User Manual

NeSCUS – Network Switch Configuration Utility Software
18.01.2004

The GNU General Public License (GPL)
Version 2, June 1991

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END OF TERMS AND CONDITIONS

The main page of application can be found at: http://nescus.sourceforge.net

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1. INTRODUCTION

NeSCUS is a back-up application for network switches. With NeSCUS maintenance personnel can automatically backup the configurations of switches, and view reports of occurred changes.

NeSCUS has a user defined time-based loop, which reads configuration of all network switches and saves them into network server. After saving the configuration NeSCUS compares the current configuration into previous saved one. If there are any changes, the application saves the new configuration into history folder. User can define how many configuration files are saved into history folder. In addition to saving changed configuration files, NeSCUS makes a report of changes thus making it possible to maintenance personnel check them. It is also possible for maintenance personnel to restore older versions of configuration files into switches.

Because different models of switches have different kind of commands, NeSCUS saves the commands of every switch model into a separate command file. The user can modify the contents of these command files, and even create new command files as necessary. By this way the number of supported switch models can be increased. The first version of NeSCUS supports only HP Procurve Switch 2524 and Cisco Catalyst 2900XL switches. The application interface into switches is programmed by using standard communication protocols (telnet, TFTP and SNMP). These protocols are supported by almost all controllable switches.

The main objective of NeSCUS is to automate current method of taking backups from switches.

1.1 Contact information

In case of problems with the application a contact form can be found from address:

http://nescus.sourceforge.net

Any suggestions for improvements and bug reports can also be sent by using the address above.

2. APPLICATION

In order to operate NeSCUS requires two different kinds of settings to be entered and starting a Windows service. After these steps NeSCUS is ready to take backups from switch configurations (figure 1).

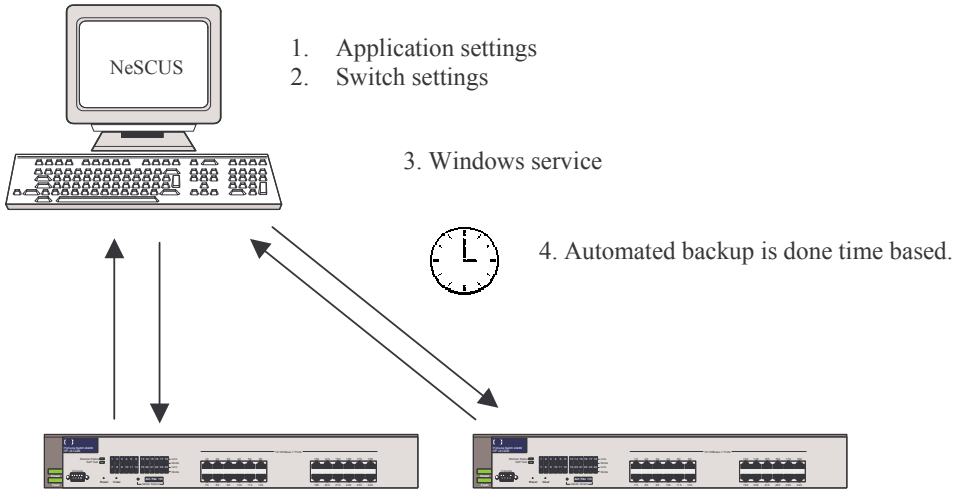


Figure 1. Workflow.

2.1 Installing and requirements

Download program binary files from address: http://nescus.sourceforge.net/. Unpack the zip file into program folder.

The NeSCUS service component can be installed into Windows service by using InstallUtil –program.

In order to be able to run NeSCUS, following system and other requirements must be meet in the computer:
- .NET Framework 1.1 must be installed
- TFTP-server program is installed
- Telnet –program must be installed
- file system must be NTFS
- Internet browser must support HTML 4.01 or higher
- operating system is Windows 2000 Professional
- Pentium II processor or higher
- 256 MB RAM
- up to 100 MB hard drive space
- Ethernet network card installed
- TCP/IP protocol installed and configured
- Adobe Acrobat –reader.

2.2 Running the program

Run NeSCUS by navigating into the folder, where NeSCUS is installed, and clicking NeSCUS.exe file.

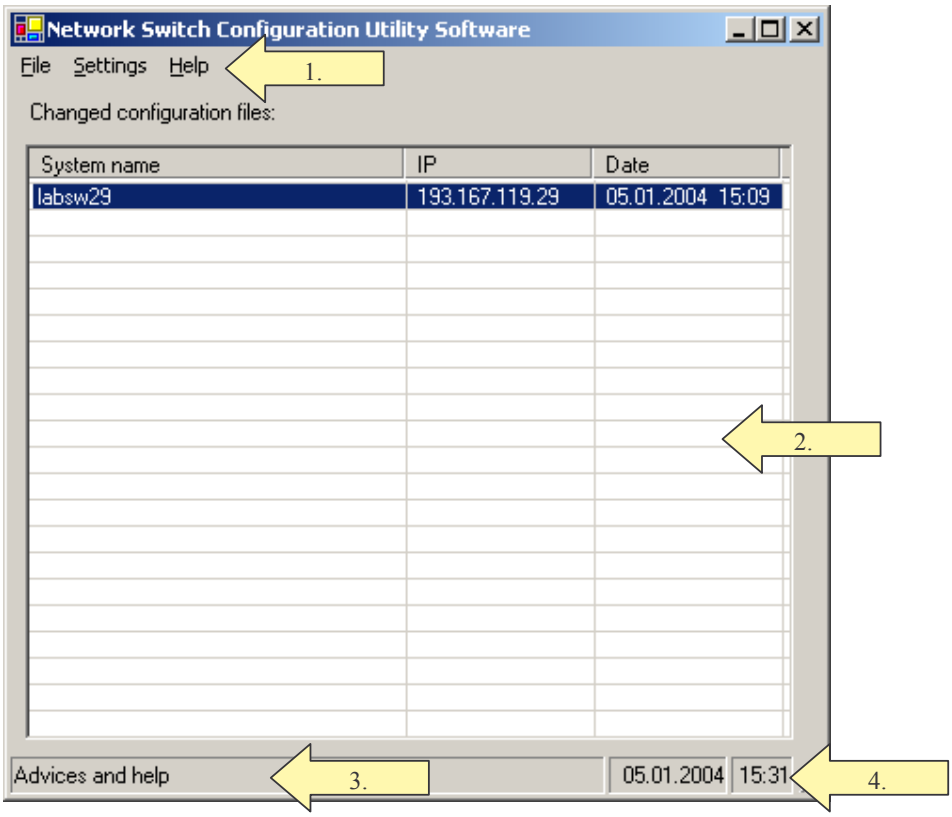


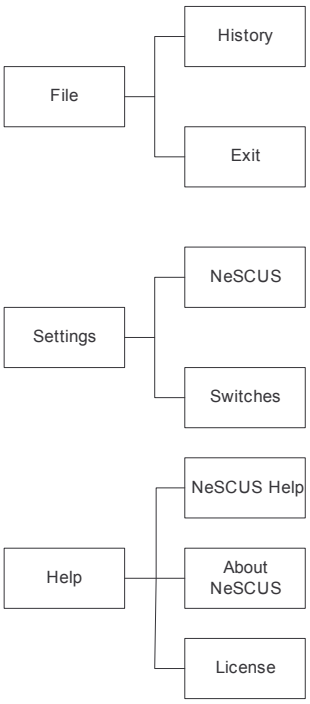
Figure 2. NeSCUS –main window.

When the application is started, the main window opens. It consists of features listed under:

1. menu, for running all functions
2. listing of names and IP–addresses of those switches, whose configuration files have been changed. In addition the date of the new configuration file can be seen.
3. message bar for information and help
4. current date and time.

2.3 Menu

The structure of NeSCUS menu is as follows:



In the History –window it is possible to study old configuration files switch by switch.

Exiting the application.

Application settings.

Controlling the switches, i.e. switch settings.

Help files for using the application.

About NeSCUS.

License information.

2.4 Application settings

When the application is started for the first time, application settings must be defined. Choose **Settings – NeSCUS** (figure 3) from menu.

If you start NeSCUS and backup is running, application shows a warning message. Backup won't run, if NeSCUS user interface is running. If you see the warning message, click **'No'** and please wait for the backup to finish. Try again after few minutes.

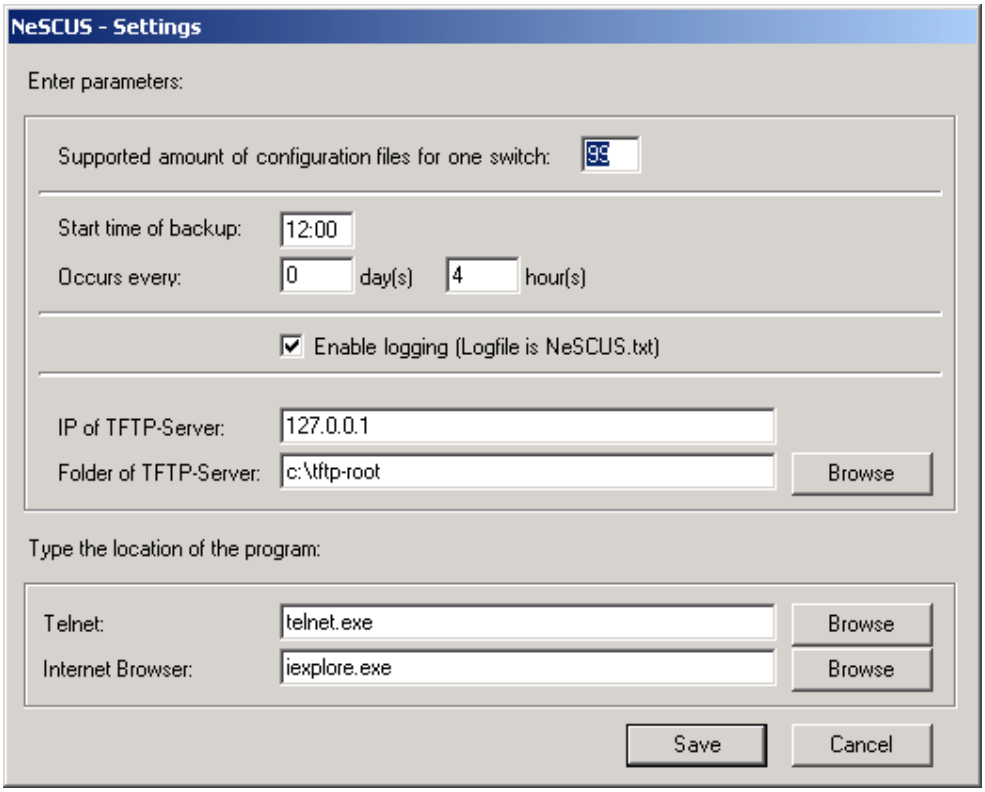


Figure 3. The window of application settings.

Supported amount of configuration files for one switch – This is the amount of configurations files, which is saved for one switch. The maximum amount for one switch is 99.

Start time of back up – Define the time of day for starting the backup here. The time is entered in the form of HH:MM, where HH is hours (24 h) and MM is minutes. The backup –function is started when the entered time is reached for the next time. Note! NeSCUS.exe application must be closed, before the backup can be run by Windows service. Also note that NeSCUS user interface will close itself, if it is not used for 10 (default value) minutes. At first NeSCUS will prompt you about the closure, and then it waits for additional 10 minutes before closing. This time can be modified in NeSCUS.XML file, which can be found from <program folder>/configs – folder.

Occurs every – Define the timeout of backup. For example setting *1* day(s) *0* hour(s) the backup is taken once a day. The minimum timeout for backup is 4 hours, and maximum is 1 month.

Enable logging – If this option is checked, a log file of NeSCUS functions is saved, while running the backup. The name of the log file is NeSCUS.txt, and it is saved into the same folder where NeSCUS.exe can be found. Note! If there exists log file in the disk, then there is link to it next to this field.

IP of TFTP-Server – IP address of the TFTP Server. This gives you opportunity to use common TFTP-Server that is in different computer than NeSCUS.

Folder of TFTP-Server – Define the directory and folder for TFTP-Server here. TFTP-Server sends the configurations of switches, and saves them in this folder. It is possible to use folder in NeSCUS computer or map a drive into the folder of TFTP-server computer, if TFTP-server is in different computer than NeSCUS application.

Telnet – Define the directory and executable file of Telnet –application here. Telnet is needed for manual maintenance of switches.

Internet Browser – Define the directory and executable file of Internet Browser –application here. The Internet browser is needed when comparing of switch file is done. See 2.7 History of versions.

When all settings are entered, click **'Save'** –button, and the settings are saved.

If you do not want to save changes or you just want to close this window, click **'Cancel'** –button. Clicking the **'Cancel'** –button won't cause any changes into application settings.

All parameters are obligatory, except 'Enable logging' check box.

2.5 Switch settings

NeSCUS is capable of taking configuration backup from 1 – 200 switches. In order for NeSCUS to handle saving of configuration, every single switch must be entered into switch settings.

Choose **Settings – Switches** to enter settings for switches (figure 4).

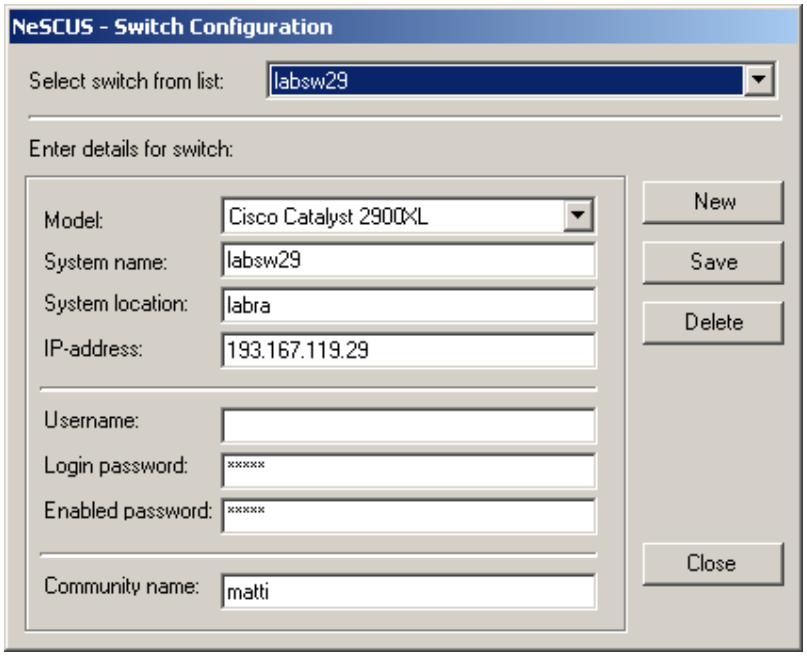


Figure 4. Switch Configuration –window.

All fields, except **'Login password'**, are obligatory

Note! 'Login password' must be entered to those switches, which have two passwords like Cisco Catalyst.

Adding a switch

Switch is added to the backup list in following manner:

1. Click button **'New'**.
2. Choose from **Model** –dropdown list model for the switch:
   - Cisco Catalyst 2900XL or
   - HP Procurve Switch 2524.
3. Enter system name of the switch into **System name**.
4. Enter location of the switch into **System location**.
5. Enter IP-address of the switch into **IP-address**.
6. Enter name of the user into **Username**, (if the model of the switch requires this).
7. Enter **Login password** (if the model of the switch requires this).
8. Enter **Enabled password**, (if the model of the switch requires this).
9. Enter **Community name**.

Username and passwords (6-8) are those defined for switches.

Save settings of the new switch by clicking **'Save'** –button. The just added switch appears into the dropdown list at the top of the window (Select switch from list).

If only **'Close'** –button is clicked, entered settings are not saved.

Changing the switch settings

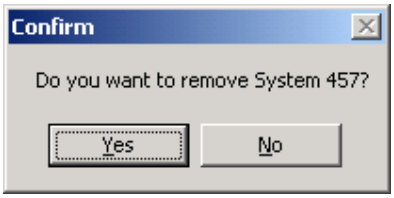
Switch settings can be changed by choosing the target switch from list at top of the window (Select switch from list).

Enter changes, and save them by clicking **'Save'** –button.
If only **'Close'** –button is clicked, changed settings won't be saved.

Removing a switch

Switch can be removed from backup list by following manner:

1. Choose the target switch from dropdown list at top of the window (Select switch from list).
2. Click **'Delete'** –button.
3. The application confirms if you really want to remove the switch:

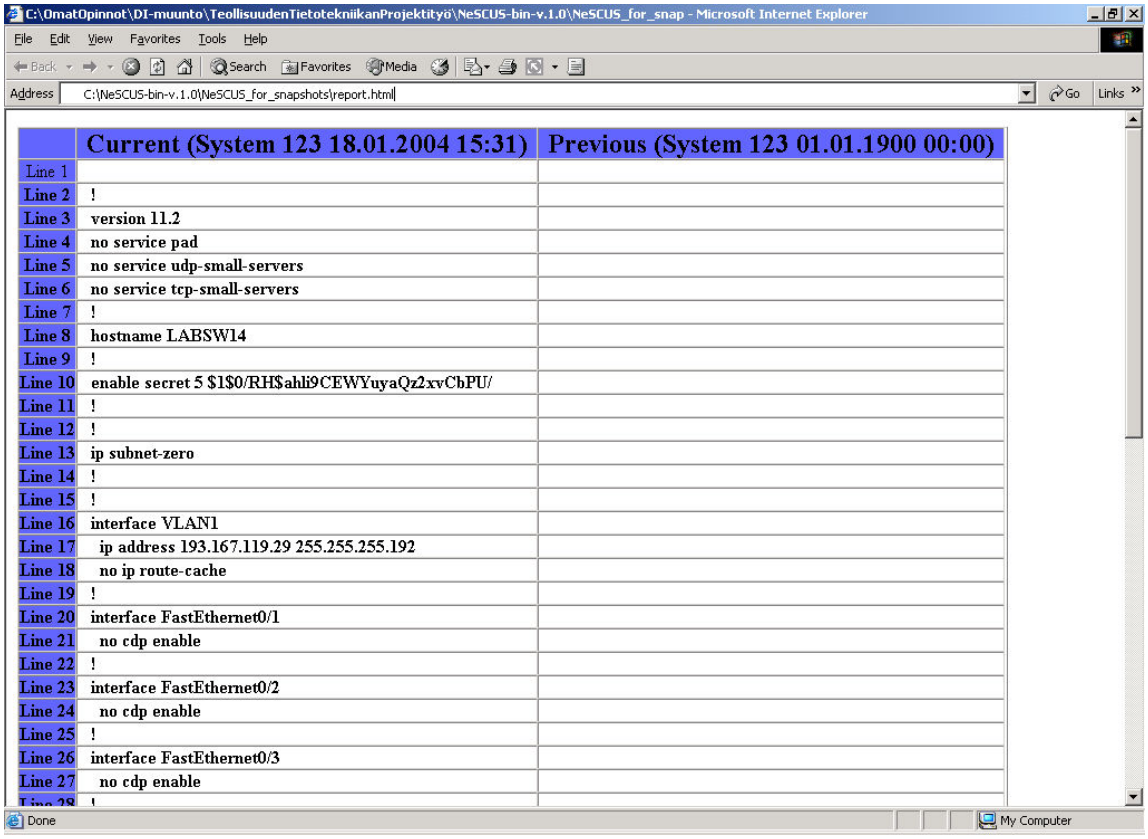


4. Clicking **'Yes'** switch is removed.
5. Clicking **'No'** switch is NOT removed.

2.6 Monitoring backup

NeSCUS performs the automatic backup, when both application and switch settings are entered. NeSCUS uses network communication for backup function. It loops though the list of switches and takes a backup copy of their configuration. If any changes have occurred in configurations, NeSCUS makes a history file from the old configuration file, and creates a new configuration file with current configuration.

If configuration has changed, NeSCUS shows the system name and IP-address of the switch in the main window (figure 2). Also the date of the old configuration file can be seen at that line. When you double click the name, Internet browser opens and shows the new and old configuration files side by side (figure 5).



	Current (System 123 18.01.2004 15:31)	Previous (System 123 01.01.1900 00:00)
Line 1		
Line 2	!	
Line 3	version 11.2	
Line 4	no service pad	
Line 5	no service udp-small-servers	
Line 6	no service tcp-small-servers	
Line 7	!	
Line 8	hostname LABSW14	
Line 9	!	
Line 10	enable secret 5 $1$0/RH$ahli9CEWYuyaQz2xvCbPU/	
Line 11	!	
Line 12	!	
Line 13	ip subnet-zero	
Line 14	!	
Line 15	!	
Line 16	interface VLAN1	
Line 17	ip address 193.167.119.29 255.255.255.192	
Line 18	no ip route-cache	
Line 19	!	
Line 20	interface FastEthernet0/1	
Line 21	no cdp enable	
Line 22	!	
Line 23	interface FastEthernet0/2	
Line 24	no cdp enable	
Line 25	!	
Line 26	interface FastEthernet0/3	
Line 27	no cdp enable	

Figure 5. Switch configuration has been changed. User has double clicked the switch name in the main window.

The changed configurations can be seen in bold letters. (In figure 5 all lines are bold because the whole configuration file is new, so all lines are different).

2.7 History of versions

It is possible to study old versions of configuration files by choosing File – History from menu. Following window is opened:

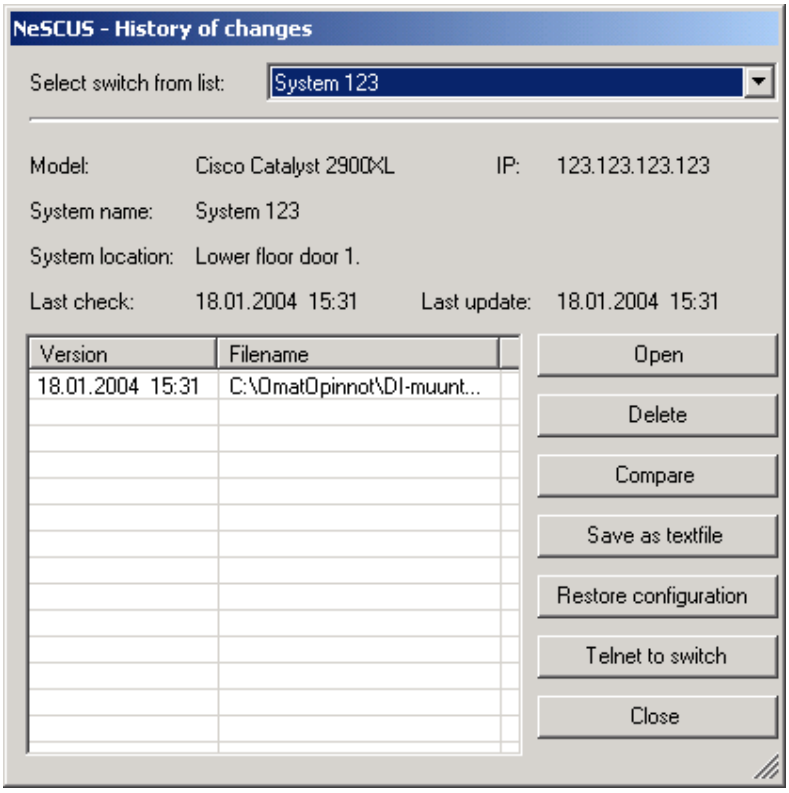


Figure 6. History of changes -window.

At first you must choose target switch from dropdown list (Select switch from list). After selection old configuration files of chosen switch can be seen in list.

History of changes –window can be closed by clicking **'Close'** –button.

Opening configuration file for study

1. Choose file from the list by clicking it.
2. Click **'Open'** –button.

The opened configuration file can be studied in Internet browser (figure 7).

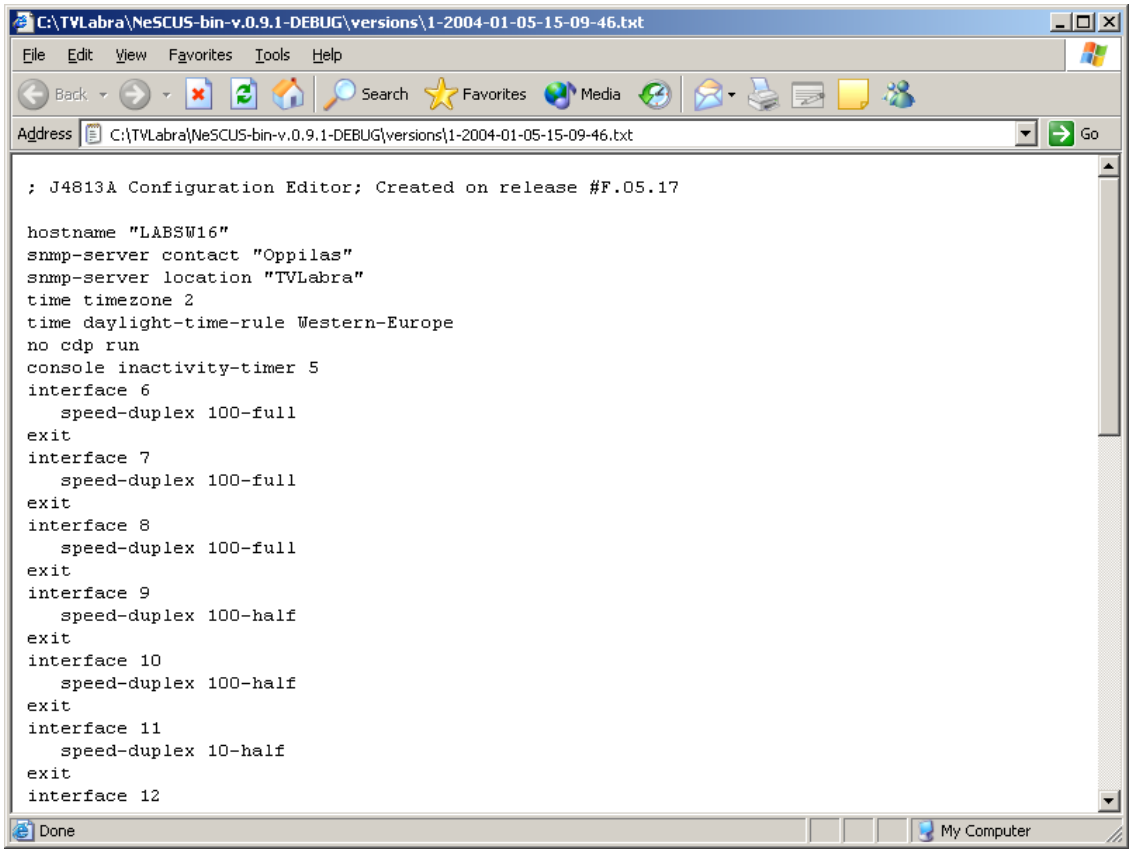


Figure 7. Configuration file is opened for study.

Removing configuration file

1. Choose file from the list by clicking it once.
2. Click **'Delete'** –button.
3. The application confirms if you really want to remove the file.
4. Clicking **'Yes'** file is removed.
5. Clicking **'No'** file is NOT removed.

Comparing configuration files

1. Choose two files from the list by clicking them once.
2. Click **'Compare'** –button.
3. A window is opened into the Internet browser, where it is possible to study the selected files.

Saving the configuration file into text file

1. Choose file from the list by clicking it once.
2. Click **'Save as textfile'** -button.
3. A dialog is opened. Choose directory and give a file name.
4. Click **'Save'** –button.

Restoring old configuration file for the switch

Sometimes there might occur a situation, where maintenance personnel must be able to restore an old version of configuration file (for example, new settings for the switch won't work). Restoring is done by following manner:

1. Choose file from the list by clicking it once.
2. Click **'Restore configuration'** –button.
3. A new window is opened. List is disabled, because at this choice, only old configurations of same switch are allowed.

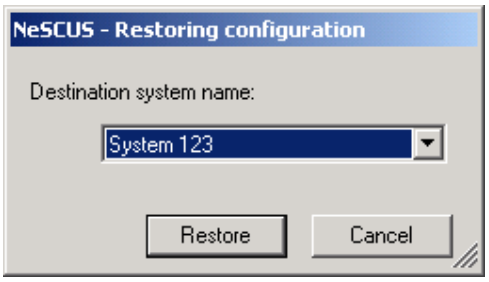


Figure 8. Dropdown list of switches for restoring.

4. Click **'Restore'** –button, and the configuration file is restored for the switch. The application returns to the History of changes –window.
5. Click **'Cancel'** –button and NO restoring is done. The application returns to the History of changes –window.

If you want to restore configuration from a file, which cannot be seen in the history list, do as follows:

1. Click **'Restore configuration'** –button WITHOUT choosing a file from list.
2. A open file –dialog opens. Choose your file and click **'Open'**.
3. A new window is opened. Choose a target switch from dropdown list (figure 8).
Note! Old configuration file must be restored for a switch of *the same model*.
4. Click **'Restore'** –button, and the configuration file is restored for the switch. The application returns to the History of changes –window.
5. Click **'Cancel'** –button and NO restoring is done. The application returns to the History of changes –window.

Telnet to switch

Clicking 'Telnet to switch' –button opens Telnet –application, and a communication is established to the switch which was chosen in the 'History of changes' –window.

3 HELP -FUNCTIONS

By choosing **Help – NeSCUS Help** from menu, a help file is opened in PDF-format.
By choosing **Help – About** from menu, an about NeSCUS -window is opened.

By choosing **Help – Licence** from menu, licence information can be read.

4 ERROR SITUATIONS

4.1 User input errors

Both in application and switch settings there are obligatory fields to fill. If faulty information is entered, or information is totally missing, NeSCUS shows a red exclamation mark beside that field (figure 9).

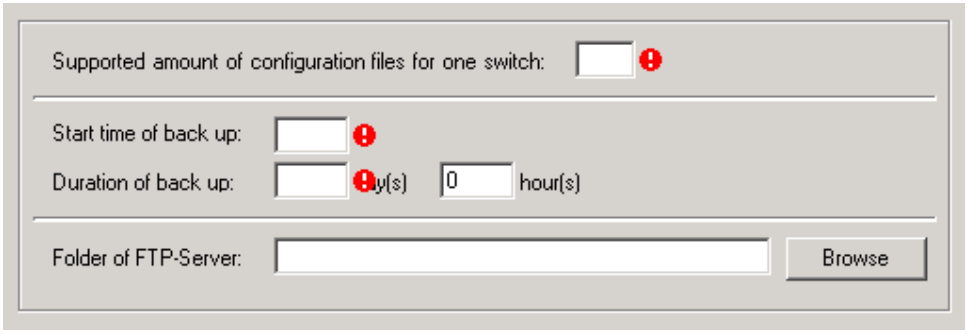


Figure 9. Fields missing information.

4.2 Problems when starting backup -function

Check that NeSCUS Service is running from Services. Check NeSCUS_log.txt for more details about the error. Set up logging from application setup to get more information to logfile.

4.3 Application error messages

Exceptions are shown in message box, but they are always logged to logfile too.

4.4 System error messages

Exceptions are logged to NeSCUS_log.txt file. That can be examined to get more detailed description about system errors.

5 GLOSSARY

Configuration file – includes information of all those switches which are saved into the NeSCUS. This information is for example IP-address, user name, passwords.

HTML - HyperText Markup Language is a description language for creating WWW pages for Internet browser.

Command file – includes commands of a switch model in a particular order. With these command it is possible to create connection to the switch in question and download or restore the current configuration file by using TFTP.

Switch configuration file – includes configuration of a switch. In the configuration file are listed those commands and command options which make it possible to configure switch from factory settings to its operational settings. If you want to save into new switch same configuration as in some old switch, you just open a control connection into the new switch and run all commands from the configuration file in listed order by using command prompt.

NeSCUS configuration file – includes common settings for NeSCUS to operate, like amount of history files and folder of TFTP-server.

TFTP - Trivial File Transfer Protocol is a simple communication protocol run over UDP. TFTP do not use usernames or passwords. TFTP protocol is used for example into transferring configuration files of switches. In the switch there is a TFTP-client, which takes connection into predefined TFTP-server beside of communication.

Telnet – is a protocol, which enables to create a text based TTY connection into device which supports telnet protocol. This on its turn enables remote controlling of the device. All controllable switches support telnet protocol. Telnet uses TCP port 23 as a default port. Usually when creating telnet connection, user must enter username and password. This blocks unauthorized connections into the device. Telnet traffic is not encrypted, i.e. usernames and passwords are not encrypted also.

Version management – with NeSCUS this means that a configuration file downloaded from switch is compared to previous downloaded one. If some changes in the configuration have happened, a new version of configuration file is created and the old one is filed.

XML - Extensible Markup Language is a flexible text definition language for saving data.