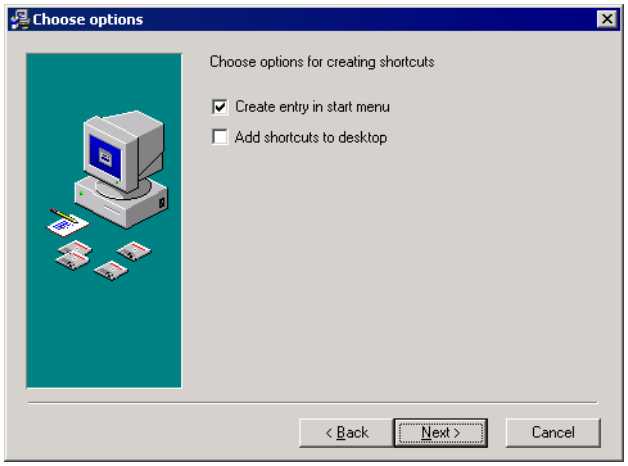
1. The **Welcome** dialog box is opened. Click **Next >** to open the **Choose Destination Location** dialog box.



2. Accept the default installation path `C:\Program Files\SEGGER\FlasherSTM8_V<VersionNumber>` or choose an alternative location. Confirm your choice with the **Next >** button.

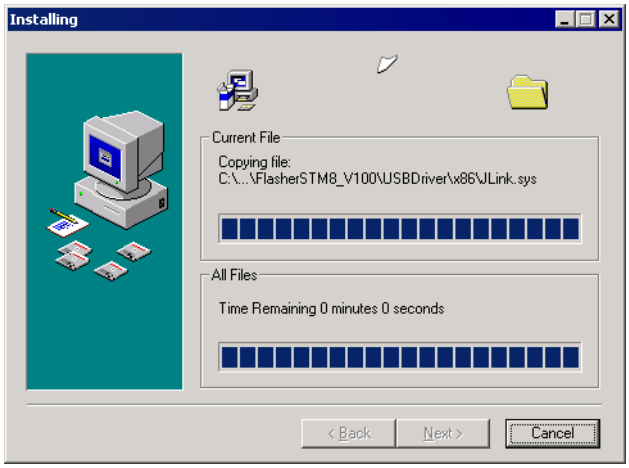


3. The **Choose options** dialog is opened. The **Create entry in start menu** option is preselected. Accept or deselect the options and confirm the selection with the **Next >** button.

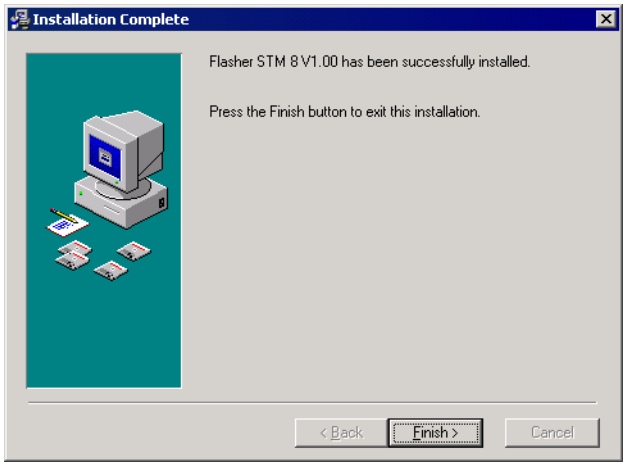


Confirm start of installation by pressing **Next >** button again.

4. The installation process will be started.



5. The **Installation Complete** dialog box appears after the copy process. Close the installation wizard with the **Finish >** button.



The Flasher STM 8 software and documentation pack is successfully installed on your PC.

6. Connect your Flasher STM 8 via USB with your PC. The Flasher STM 8 will be identified and after a short period the Flasher LED stops rapidly flashing and stays on permanently.

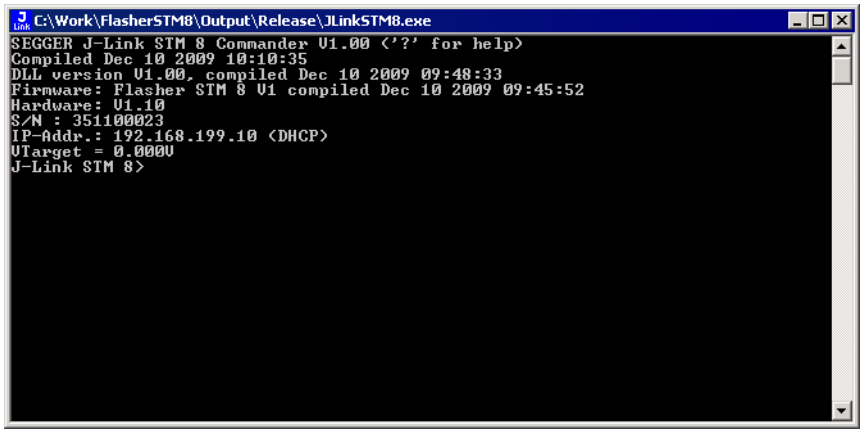
2.2 Setting up the USB interface

After installing the Flasher STM 8 software and documentation package it should not be necessary to perform any additional setup sequences in order to configure the USB interface of Flasher STM 8.

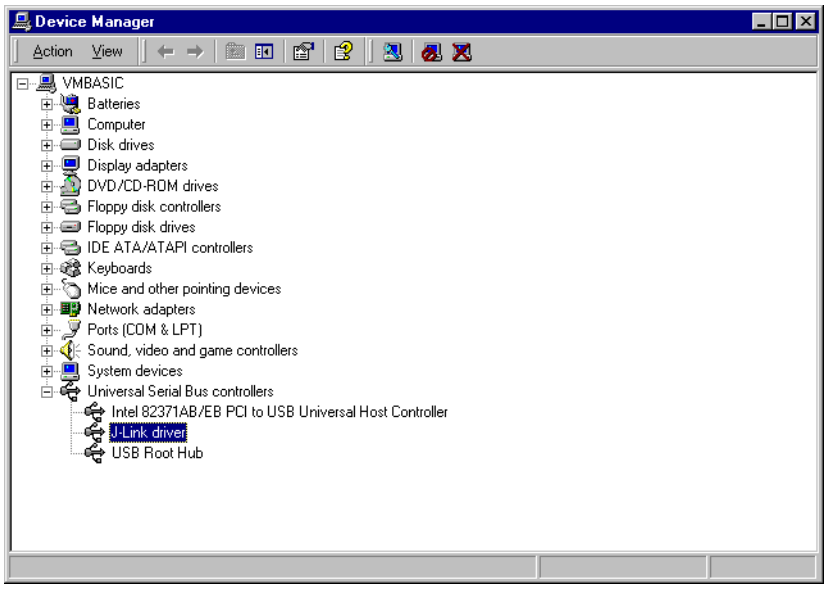
2.2.1 Verifying correct driver installation

To verify the correct installation of the driver, disconnect and reconnect Flasher STM 8 to the USB port. During the enumeration process which takes about 2 seconds, the LED on Flasher STM 8 is flashing. After successful enumeration, the LED stays on permanently.

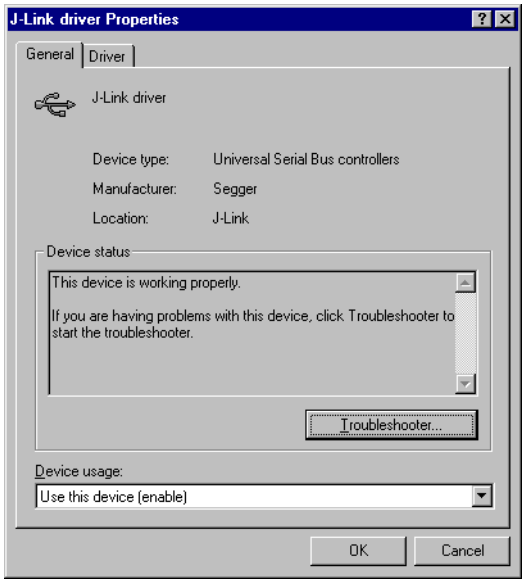
Start the provided sample application `JLinkSTM8.exe`, which should display the compilation time of the Flasher firmware, the serial number and a target voltage of 0.000V. The screenshot below shows an example.



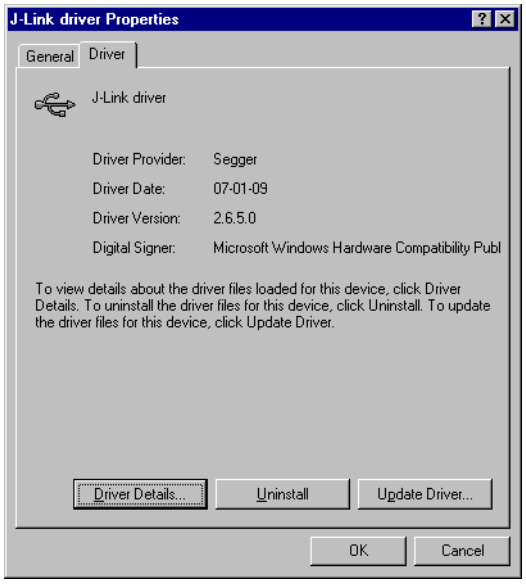
In addition you can verify the driver installation by consulting the Windows device manager. If the driver is installed and your Flasher STM 8 is connected to your computer, the device manager should list the J-Link USB driver as a node below "Universal Serial Bus controllers" as shown in the following screenshot:



Right-click on the driver to open a context menu which contains the command **Properties**. If you select this command, a **J-Link driver Properties** dialog box is opened and should report: **This device is working properly**.



If you experience problems, refer to the chapter *Support and FAQs* on page 59 for help. You can select the **Driver** tab for detailed information about driver provider, version, date and digital signer.



2.3 Uninstalling the J-Link USB driver

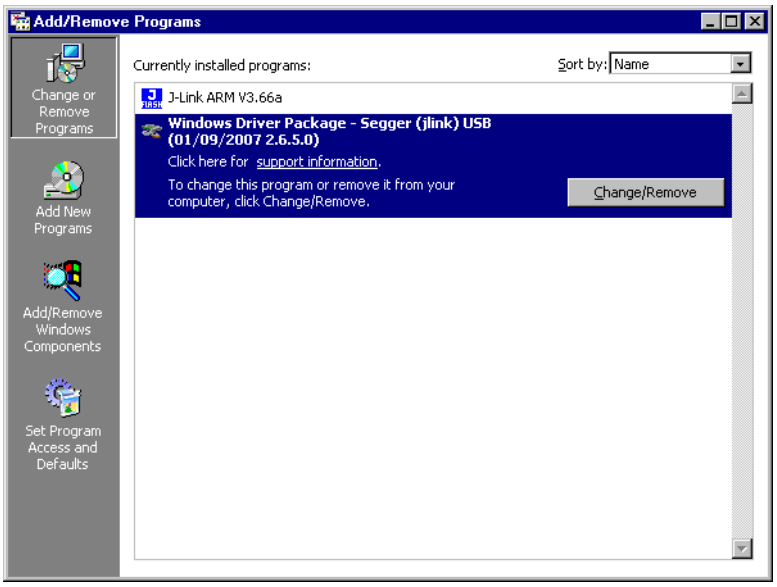
If Flasher STM 8 is not properly recognized by Windows and therefore does not enumerate, it makes sense to uninstall the J-Link USB driver.

This might be the case when:

- The LED on the Flasher STM 8 is rapidly flashing.
- The Flasher STM 8 is recognized as **Unknown Device** by Windows.

To have a clean system and help Windows to reinstall the J-Link driver, follow this procedure:

1. Disconnect Flasher STM 8 from your PC.
2. Open the **Add/Remove Programs** dialog (`Start > Settings > Control Panel > Add/Remove Programs`) and select **Windows Driver Package - Segger (jlink) USB** and click the **Change/Remove** button.



3. Confirm the uninstallation process.

2.4 Setting up the IP interface

Flasher STM 8 has an additional Ethernet interface, to communicate with the host system. A built-in web server allows configuration of the flasher via web interface. In addition to that, you can set a default gateway for the flasher which allows using it even in large intranets. For simplicity the setup process of Flasher STM 8 is described in this section.

2.4.1 Connecting the first time

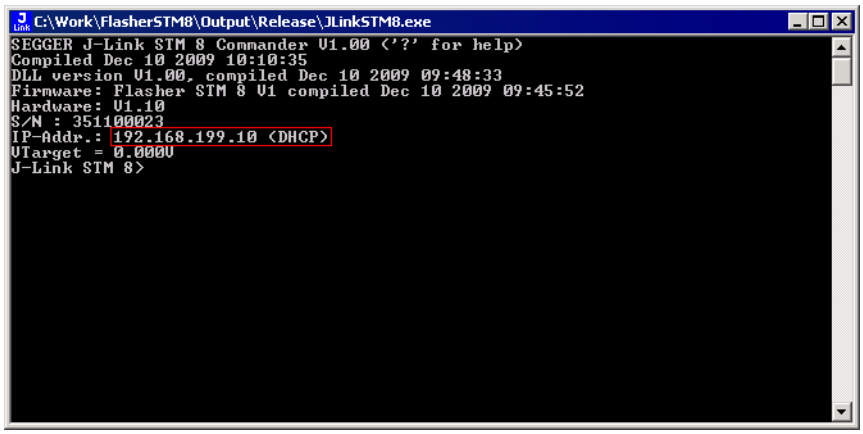
When connecting Flasher the first time, it attempts to acquire an IP address via DHCP. To get information about which IP address is acquired, you have two possibilities:

- Connecting Flasher via USB and via Ethernet and read out the IP address via `JLinkSTM8.exe`.
- Connecting Flasher only via Ethernet and read out the IP via the DHCP IP Assignment table of your DHCP Server.

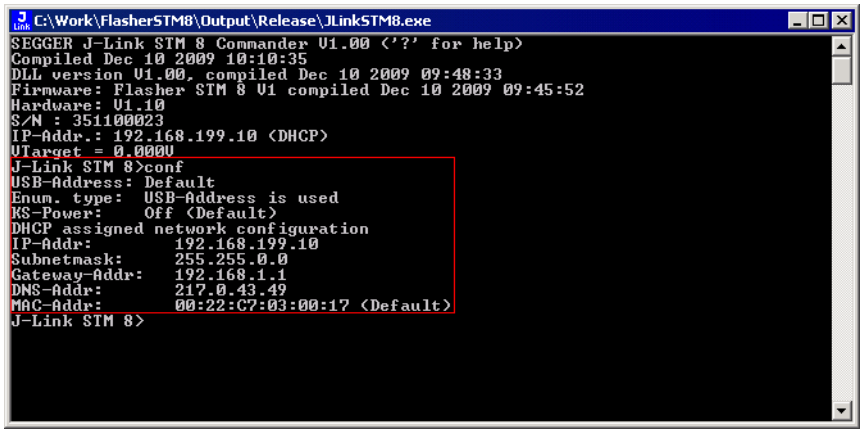
In the following, both ways to get the IP address assigned to Flasher via DHCP, are explained.

2.4.1.1 Connecting via USB and Ethernet

When using `JLinkSTM8.exe` in order to read out the IP address, Flasher has to be connected to your host system via Ethernet and via USB. When starting `JLinkSTM8.exe`, it will show information about the IP address (static / dynamic) when connecting to Flasher.



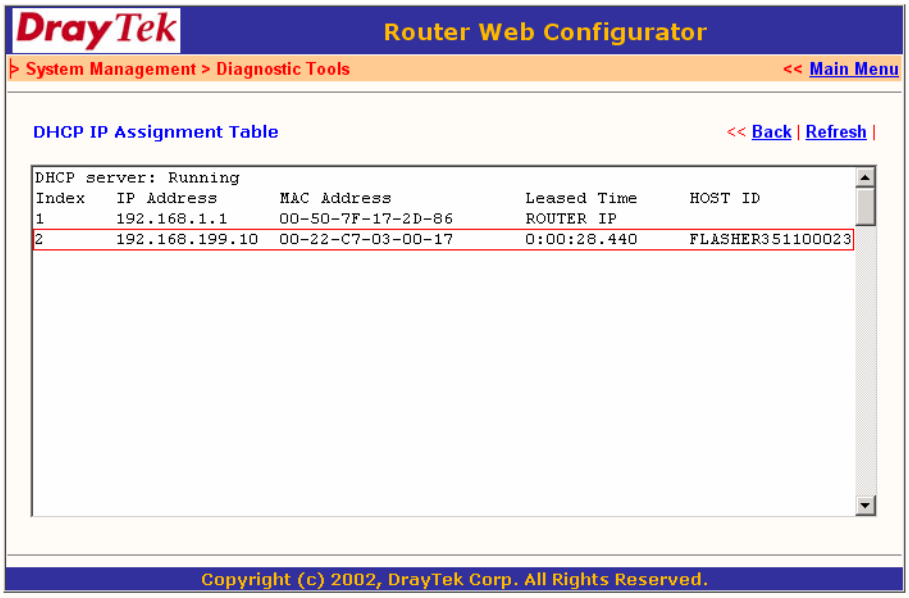
To get more detailed information about the current configuration of the Flasher (such as subnet mask and MAC address), you can use the `conf` command in `JLinkSTM8.exe`.



After reading out the IP address you can connect to Flasher via Ethernet, using the IP address.

2.4.1.2 Connecting via Ethernet only

This way of reading out the IP address of Flasher can be used for example if you do not have administrator rights on the host system in order to install the USB driver which is necessary to connect to Flasher via USB. To get the IP address which has been assigned to Flasher via DHCP, you have to read it out from the DHCP IP Assignment table of your DHCP Server:



You can easily identify your Flasher by its host ID (in this case FLASHER351100023) and by its MAC addr which always starts with: 00-22-C7-03-XX-XX where XX depends on the last five digits of the serial number of your Flasher. In this case the serial number of the connected Flasher is 351100023 (0x0017), so its MAC address is: 00-22-C7-03-00-17.

2.4.2 Configuring the Flasher

By default, Flasher is configured to receive an IP address and a subnet mask via DHCP. It is also possible to assign a fixed IP address to it. Setting up Flasher can be done via `JLinkSTM8.exe` or via web interface. In the following, both configuration methods are described.

2.4.2.1 Configuring Flasher via JLinkSTM8.exe

Configuring Flasher via `JLinkSTM8.exe` is very simple because only one command (in different variations) is necessary to choose between automatic IP address and dynamic IP address assignment.

Note: If you want to configure Flasher via JLinkSTM8.exe and Flasher is connected to your host-system via Ethernet only, you have to type in the `ip <IPAddr>` command.

Example

```
ip 192.168.199.29
```

Assigning an IP address via DHCP

By default, Flasher is configured to acquire an IP address via DHCP, so it should not be necessary to configure this. But, if you change the IP address to a fixed one, DHCP is disabled from this point. To re-enable DHCP you should use the `ipaddr DHCP` command in `JLinkSTM8.exe`. The ipaddr command will be explained in the following.

Assigning an IP address manually

If you do not want Flasher to be configured via DHCP, you can assign an IP address and a subnet mask (optional) manually. This is done via the `ipaddr` command in `JLinkSTM8.exe`. This command can be used in four different ways, which are explained in the table below:

Command	Explanation
`ipaddr`	If no additional parameter is specified, the current IP and subnet mask of Flasher are shown.
`ipaddr <IP>`	If an IP is given as an additional parameter the given IP address is set as the IP address for Flasher. A default 16-bit subnet mask (255.255.0.0) is used. From this time Flasher uses this static IP, DHCP is disabled from this point.
`ipaddr <IP> <Subnet mask>`	If an IP and a subnet mask is given as an additional parameter, the given IP and the given subnet mask are used. From this time Flasher uses this static IP and subnet mask, DHCP is disabled from this point.
`ipaddr DHCP`	If DHCP is given as an additional parameter the use of DHCP is enabled. Previously made IP settings are discarded.

Table 2.1: ipaddr command description

Example ipaddr

```
J-Link STM 8>ipaddr
DHCP assigned network configuration
IP-Addr:    192.168.199.29
Subnetmask: 255.255.0.0
```

Example ipaddr <IP>

```
J-Link STM 8>ipaddr 192.168.87.115
IP address successfully changed to '192.168.87.115'.
Subnetmask successfully changed to '255.255.0.0'.
```

Example ipaddr <IP> <Subnet mask>

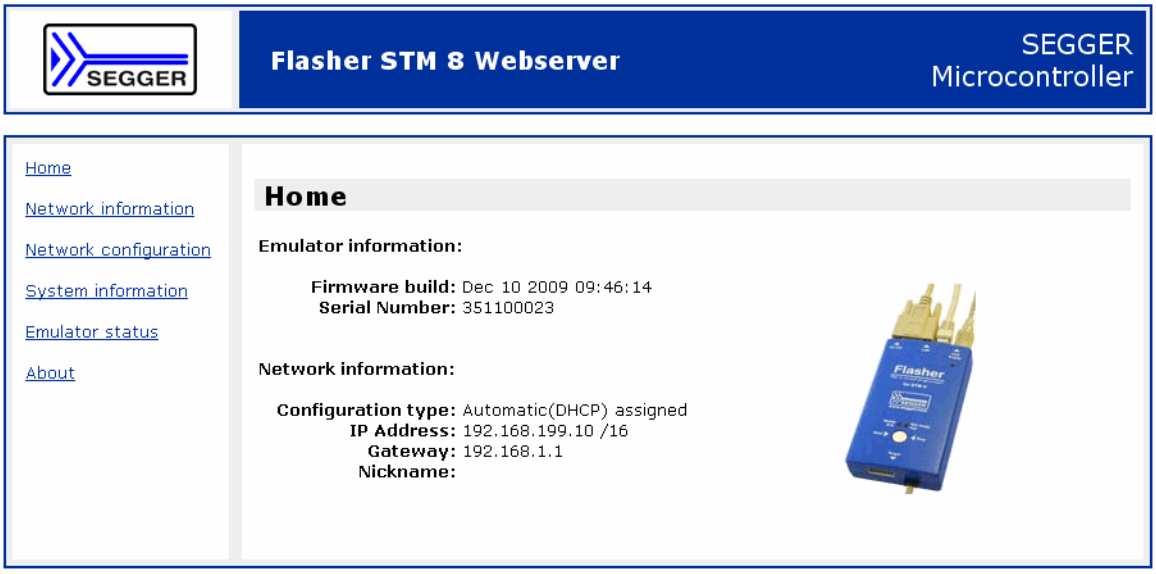
```
J-Link STM 8>ipaddr 192.168.87.116 255.255.0.0
IP address successfully changed to '192.168.87.116'.
Subnetmask successfully changed to '255.255.0.0'.
```

Example ipaddr DHCP

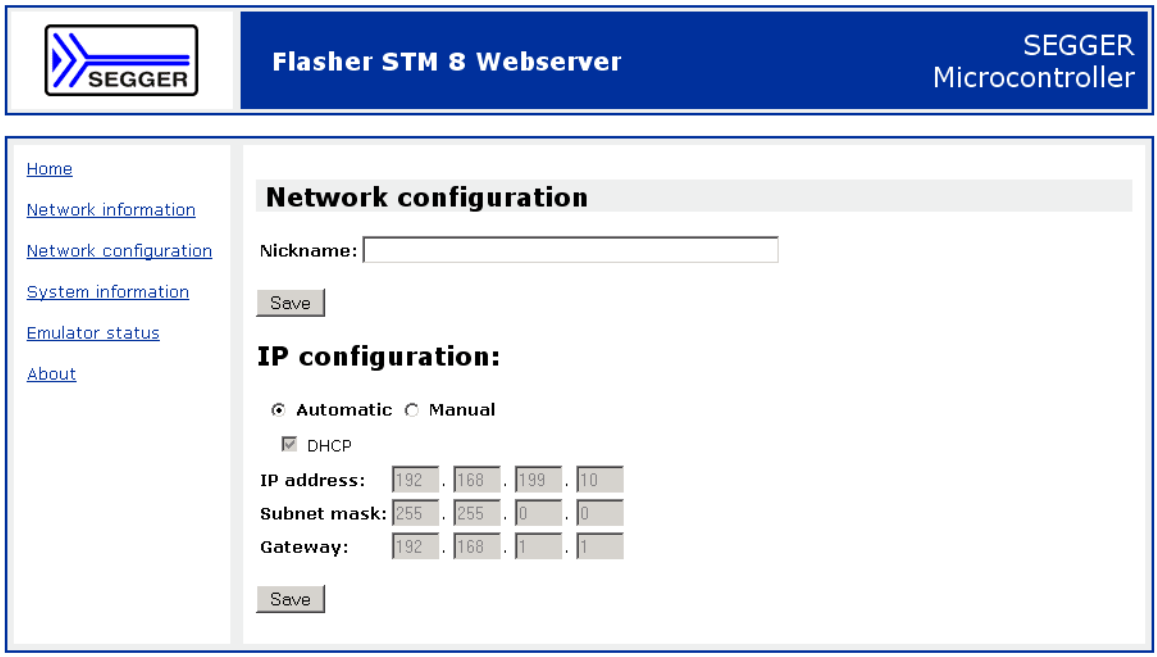
```
J-Link STM 8>ipaddr DHCP
Configuration successfully changed to DHCP.
```


2.4.2.2 Configuring Flasher via web interface

Flasher comes with a web server, which provides a web interface for configuration. This enables you to configure Flasher without additional tools, just with a simple web browser. The **Home** page of the web interface shows the serial number, the current IP address and the MAC address of the Flasher.



The **Network configuration** page allows you to configure the IP address, the subnet mask and the default gateway of Flasher. You can choose between **automatic** IP assignment and **manual** IP assignment by selecting the appropriate radio button. If you choose **manual**, you can change the IP address, the subnet mask and the default gateway by entering the desired values in the appropriate fields and clicking **change**. So, you do not have to care about any command syntax in order to change the IP address/subnet mask/default gateway.



Chapter 3

Flasher STM 8 related software

This chapter describes Segger’s Flasher STM 8 related software portfolio available for use with Flasher STM 8 hardware.