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Manual

Installation and Usage

USB Redirector for Linux v3.04

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General

Intended Use

The USB servers from Wiesemann & Theis enable access to USB devices via the network. After setting up the USB server, the USB devices connected to it can be plugged to the local system by means of the USB-Redirector for Linux from a supported Linux operating system. Access to the USB devices is exclusive. A connection to an already plugged USB device can only be made after disconnecting the first connection.

The USB-Redirector can connect to a maximum of eight USB devices simultaneously. The USB devices can, however, be connected to different USB servers.

The USB servers and the USB-Redirector conform to the USB standards 1.0, 1.1 and 2.0 with the transfer speeds Low-Speed (1.5 Mbit/s), Full-Speed (12Mbit/s) and High-Speed (480Mbit/s). All types of USB devices and all transfer types, i.e. Control, Interrupt, Bulk and Isochronous, are supported.

Compatible USB-Servers

The USB-Redirector for Linux can be used in conjunction with the following models and firmware versions:

#53665 - USB-Server Megabit 2.0, Firmware 1.17

#53663 - USB-Server Gigabit 2.0, Firmware 1.44

The latest firmware for each of the devices can be found at

www.wut.de/<Article number> (e.g. www.wut.de/53663)

Used network ports

The USB-Redirector uses TCP port 32032 for communication with the USB server by default. This port can be changed via the web-based configuration interface of the USB server. Any security components installed must allow communication between the USB-Redirector and the USB-Server without delay.

The UDP port 8513 used for the automatic inventory is not mandatory for the communication with the USB devices.

System requirements

The USB-Redirector for Linux is available for 32 and 64 bit systems. The installed Linux distribution determines which version you need. The architecture of your Linux system can be identified using the following command:

```
$: uname -m
```

The USB-Redirector has been successfully tested on the following standard distributions:

- Mint: 19.2 LTS and 20.1 LTS
- Debian: 10.8 LTS
- Ubuntu: 20.04.2 LTS and 21.04

Other Linux systems are also supported, as long as they fulfill the below minimal requirements

- Kernel version $\geq 4.4.0$
- VHCI kernel module
- modprobe utility

Installation

The current version of the USB-Redirector for Linux can be downloaded from www.wut.de/00113. Alternatively, the file can also be downloaded via direct link, e.g. using `wget`:

```
$: wget https://www.wut.de/linux-usb-redirector
```

The USB-Redirector is delivered in a zipped tar archive. The following command extracts the contents of the archive to a subfolder in the current directory:

```
$: tar -xvzf e-00113-ww-swus-304.tar.gz
```

Script based installation

The archive contains an installation script, which both checks the system requirements and also suggests standard paths for the required files. After checking the entered data, the script can automatically copy the files to the desired locations.

The installation script can be started via the following command:

```
$: ./install.sh
```

By default, the executable of the USB-Redirector is placed at the following path:

```
/usr/local/bin/usb-redirector
```

If the system has `systemd` support enabled, the installation script can also create a service to start the USB-Redirector on system start. By default, the service file will be placed at the following location:

```
/etc/systemd/system/usb-redirector-daemon.service
```

All paths can be adjusted after starting the installation script.

Manual installation

Alternatively, the USB redirection can also be installed manually. This requires copying the executables that match your system to a suitable location. A typical command line would be the following:

```
$: cp -vf usb-redirector.$(uname -m) /usr/local/bin/usb-redirector
```

The above command will automatically choose the correct binary and place it in the search path.

Manual installation with systemd support

If the system supports systemd, a systemd service can also be created. For this purpose, the supplied template file can be copied into the directory for systemd services:

```
$: cp -vf usb-redirector-daemon.service /etc/systemd/system
```

To start the service automatically at system startup, the configuration files of systemd have to be reloaded. After that, automatic execution at system startup can be enabled. Root privileges are required for this operation:

```
$: systemctl daemon-reload
$: systemctl enable usb-redirector-daemon.service
```

Manual installation without systemd support

If systemd is not available, the service can of course also be started via other available methods at system startup.

The background service of the USB-Redirector can be started with the following command. If the option `-f` is additionally specified, the process remains in the foreground.

```
usb-redirector daemon
```

Usage

General syntax

The general syntax of the USB-Redirector is as follows:

```
usb-redirector [glob. options] <command> [command-options] <args>
```

Arguments in angle brackets indicate a mandatory argument. Arguments in square brackets are optional.

The -h parameter can be used to output a list of all available commands:

```
#: usb-redirector -h
```

Scanning for USB-Servers

Specifying the scan command, the USB-Redirector searches the local subnet for available USB servers.

```
usb-redirector scan
```

If there is more than one network interface connected to the system, the interface to be used can be specified as an optional parameter.

The scanning process uses the UDP port 8513:

```
#: usb-redirector scan ens192
IP address      | MAC                | System name        | Port
-----
10.40.28.65     | 00c03d:08e404     | USB-Server-08e404 | 32032
10.40.28.63     | 00c03d:096103     | USB-Server-096103 | 32032
```

Listing USB devices

The list command followed by the IP address or the host name of a USB server lists the connected USB devices. If the TCP communication port of the USB server differs from the default port 32032 an alternative port can be specified using the -p option:

```
usb-redirector list <host>
```

The result list contains the number of the USB port, the name of the USB device and, if applicable, the IP address of the computer that is currently connected to the USB device. Should the USB device be connected to your own PC, this will be marked with an asterisk.

Multiple USB servers can also be queried simultaneously. The typical <IP>:<port> notation is also supported:

```
$: usb-redirector list 10.40.28.82 10.40.41.42:3333
Server IP      | USB port  | Device name      | Plugged to
-----
10.40.28.82   | 1.3       | USB Cable 2     | 10.40.28.32
10.40.41.42   | 1         | USB <> RS232 Cable 2 | *
```

Plugging USB devices

A connection to a USB device connected to a USB server can be established with the plug command followed by the IP address or hostname of the USB server and the number of the USB port. If the TCP communication port of the USB server differs from the default port 32032, an alternative port can be specified using the -p option:

```
usb-redirector plug <host> <USB port>
```

On success, the command produces no output. If the desired device is already plugged by another machine, it is added to the internal list of connected devices and its availability is checked cyclically.

Listing plugged USB devices

The following command outputs a list of all USB devices currently connected to the system via the USB-Redirector:

```
usb-redirector status
```

The list also contains the current connection status and the associated USB server for each device.

```
$: usb-redirector status
Host          | USB port | Device name      | Speed | Status
-----
10.40.28.82   | 1.3     | USB Cable 2     | (fs)  | Working
```

Unplugging USB devices

As long as there is an active connection to a USB device, no other user can connect to the USB device. It is therefore advised to unplug the device as soon as it is no longer needed. For disconnecting, the unplug command and the combination of IP of the USB server and the USB port have to be specified:

```
$: usb-redirector unplug 10.40.28.82 1.3
```

If successful, the command is acknowledged with the following output:

```
INFO: c7a19740 - [14:38.22]: Unplugged 1 connections successfully
```

If all USB devices that were mounted via the USB-Redirector are to be unmounted, this can be done with the unplug command and the option all:

```
usb-redirector unplug all
```


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