NLTESTCHANNEL MANUAL

NEWRON SYSTEM
25-27 Boulevard Victor HUGO
31770 COLOMIERS (France)
T: +33 (0)5 61 15 18 45
F: +33 (0)5 61 15 16 44

SUMMARY

PICTURES

INTRODUCTION

Thank you for choosing **NLTestChannel** software member of NLSuite.

We are happy to help you in your LonWorks integration. All software of NLSuite are often updated to correct bugs and improve performances. Please check version on Web site www.newron-system.com.

NL220TE

This is a LonWorks LNS Manager tool.

NLFacilitiesTE

This is a graphical tool for managing your living spaces.

NLOPC-MIP

This is a very fast OPC server with embedded tool to tune your Scada.

NLopcTE

It is a OPC server for LNS Turbo Edition. It can manage directly iLon interfaces.

NLUtil

This is a window node utility. It is used before installation for checking channel and other LonWorks products.

NLTestChannel

This is a window utility to be used to monitor the state of LonTalk(c) channels.

INSTALLATION OF PROGRAMS

This section explains how to install the NITestChannel program

Configuration requirements

The table below shows the minimum configuration and the recommended configuration for the installation and correct functioning of the program.

Equipment	Minimum	Recommended
Operating system	Windows 2000, Xp, 2003 server	Windows 2000, Xp, 2003 server
Computer	Pentium IV 1Ghz 800 x 600 screen	Pentium IV 2Ghz 1024 x 768 screen
Memory	256 M octets	512 M octets
Hard disk	1Go	1Go
CD ROM	Required for installation	Required for installation
Software	LNS Turbo Edition 3.21 or greater	LNS Turbo Edition 3.21 or greater
Interface network	Type NSI or VNI card	Type NSI or VNI card

Table 1 The equipment

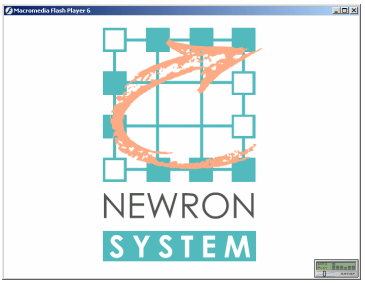
Installation

A setup program will guide you through the installation procedure and will ask you for any information necessary.

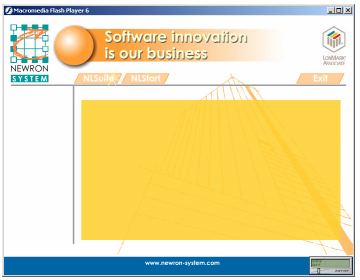
Installation of program

1. Insert the CDROM in the CD reader
2. If no window appears on the screen open: X:\MaquetteCD01.exe where X is the driver letter of your CD reader
3. After a couple of second, Picture 1 will appear.
4. Select **Software family** NLSUITE on main Menu
5. Picture 2 will appear on the screen.
6. Select a product logo or  for complete menu
7. The complete menu is show in Picture 4.
8. When you select a product, the Description information will appear like in Picture 5.
9. Select 

, for launch installation product.

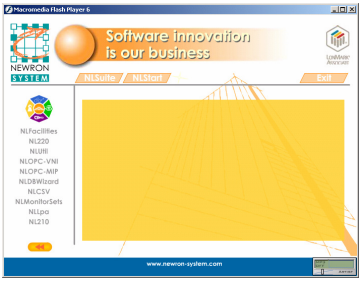


Picture 1 Step 1

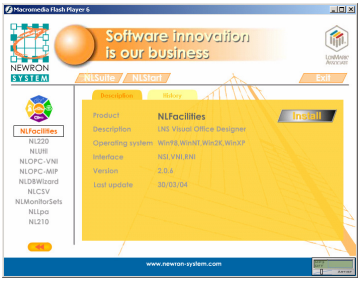


Picture 2 Step 2

Picture 3 Step 3

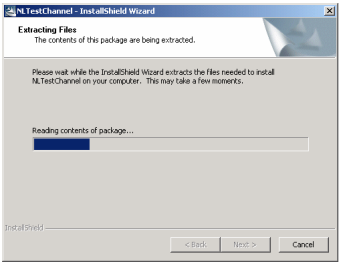


Picture 4 Step 4

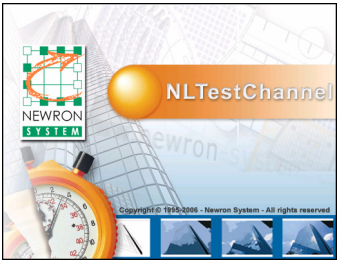


Picture 5 Step 5

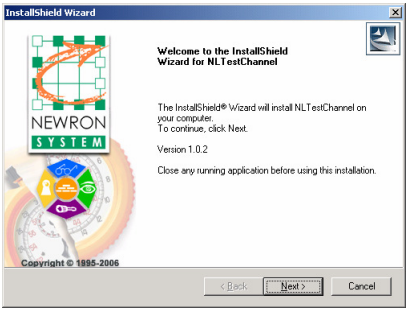
The installation program will now be readied and Picture 7 will appear on the screen. Follow the instructions until you arrive to the type of installation choice on **Erreur ! Source du renvoi introuvable.**8.



Picture 6 Installation Step 6



Picture 7 Install Step 7



Picture 8 Installation Step 8

You should restart your PC at the end of the installation, according to the instructions

NETWORK INTERFACE

The network interface allows a physical link to be created between the PC and LonWorks network.

Valid interfaces

Type of interface	Maker	Connection	NSI	VNI
PCC10	Echelon	Slot PCMCIA	X	X
PCLTA21	Echelon	Slot PCI	X	X
ILON100	Echelon	Remote IP		X
U10	Echelon	USB	X	X
SLTA10	Echelon	Port RS232	X	
NIC709-PCI	Loytec	Slot PCI	X	X
NIC709-USB	Loytec	USB	X	X
NIC709-IP	Loytec	Remote IP	X	X
LPP	Gesytec	Slot ISA	X	
LPC	Gesytec	Slot PCI	X	

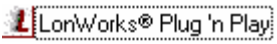
Table 2 Type of PC interface

To work, **NTestChannel** needs a Firmware NSI or VNI interface

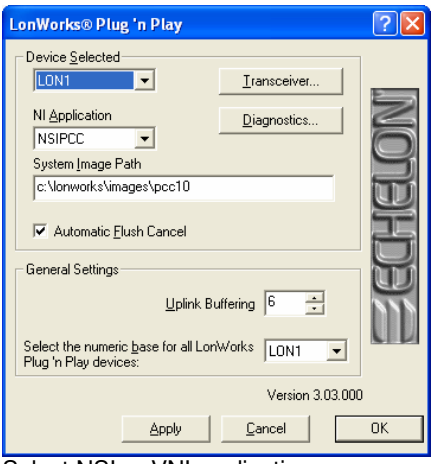
Verifying interface function

To function correctly, **NLTestChannel** must have a type NSI or VNI interface as shown in Table 2.

Verifying PCC10, PCLTA21

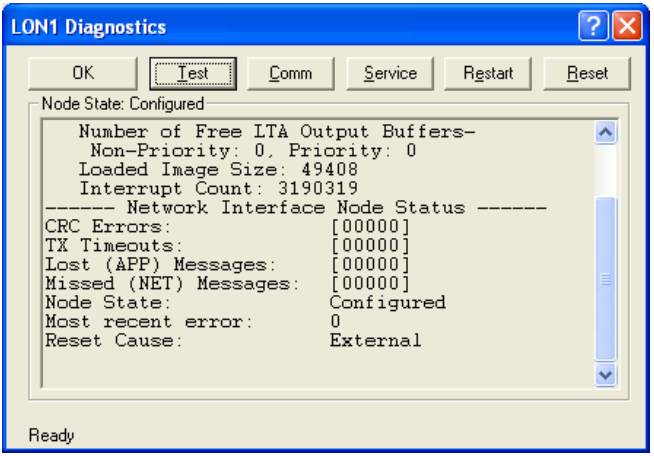
1. Open the configuration panel and launch the icon 

2.



Select NSI or VNI application.
Click on Diagnostics

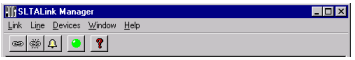
3.



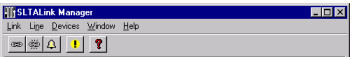
Click on Test to test your interface.

Verifying SLTA10

1. Activate: *Start/Programs/LonWorks SLTA10/SLTALink Manager*
2. The SLTA Link Manager menu bar must be as in Picture 9 with a green warning light, if it is red, or if the menu bar is like Picture 10, the interface is not working. Repeat the configuration steps, following the instructions carefully

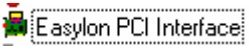


Picture 9 SLTA10 connected

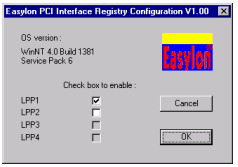


Picture 10 SLTA10 unconnected

Verifying LPP

1. Open the configuration panel and launch the icon 

2. If a check box is valid, the interface is show by the system like in Picture 11

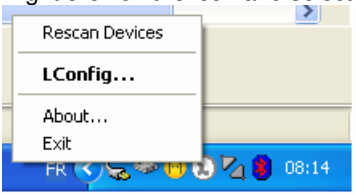


Picture 11 Valid LPP windows

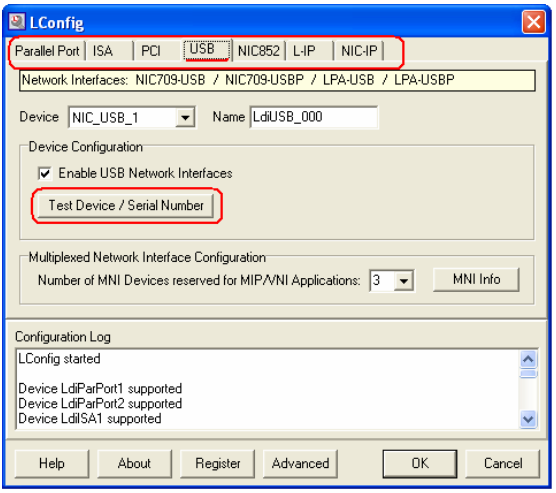
Verifying Loytec Interface

1. When Loytec Network Interfaces driver is installed you must have the Loytec tray icon.

2. Right click on the icon and select **LConfig** option.



3.



Select the tabulation depending on the type of your interface (ISA, PCI, USB, …)
Click on Test Device/Serial number to test your interface.

PRESENTATION OF NLTESTCHANNEL

What is NLTestChannel

NLTestChannel is a LNS utility used to monitor the state of the channels of the network.

NLTestChannel can be used to:

Raise alarms or warnings on a single device

Alarms and warnings can be raise on network statistics (i.e. CRC, bandwidth, ...), on device state (i.e. unconfigured, offline, ...), on device reset cause (ie watchdog, power up, ...), on error logged on devices (i.e. division per zero)

For each alarm/warning you can display the details with the possible causes and possible actions to be taken.

Raise alarms or warnings on a channel

Alarms and warnings can be raised on network statistics (i.e. CRC, bandwidth, ...)

Save all alarms and warnings (appearance and disappearance) in a database.

These data can be consulted at any time.

Display the state of each channel

The state of a channel can be from all good (green) to all bad (red)
Calculation of the state use many parameters.
This state is useful to have an overlook on the quality of each channel.

Save tendency data in the database

These data (i.e. CRC, bandwidth, ...) can be monitored (graphs) at any time.

Make diagnostics on a channel

Use full to make real time diagnostics when problems appear.
This requires to be in maintenance mode.

Make diagnostics on devices

Use full to make real time diagnostics when problems appear.
This requires to be in maintenance mode.

How to use it

The first operation is to configure **NLTestChannel**.

To do that :

- Launch NLTestChannel Configuration Tool
- Select the LNS databases to monitor
- Create your families
- Set options (if required)
- Set the frequencies (if required)
- Set the emails on alarm
- Save your configuration

After **NLTestChannel** is configured, you can launch it and use it.

To do that :

Launch NLTestChannel

- Double click on the tray icon to open the user interface of NLTestChannel
- Consult the alarms
- Consult the channels state
- Consult the tendency graphs
- Consult the alarms logged in database
- If required :
    - Switch in maintenance mode
    - Do diagnostics on channels
    - Do diagnostics on devices

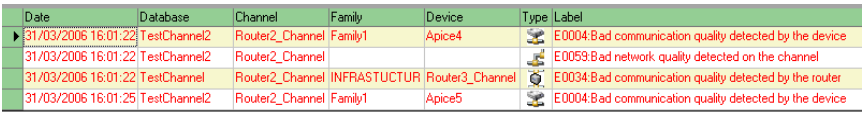
NLTestChannel : How tests are done

There are four types of tests :

- Tests for alarms
- Tests for channel state

- Tests for tendencies
- Tests for diagnostics

Tests for alarms and warnings



Date	Database	Channel	Family	Device	Type	Label
31/03/2006 16:01:22	TestChannel2	Router2_Channel	Family1	Apice4		E0004:Bad communication quality detected by the device
31/03/2006 16:01:22	TestChannel2	Router2_Channel				E0059:Bad network quality detected on the channel
31/03/2006 16:01:22	TestChannel	Router2_Channel	INFRASTUCTUR	Router3_Channel		E0034:Bad communication quality detected by the router
31/03/2006 16:01:25	TestChannel2	Router2_Channel	Family1	Apice5		E0004:Bad communication quality detected by the device

An alarm or a warning can be raised for :

- A channel
- A device
- An infrastructure device (router)

There are several types of test :

Tests on statistics

These tests are done using the logged statistics on each device.

For example the percentage of CRC detected by a device.

You can configure the threshold of each test in the Configuration Tool.

The alarm/warning appears when the threshold is reached by the statistic.

The alarm/warning disappears when the threshold is no more reached by the statistic.

Tests on device state

These tests are done using the state of each device.

The alarm/warning appears when the device is in a wrong state (not configured online).

The alarm/warning disappears when the device is configured online again.

Tests on device last reset cause

These tests are done using the last reset cause of each device.

The alarm/warning appears when the device reset cause is not cleared.

When the alarm appears NLTestChannel clear the last reset cause automatically.

The alarm/warning disappears when the last reset cause is cleared.

Tests on device last error logged

These tests are done using the last error logged on each device.

The alarm/warning appears when the last error logged is not zero.

When the alarm appears NLTestChannel clear the last error logged automatically. The number of time the last error logged is cleared by day can be limited in the Configuration Tool.

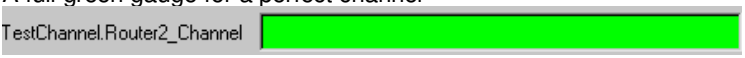
The alarm/warning disappears when the last reset cause is cleared.

Tests for channels state

The channels state is a feature to know the global state of each channel.

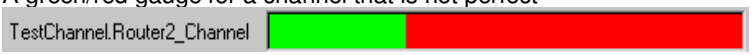
The state of each channel is displayed with a gauge.

A full green gauge for a perfect channel



A full red gauge for a complete bad channel

A green/red gauge for a channel that is not perfect



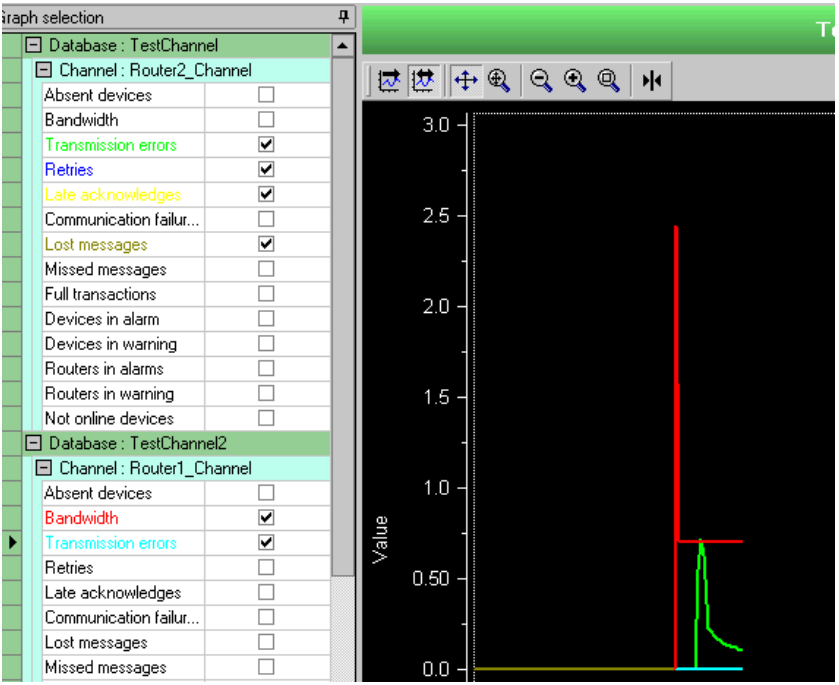
To determine the channel of each state :

NLTestChannel calculates the value of each test for the channel (average value of all devices of the channel).

Compares the value to the green threshold and the red threshold. These thresholds can be configured in the Configuration Tool.

Take the worst value to determine the state of the channel

Tests for tendencies



Tendencies are network data saved in the database by **NLTestChannel** for each channel.

Note : You can configure the maximum size of the database and the login frequency in the Configuration Tool.

These data can use :

- The statistics of each device (average value)
- The state of the devices

You can consult these data through graphs.

Tests for diagnostics

Diagnostics are available only in maintenance mode.

Diagnostics are to be used when problems occur.

Diagnostics are real time tests.

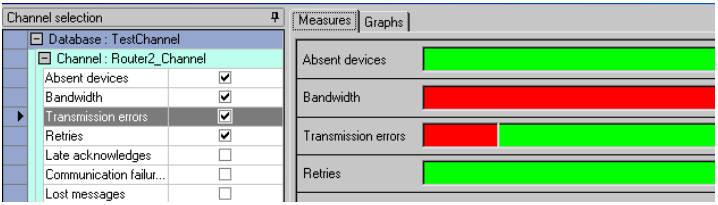
These mean :

- The data are displayed just after being read on network
- The data polling on the network is faster

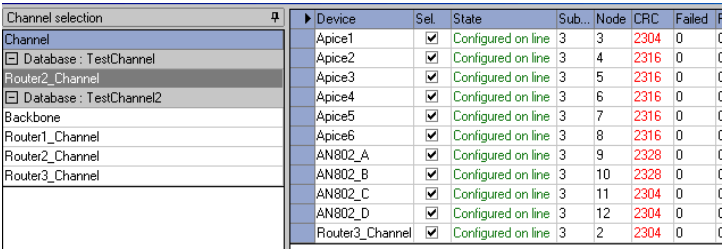
Note :
You have to remember that when in diagnostics the bandwidth usage by **NLTestChannel** is more important.
An inactivity timeout can be defined in the Configuration Tool to automatically exit the diagnostics when no user activity is detected.

Two types of diagnostics are available :

- **Channels diagnostics**



- **Devices diagnostics**



Diagnostics can use :

- Statistics logged on devices (average for channel)
- State of devices

Limited version:

NLTestChannel is available for evaluation in limited version.

In this mode **NLTestChannel** features are COMPLETE but with these limits :

- ✓ Only two monitored channel
- ✓ Only four devices per channel

To unlock **NLTestChannel** you need an hardware key (dongle USB or parallel).Contact your distributor to get a hardware key.

NLTESTCHANNEL SETTINGS

Introduction

Launching NLTestChannel configuration Tool

You can launch the Configuration Tool of **NLTestChannel** from the startup menu.

Open **StartUp** menu

Open **Programs** Folder

Open **NLSuite** folder

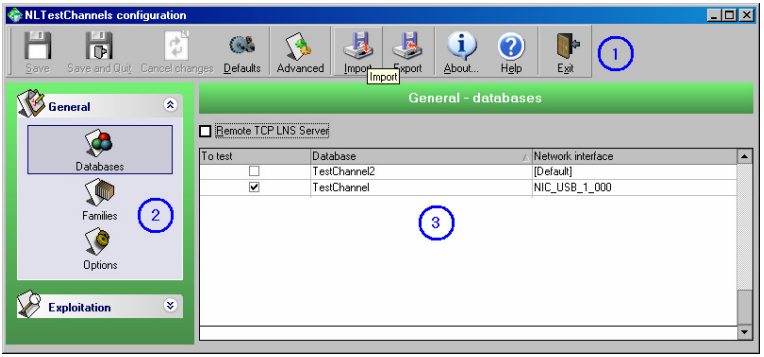
Open **NLTestChannel** folder

Click on **NLTestChannel Settings**

You can launch too the Configuration Tool from the menu of the tray icon.

Right click on the tray icon and select option **Configure**.

Presentation of NLTestChannel configuration tool



NLTestChannel Configuration Tool is used to configure **NLTestChannel.**

NLTestChannel must be configured at least one time with at least one LNS database.

You can change the configuration of **NLTestChannel** at any time.

Most of the configurations can be changed without stopping **NLTestChannel**.

A few part requires **NLTestChannel** to be stopped and launched again to take the changes in account.

If you change such configurations and if **NLTestChannel** is running then a warning will be raised.

NLTestChannel can work in standard or advanced mode.

NLTestChannel Configuration Tool is composed by :

1. toolbar
2. menu
3. A configurations screen

   The contents of the configuration screen will change depending on the actual option selected in the menu.

The toolbar

	Save the changes (enabled only if changes are pending)
	Save the changes and exit (enabled only if changes are pending)
	Cancel the changes (enabled only if changes are pending)
	Set all configurations to default value (a confirmation will be asked for)
	Swap standard/advanced mode
	Import the entire configuration from a XML file
	Export the entire configuration to a XML file
	Display about box window
	Display help contents
	Exit (without saving changes)

Configuration Tool Menu

The contents of the menu depends on the actual mode.

Menu in standard mode

		Configure LNS databases to monitor
		Configure Families
		Configure General Options
		Configure Monitor Frequencies
		Configure Emails

Menu in advanced mode

		Configure LNS databases to monitor
		Configure Families
		Configure General Options
		Configure Monitor Frequencies
		Configure Tests
		Configure Data Login
		Configure Emails
		Configure Channels Diagnostics
		Configure Devices Diagnostics

Configuration Tool Mode

The Configuration Tool can be used in standard mode or advanced mode.

To change the mode click on  in the toolbar.

If the button is not pressed then you are working in standard mode.

If the button is pressed then you are working in advanced mode.

In most cases standard mode is sufficient.

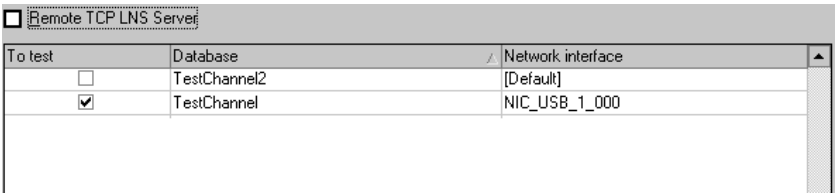
The options available in advanced mode and not available in standard mode are :

- To configure the tray icon menu contents
- To configure the options available in **NLTestChannel**
- To configure some advanced frequencies
- To configure each test done and this for each channel
- To configure the threshold of each test
- To configure the thresholds of each test for the channels state
- To include/exclude any channel from the tests
- To include/exclude any device from the tests
- To configure data login
- To configure channels diagnostics
- To configure devices diagnostics

Standard configuration

Configuring the LNS databases (standard mode)

You will configure here the LNS databases to be monitored by **NLTestChannel**.



Remote TCP LNS Server

Check this to monitor remote LNS databases.

If checked then only declared remote LNS databases will be available.

If not checked then only local LNS databases will be available.

Databases

For each database :

To test
Check this if the database must be monitored.

You must select at least ONE database.

Network Interface
Select the network interface to use to monitor the database.
[Default] is to use the network interface used the last time for this database.

Configuring the families (standard mode) 

You will configure here the families of the device templates.

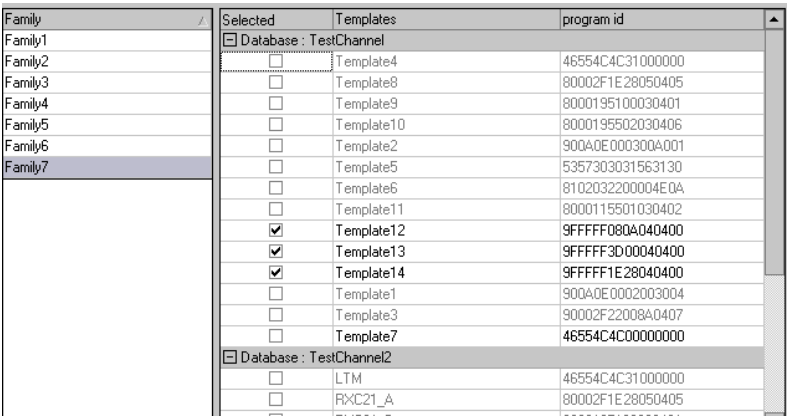
Families are used to group one or several device templates in one family.

Note that a family for router devices (INFRASTRUCTURE) always exists.

When an alarm/warning appears for an application device then **NLTestChannel** will put the alarm/warning in the family depending on the device template of the device.

A device template can belong only to one family.

Even if the same device template (same programID) belong to several monitored databases then it can belong only to one family.



The left list displays the existing family.

The right grid displays the device templates of each monitored database.

When you select a family in the left list, then the device templates of the family are displayed with a ☑.

The device templates that do not belong to the family are displayed with a ☐.

The device templates that belong to ANOTHER family are displayed are grayed and cannot be selected.

Creating a new family

Click on 

Enter the name of the new family

Removing a family

Select the family in the left list

Click on 

Confirm by pressing on **OK**

Changing a family

Select the family in the left list

Check/Uncheck the device templates you want to belong or not in the family

Configuring the options (standard mode) 

You will configure here different options of **NLTestChannel**.

Maintenance Mode\Password

The maintenance mode of NLTestChannel allows the user to access advanced options like diagnostics.

You can protect this mode with a password.

Therefore the password is used to :

- To protect the access of the Configuration Tool of **NLTestChannel**
- To protect the option to disable the tests of **NLTestChannel**
- To protect the option to exit **NLTestChannel**

All of these requires to know the password (if any).

Maintenance Mode\Automatic disconnection timeout (min)

You can configure here the timeout in minutes to automatically exit the maintenance mode of **NLTestChannel** when no user activity is detected.

Maintenance Mode\Icon file

You can define here the bitmap used for the maintenance mode button in the menu of **NLTestChannel**.

The file must be :

An ico or a bmp file

32*32 size

Transparent color is (RGB 0xFF, 0, 0xFF)

Language

You can set here the language of **NLTestChannel**.

Alarm popups\Popups

Popups are displayed when alarms appear or disappear and when NLTestChannel is reduced as a tray icon.

Use this option to enable/disable the popups.

Alarm popups\Show delay (sec)

Delay an alarm popup is shown (in second).

Print\Project name

Name of the project added in the header of all prints.

Configuring the frequencies (standard mode) 

You will configure here the frequencies of **NLTestChannel**.

Device test frequency (sec)

The time in second between the test of two devices.

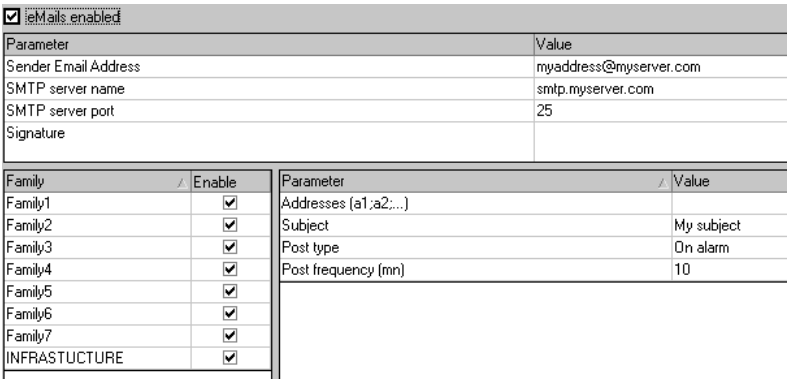
Router test frequency (sec)

The time in second between the test of two routers.

Configuring the emails (standard mode) 

You will configure here the emails to send when alarms/warnings appear or disappear.

You can configure **NLTestChannel** to send emails for each family.



eMails enabled

Use this option to enable/disable emails.

Parameter\Sender Email Address

The source email address of the machine sending the emails (this means the machine where **NLTestChannel** is running).

This is MANDATORY.

Parameter\SMTP server name

The SMTP server address.

Parameter\SMTP server port

The port to use to access the SMTP server.

Parameter\Signature

The text that will be added in all emails as a signature.

Family

In this list you have all families you have defined.

The family **INFRASTRUCTURE** always exists and concerns the infrastructure devices (routers).

Family parameters

For each family you can define the emails to send on alarms.

To do that select the family in left list and enter :

- **Addresses (a1;a2;...)**

  Enter here the destination emails addresses.
  You can enter several addresses separated by a ;

- **Subject**

  The email subject.

- **Post type**

  How the emails must be send

  - **On alarm**
    Each type an alarm/warning appears or disappears the emails is sent
  - **On frequency**
    The emails are sent only at a certain frequency (but only when alarms/warnings appear or disappear)

- **Post frequency (mn)**

  Frequency in minutes to post the emails.
  Used only if **Post type** is **On frequency**

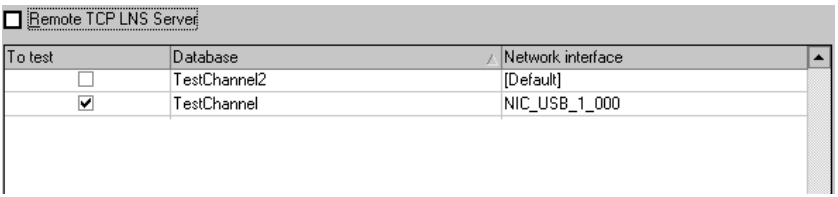
Advanced configuration

In advanced mode you have more options to tune **NLTestChannels**.

To swap between advanced/normal mode click on 

Configuring the LNS databases (advanced mode)

You will configure here the LNS databases to be monitored by **NLTestChannel**.



Remote TCP LNS Server

Check this to monitor remote LNS databases.

If checked then only declared remote LNS databases will be available.

If not checked then only local LNS databases will be available.

Databases

For each database :

- **To test**

  Check this if the database must be monitored.
  You must select at least ONE database.

- **Network Interface**

  Select the network interface to use to monitor the database.
  [Default] is to use the network interface used the last time for this database.

Configuring the families (advanced mode) 

You will configure here the families of the device templates.

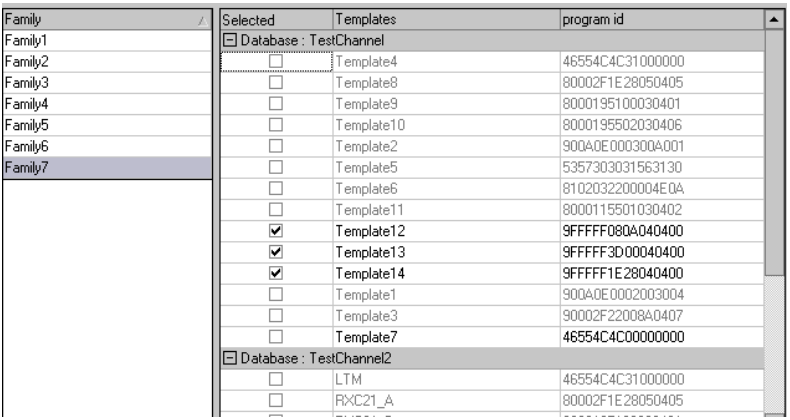
Families are used to group one or several device templates in one family.

Note that a family for router devices (INFRASTRUCTURE) always exists.

When an alarm/warning appears for an application device then **NLTestChannel** will put the alarm/warning in the family depending on the device template of the device.

A device template can belong only to one family.

Even if the same device template (same programID) belong to several monitored databases then it can belong only to one family.



The left list displays the existing family.

The right grid displays the device templates of each monitored database.

When you select a family in the left list, then the device templates of the family are displayed with a ☑.

The device templates that do not belong to the family are displayed with a ☐.

The device templates that belong to ANOTHER family are displayed are grayed and cannot be selected.

Creating a new family

Click on 

Enter the name of the new family

Removing a family

Select the family in the left list

Click on 

Confirm by pressing on **OK**

Changing a family

Select the family in the left list

Check/Uncheck the device templates you want to belong or not in the family

Configuring the options (advanced mode) 

Tray icon menu options\Disable tests

Set the option **Disable** available or not in the menu of the tray icon of **NLTestChannel**.

*Note : **Disable** can be used to stop/start the channels monitoring.*

Tray icon menu options\Configure

Set the option **Configure** available or not in the menu of the tray icon of **NLTestChannel**.

*Note : **Configure** can be used to launch the configuration tool from **NLTestChannel**.*

Tray icon menu options\Exit

Set the option **Exit** available or not in the menu of the tray icon of **NLTestChannel**.

*Note : **Exit** can be used to quit **NLTestChannel**.*

Standard mode features\Channels state

Set if the feature **Channels state** is available or not in **NLTestChannel** when working in standard mode.

Standard mode features\Tendency graphs

Set if the feature **Tendency graphs** is available or not in **NLTestChannel** when working in standard mode.

Standard mode features\Alarms login

Set if the feature **Alarms login** is available or not in **NLTestChannel** when working in standard mode.

Maintenance mode features\Channels state

Set if the feature **Channels state** is available or not in **NLTestChannel** when working in maintenance mode.

Maintenance mode features\Tendency graphs

Set if the feature **Tendency graphs** is available or not in **NLTestChannel** when working in maintenance mode.

Maintenance mode features\Alarms login

Set if the feature **Alarms login** is available or not in **NLTestChannel** when working in maintenance mode.

Maintenance mode features\Diagnostics

Set if the features **Diagnostics** are available or not in **NLTestChannel** when working in maintenance mode.

Maintenance Mode\Password

The maintenance mode of NLTestChannel allows the user to access advanced options like diagnostics.

You can protect this mode with a password.

Therefore the password is used to :

To protect the access of the Configuration Tool of **NLTestChannel**

To protect the option to disable the tests of **NLTestChannel**

To protect the option to exit **NLTestChannel**

All of these requires to know the password (if any).

Maintenance Mode\Automatic disconnection timeout (min)

You can configure here the timeout in minutes to automatically exit the maintenance mode of **NLTestChannel** when no user activity is detected.

Maintenance Mode\Icon file

You can define here the bitmap used for the maintenance mode button in the menu of **NLTestChannel**.

The file must be :

An ico or a bmp file

32*32 size

Transparent color is (RGB 0xFF, 0, 0xFF)

Language

You can set here the language of **NLTestChannel**.

Alarm popups\Popups

Popups are displayed when alarms appear or disappear and when NLTestChannel is reduced as a tray icon.

Use this option to enable/disable the popups.

Alarm popups\Show delay (sec)

Delay an alarm popup is shown (in second).

Print\Project name

Name of the project added in the header of all prints.

Configuring the frequencies (advanced mode) 

You will configure here the frequencies of **NLTestChannel**.

Device test frequency (sec)

The time in second between the test of two devices.

Minimum time between two tests of the same device (sec)

The minimum time interval in second between two tests of the same device .

Maximum number of clear eeprom (per day)

The maximum number of times **NLTestChannel** can clear the eeprom statistics of a device per day.

This is used when **NLTestChannel** want to clear the statistics of a device and when the last error logged is not zero.

Because of the life time of the eeprom memory it is recommended to avoid to clear it to often.

When this maximum is reached, an alarm will be raised for the device and the device will not be tested any more until the next day.

Router test frequency (sec)

The time in second between the test of two routers.

Test process

Define how the tests are processed if several databases are monitored :

- **Test only one database in each cycle**

  In this case the device test and router test frequency is for all databases.
  This means that it is the time between two tests regardless the database.

  Example :
  You monitor 2 databases (DB1, DB2) with two devices in each (D1,D2)
  If you set a Device test frequency of 1 you will have :

  DB1.D1 (1 sec) DB2.D1 (1 sec) DB1.D2 (1 sec) DB2.D2 (1 sec) DB1.D1 (1 sec) ....

- **Test all databases in each cycle**

  In this case the device and router test frequency is for one database.
  This means that it is the time between two tests of two devices for one database .

  Example :
  You monitor 2 databases (DB1, DB2) with two devices in each (D1,D2)
  If you set a Device test frequency of 1 you will have :

  DB1.D1 DB2.D1 (1 sec) DB1.D2 DB2.D2 (1 sec) DB1.D1 DB2.D1 ...

Configuring the tests (advanced mode) 

Here you will configure the tests of **NLTestChannel**.

The configuration can be set for each channel of each monitored database.

To test	Channel
⊟ Database : TestChannel	
☐	Backbone
☐	Router1_Channel
☑	Router2_Channel
☐	Router3_Channel
⊟ Database : TestChannel2	
☑	Backbone
☑	Router1_Channel
☑	Router2_Channel
☑	Router3_Channel

If you uncheck a channel (☐) then the channel will not be monitored and be unavailable in **NLTestChannel**.

For each channel you can configure :

- Alarms
- ChannelSate
- The devices to test

To configure a channel :

- Select the channel in the left list
- Select the tabulation for the data you want to configure
- Configure the channel

Configuring the tests of alarms (advanced mode) -> 

Configure the alarms

To realize	Test	Alarm threash...	Unit
⊟ On channel			
☑	Absent devices	55	%
☑	Bandwidth	40	msg/sec
☑	Transmission errors	9	%
⊟ On device			
☑	Absence		
☑	Applicationless State		
☑	Bypass State		
☑	Communication failures	2	%
☑	Error : application checksum error (152)		
☑	Error : configuration checksum error (1		

For each test :

- **To realize**

  If checked (☑) this alarm will be analyzed by **NLTestChannel** for the channel
  If not checked (☐) this alarm will NOT be analyzed by **NLTestChannel** for the channel

- **Test**

  The label of the test (cannot be changed)

- **Alarm threshold**

  The threshold NLTestChannel will use to detect an alarm.
  The value depends on the test itself.
  Some tests have no threshold.

- **Unit**

  The unit of the test (cannot be changed)

Configuring the channels state (advanced mode)  -> 

Here you will configure the thresholds to analyze the channels state of one channel.

Configure the thresholds

Test	100% Green threashold	100% Red threashold
Absent devices	0	100
Bandwidth	50	100
Communication failures	2	5
Late acknowledges	5	20
Lost messages	2	5
Missed message	2	5
Not online devices	0	100
Retries	5	20
Transactions full	2	5
Transmission errors	2	10

For each test you have :

- The label (cannot be changed)
- The threshold for the 100 % good (green) state

- The threshold for the 100 % bad (red) state

Here is an example.

For communication failures (CRC) you have thresholds of 2 and 5.

This means that :

For any CRC value less or equal than 2 the channel will be considered 100 % good

For any CRC value greater or equal than 5 the channel will be considered 100 % bad

For any CRC value between 2 and 5 the channel will be filled from green (2) to red (5)

Configuring the devices to test (advanced mode) -> 

Here you will configure the devices to test or not for one channel.

Select the tabulation 

Check/Uncheck the devices to test

To test		Device
☑		Device1
☐		Device10
☐		Device2
☑		Device3
☑		Device4
☑		Device5
☑		Device6
☑		Device7
☑		Device8
☑		Device9
☑		Router3_Channel

If checked (☑) the device or the router will be include to test the channel.

If unchecked (☐) the device or the router will be include to test the channel.

Note :

For an application device the icon is 
For an infrastructure device (router) the icon is 

Configuring the data login (advanced mode) 

Here you will configure how the data are saved in the trends database.

NLTestChannel logs in the database :

- Alarms appearance
- Alarms disappearance
- Channels tendency measures (CRC, bandwidth, lost messages,
- devices not online, ...)

Alarms login\Enabled

Activate or deactivate the alarms login.

Alarms login\Maximum login time

Maximum number of data kept in the database.

Can be 2 weeks, 1 month, or 3 months

Alarms login\Maximum backup files

Each time the data logged are too important NLTestChannel saves the data to removed in a CSV file (with the date of the file) and then remove them from the database.

This option is to configure the maximum number of CSV files kept on the disk.

Tendency measures\Enabled

Activate or deactivate the login of the channels tendencies.

Tendency measures\Maximum login time

Maximum number of data kept in the database.

Can be 2 weeks, 1 month, or 3 months

Tendency measures\Maximum backup files

Each time the data logged are too important NLTestChannel saves the data to removed in a CSV file (with the date of the file) and then remove them from the database.

This option is to configure the maximum number of CSV files kept on the disk.

Tendency measures\Login frequency (mn)

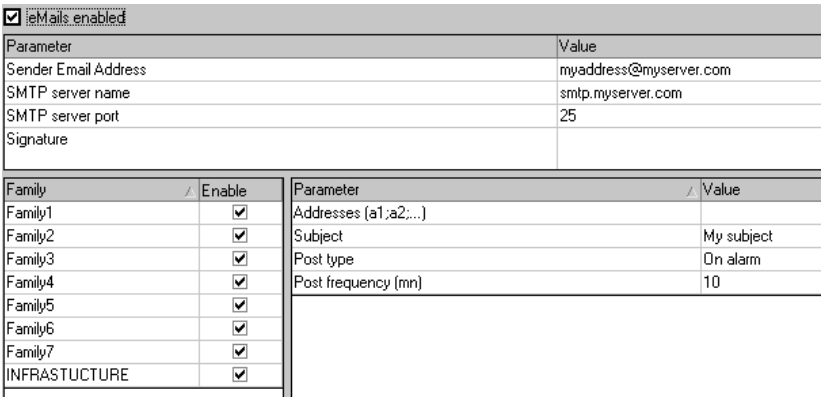
The frequency the value of each tendency is saved in the database.

The less you set the bigger the database size will be.

Configuring the emails (advanced mode) 

You will configure here the emails to send when alarms/warnings appear or disappear.

You can configure **NLTestChannel** to send emails for each family.



eMails enabled

Use this option to enable/disable emails.

Parameter\Sender Email Address

The source email address of the machine sending the emails (this means the machine where **NLTestChannel** is running).

This is MANDATORY.

Parameter\SMTP server name

The SMTP server address.

Parameter\SMTP server port

The port to use to access the SMTP server.

Parameter\Signature

The text that will be added in all emails as a signature.

Family

In this list you have all families you have defined.

The family **INFRASTRUCTURE** always exists and concerns the infrastructure devices (routers).

Family parameters

For each family you can define the emails to send on alarms.

To do that select the family in left list and enter :

- Addresses (a1;a2;...)

  Enter here the destination emails addresses.
  You can enter several addresses separated by a ;

- **Subject**

  The email subject.

- **Post type**

  How the emails must be send

  - **On alarm**
    Each type an alarm/warning appears or disappears the emails is sent
  - **On frequency**
    The emails are sent only at a certain frequency (but only when alarms/warnings appear or disappear)

- **Post frequency (mn)**

  Frequency in minutes to post the emails.
  Used only if **Post type** is **On frequency**

Configuring the channels diagnostic (advanced mode)

Here you will configure the diagnostics of the channels.

Note : Channels diagnostic is available in **NLTestChannel** only in maintenance mode.

Parameter\Stop alarms monitoring during diagnostic

Set this to **Yes** to stop alarms monitoring when you enter diagnostic mode.

Set this to **No** to continue alarms monitoring when you enter diagnostic mode.

Parameter\Test frequency

The frequency to test each device (unit is 1/10 second) in channel diagnostic mode.

Diagnostics :

To test	Test
☑	Absent devices
☑	Bandwidth
☑	Communication failures
☑	Full transactions
☑	Late acknowledges

You can define here the diagnostic available (☑) or not (☐).

Configuring the devices diagnostic (advanced mode)

Here you will configure the diagnostics of the devices.

Note : Devices diagnostic is available in **NLTestChannel** only in maintenance mode.

Parameter\Test frequency

The frequency to test each device (unit is 1/10 second) in devices diagnostic mode.

Diagnostics :	
To test	Test
☑	Communication failures
☑	Full transactions
☑	Last error
☑	Late acknowledges
☑	Layer 2 received

You can define here the diagnostic available (☑) or not (☐).

Importing/Exporting the configuration

You can import/export the entire configuration at any time.

Exporting the configuration

To export the configuration :

Click on  in the toolbar.

Select the XML file full pathname you want to generate

Click on **Save**

Importing the configuration

To import the configuration :

Click on  in the toolbar.

Select the XML file full pathname you want to import

Click on **Open**

NLTESTCHANNEL

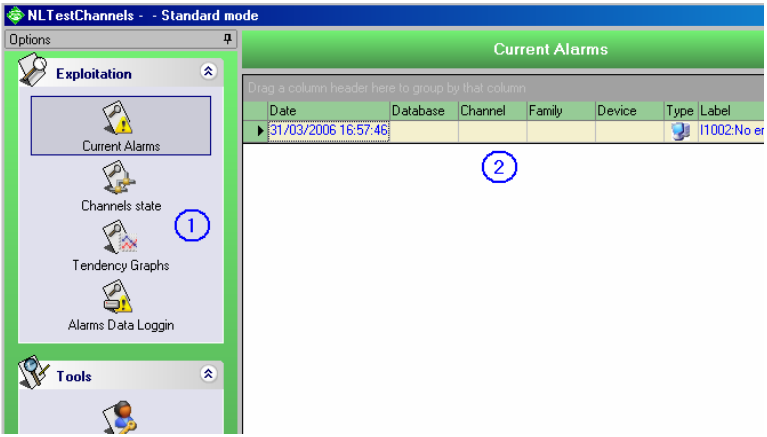
Introduction

Launching NLTestChannel

You can launch **NLTestChannel** from the startup menu.

- Open **StartUp** menu
- Open **Programs** Folder
- Open **NLSuite** folder
- Open **NLTestChannel** folder
- Click on **NLTestChannel**

NLTestChannel User Interface



1. The menu
2. The working page (contents depends on the selected option in the menu)

You can reduce the menu by clicking on .

When reduced you can restore the menu by clicking on the vertical tab Options and then clicking on .

NLTestChannel menu

The contents of the menu depends on the actual mode.

Menu in standard mode

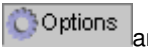
		Displays current alarms and warnings
		Display channels state
		Display tendency graphs
		Display alarms and warnings login
		Switch between standard and maintenance mode
		Print (can be disabled depending on selected option in the menu)
		Close Does not exit NLTestChannel but reduces it to the tray icon. To exit NLTestChannel use the tray icon menu.
		Display About Box
		Display Help

Menu in maintenance mode

		Displays current alarms and warnings
		Display channels state
		Display tendency graphs
		Display alarms and warnings login
		Display channels diagnostics
		Display devices diagnostics

		Switch between standard and maintenance mode
		Print (can be disabled depending on selected option in the menu)
		Close Does not exit NLTestChannel but reduces it to the tray icon. To exit NLTestChannel use the tray icon menu.
		Display About Box
		Display Help

You can reduce the menu by clicking on .

When reduced you can restore the menu by clicking on the vertical tab 

and then clicking on .

NLTestChannel mode

There are two modes for **NLTestChannel** :

- Standard mode
- Maintenance mode

In maintenance mode you can access to the diagnostics (channels diagnostics and devices diagnostics).

To switch the mode click on  in the menu.

Notes :

- If a maintenance password is defined in the Configuration Tool then the password is required to switch in maintenance mode.
- Maintenance mode will automatically stop by itself when no user activity is detected during a timeout.
- The icon  in the menu can be changed in the Configuration Tool.

Tray icon

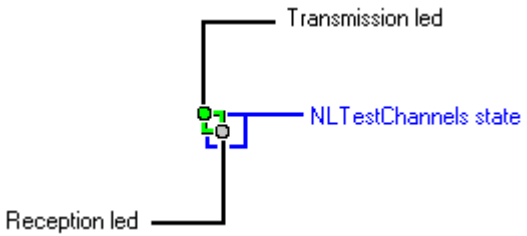
When you launch NLTestChannel a tray icon is displayed.

Double clicking on the tray icon will display the user interface of **NLTestChannel**.

Right clicking on the tray icon will display the tray contents menu.

The tray icon displays :

- Network transmissions
- Network receptions
- NLTestChannel state



The transmission led is ▫ when no message are sent on the network.

The transmission led is ▪ when a message is sent on the network.

The reception led is ▫ when no activity is waited for on the network.

The reception led is ▪ when a response or acknowledge is correctly received.

The reception led is ▪ when a response or acknowledge is not correctly received.

The **NLTestChannel** state is composed by the two bars : 

The state can be :

- 
  NLTestChannel monitoring is disabled, because manually disabled (using tray icon menu) or because in diagnostics mode

- **NLTestChannel** is preparing the data (first network polling)
- **NLTestChannel** is running and no alarms/warnings are present
- **NLTestChannel** is running and at least one warning is present
- **NLTestChannel** is running and at least one alarm is present

- *Note : In diagnostics mode the state blinks from to .*

Tray icon menu

Right clicking on the tray icon will display the tray icon menu.

The options are :

Configure

Launch NLTestChannel Configuration Tool.

Note : If a maintenance password is defined, then it is required for this option.

Disable

Disable channels monitoring.

This option can be disabled in the Configuration Tool.

Note : If a maintenance password is defined, then it is required for this option.

Show NLTestChannel

Show **NLTestChannel** user interface.

Double clicking on the tray icon will do the same thing.

Help

Display help welcome page.

About

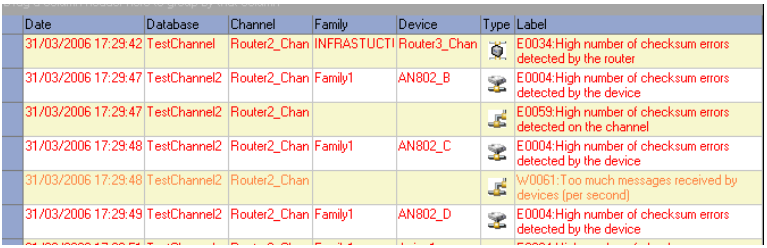
Display about box.

Exit

Exit **NLTestChannel**.

Note : If a maintenance password is defined, then it is required for this option.

Current Alarms and Warnings 



Date	Database	Channel	Family	Device	Type	Label
31/03/2006 17:29:42	TestChannel	Router2_Chan	INFRASTUCTI	Router3_Chan		E0034:High number of checksum errors detected by the router
31/03/2006 17:29:47	TestChannel2	Router2_Chan	Family1	AN802_B		E0004:High number of checksum errors detected by the device
31/03/2006 17:29:47	TestChannel2	Router2_Chan				E0059:High number of checksum errors detected on the channel
31/03/2006 17:29:48	TestChannel2	Router2_Chan	Family1	AN802_C		E0004:High number of checksum errors detected by the device
31/03/2006 17:29:48	TestChannel2	Router2_Chan				W0061:Too much messages received by devices (per second)
31/03/2006 17:29:49	TestChannel2	Router2_Chan	Family1	AN802_D		E0004:High number of checksum errors detected by the device

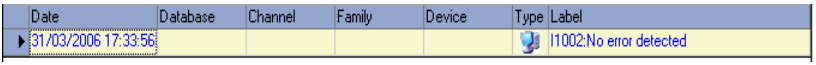
This screen displays all actual alarms, warnings and information.

The line is red for an alarm, orange for a warning and blue for an information.

For each line you have :

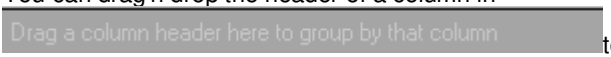
- The **date** of the alarm
- The **database** concerned by the alarm (if any)
- The **channel** of the alarm (if any)
- The **family** of the device concerned by the alarm (if any)
  Always INFRASTRUCTURE for a router
- The **device** concerned by the alarm (if any)
- The **type** of the alarm
   for a channel alarm,  for a device alarm,  for a router alarm
- The **label** of the alarm
  Each alarm, warning or information type have a unique identifier.
  The label will be different in standard and maintenance mode (more technical in maintenance mode)

If no alarm and warning is detected the grid will always be as this :



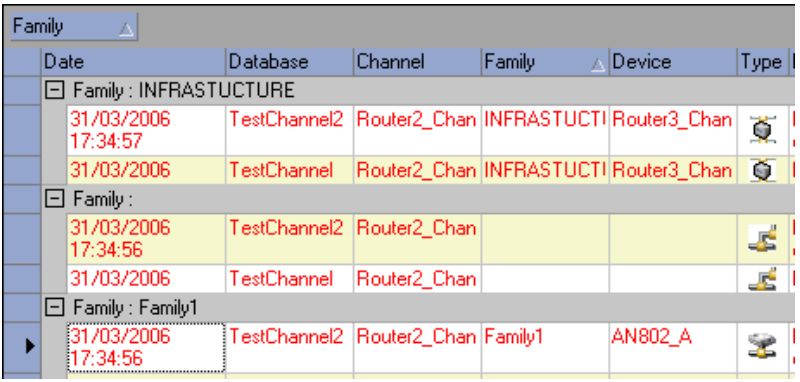
Date	Database	Channel	Family	Device	Type	Label
31/03/2006 17:33:56						I1002:No error detected

You can drag'n drop the header of a column in



to group the alarms by column value.

For example here is a **family** grouping :



You can double click on an alarm to see the detail of the alarm.

If the option 

is checked then the grid will automatically scroll down when a new alarm or warning appears.

You can click on  in the menu to print the current alarms.

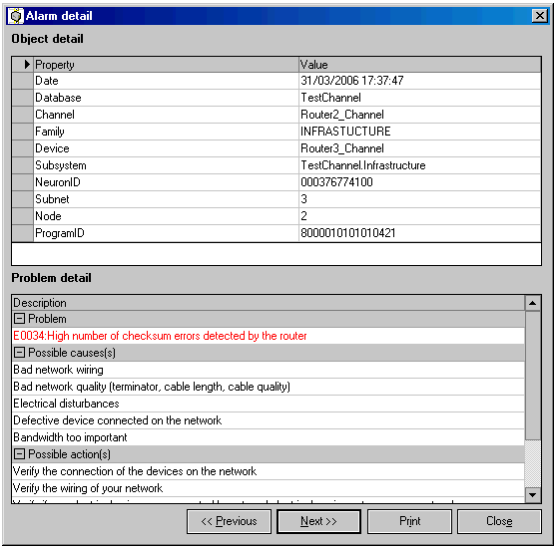
Detail of an alarm or warning

You can see the detail on any alarm or warning from :

The current alarms

The logged alarms

To see the detail simply double click on the alarm/warning in the grid.



The **object detail** displays the detail of the alarm with :

- **Date** : Date of the alarm
- **Database** : Database of the alarm (if any)
- **Channel** : Channel of the alarm (if any)
- **Media :** Media of the channel (only for a channel alarm)
- **Family** : Family of the alarm (if any)
- **Device** : Device name (for a device or router alarm)
- **Subsystem** : Subsystem path (for a device or router alarm)
- **Neuron ID (1)** : Neuron ID (only for a device alarm)
- **Neuron ID near (1)** : Neuron ID of near side (only for a router alarm)
- **Neuron ID far (1)** : Neuron ID of far side (only for a router alarm)
- **Subnet (1)** : Subnet id (only for a device alarm)
- **Node (1)** : Node id (only for a device alarm)
- **Program ID (1)** : Program id (only for a device alarm)

(1) Displayed only in maintenance mode

The **problem detail** displays the detail of the problem with :

- **Problem**

  The description of the problem.
  Each alarm, warning or information type have a unique identifier.
  The label will be different in standard and maintenance mode (more technical in maintenance mode)

- **Threshold**

  The value of the threshold that causes the alarm

- **Possible cause(s)**

  The list of all possible causes of the alarm or warning.
  The causes will be different in standard and maintenance mode (more technical in maintenance mode)

- **Possible action(s)**

  The list of all possible actions to remove the alarm or warning.
  The actions will be different in standard and maintenance mode (more technical in maintenance mode)

Click on << Previous to display the details of previous alarm/warning (if any)

Click on Next >> to display the details of next alarm/warning (if any)

Click on Print to print the actual displayed detail

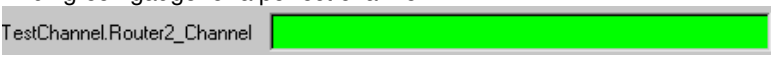
Click on Close to close this window

Channels State  ->

The channels state is a feature to know the global state of each channel.

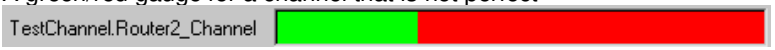
The state of each channel is displayed with a gauge.

A full green gauge for a perfect channel



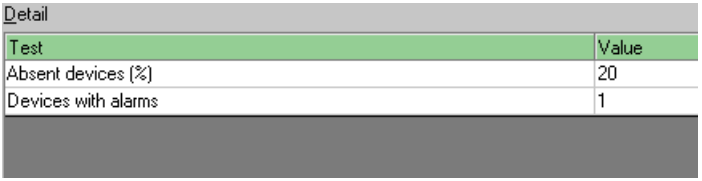
A full red gauge for a complete bad channel

A green/red gauge for a channel that is not perfect



You can click on a channel gauge to see the details of the problems on a channel :

You can click on a channel to display the details of the current channel.



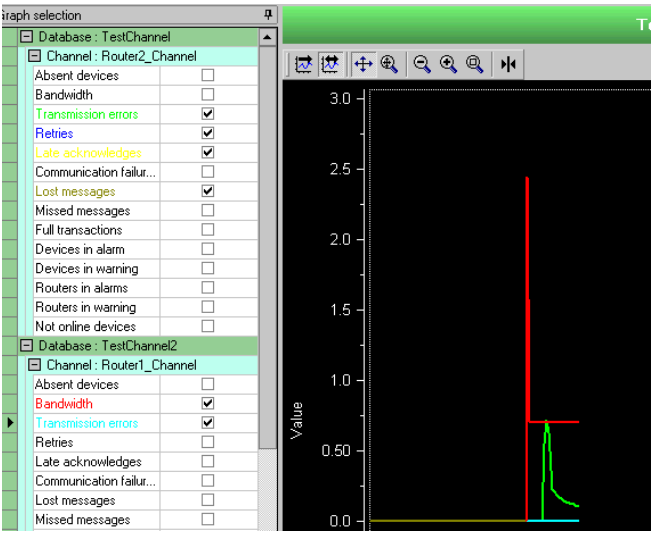
The detail will show all current problems that cause the channels to not be fully green.

If the channel is completely green then the detail is always empty.

Tendencies graphs  -> 

You can display here the data saved for each channel in the database using graphs.

Note : You can configure the maximum amount of data saved in database with the Configuration Tool.

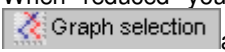


You can display up to 8 graph at a time.

To select a graph to display, check it in the left list. The graph will be added. The color of the graph will be displayed in the left list.

To remove a graph from display, uncheck it in the left list.

You can reduce the left list by clicking on .

When reduced you can restore the list by clicking on the vertical tab 

and then clicking on .

 Press it to force automatic scroll. Graphs will scroll when data are added to the graphs.

 Press it to stop automatic scroll.

 Press it to enable axes scrolling. In this mode you can scroll the X and Y axes by left clicking on an axe and moving the axe by keeping the left mouse button pressed.

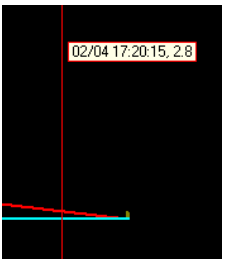
 Press it to enable axes sizing. In this mode you can change the X and Y axes scale by left clicking on an axe and changing the scale by keeping the left mouse button pressed.

 Click on it to zoom out.

 Click on it to zoom out.

 Press it to draw a zoom square.

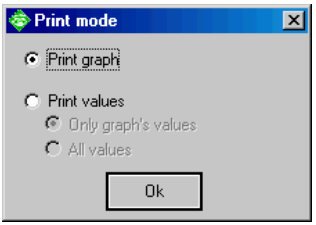
 Press it to show/hide markers.



When markers are visible you can drag the marker to move it.

Right click on a marker to be able to change the graph or the type of the marker.

You can click on  in the menu to print the current graph.

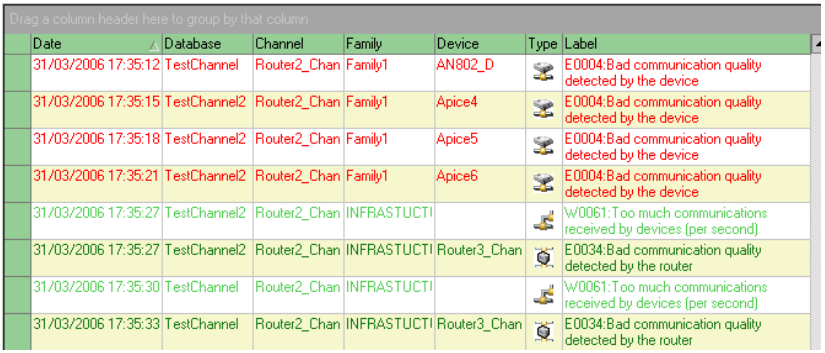


You can print :

- The graph itself (with or without legend)

- The data points of the graph (only for points visible on the graphs depending on the X axe scale)
- The data points of the graph (all points in the database for displayed graphs)

Logged Alarms and Warnings 


Drag a column header here to group by that column

Date	Database	Channel	Family	Device	Type	Label
31/03/2006 17:35:12	TestChannel	Router2_Chan	Family1	AN802_D		E0004:Bad communication quality detected by the device
31/03/2006 17:35:15	TestChannel2	Router2_Chan	Family1	Apice4		E0004:Bad communication quality detected by the device
31/03/2006 17:35:18	TestChannel2	Router2_Chan	Family1	Apice5		E0004:Bad communication quality detected by the device
31/03/2006 17:35:21	TestChannel2	Router2_Chan	Family1	Apice6		E0004:Bad communication quality detected by the device
31/03/2006 17:35:27	TestChannel2	Router2_Chan	INFRASTUCTI			W0061:Too much communications received by devices (per second)
31/03/2006 17:35:27	TestChannel2	Router2_Chan	INFRASTUCTI	Router3_Chan		E0034:Bad communication quality detected by the router
31/03/2006 17:35:30	TestChannel	Router2_Chan	INFRASTUCTI			W0061:Too much communications received by devices (per second)
31/03/2006 17:35:33	TestChannel	Router2_Chan	INFRASTUCTI	Router3_Chan		E0034:Bad communication quality detected by the router

This screen displays all alarms, warnings and information logged in database.

Note : You can configure the maximum quantity of alarms logged in the database with the Configuration Tool.

The line is :

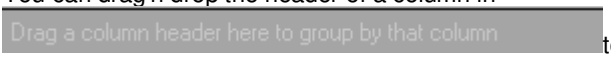
- red for an alarm appearance
- orange for a warning appearance,
- green for an alarm disappearance
- light green for a warning disappearance
- blue for an information.

For each line you have :

- The **date** of the alarm
- The **database** concerned by the alarm (if any)
- The **channel** of the alarm (if any)
- The **family** of the device concerned by the alarm (if any)
  Always INFRASTRUCTURE for a router
- The **device** concerned by the alarm (if any)
- The **type** of the alarm
   for a channel alarm,  for a device alarm,  for a router alarm

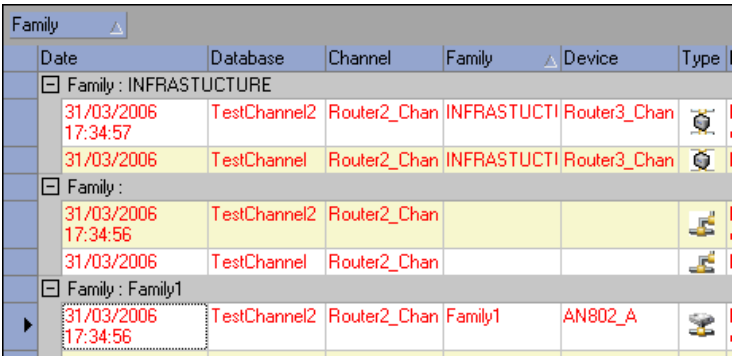
- The **label** of the alarm
  Each alarm, warning or information type have a unique identifier.
  The label will be different in standard and maintenance mode (more technical in maintenance mode)

You can drag'n drop the header of a column in



to group the alarms by column value.

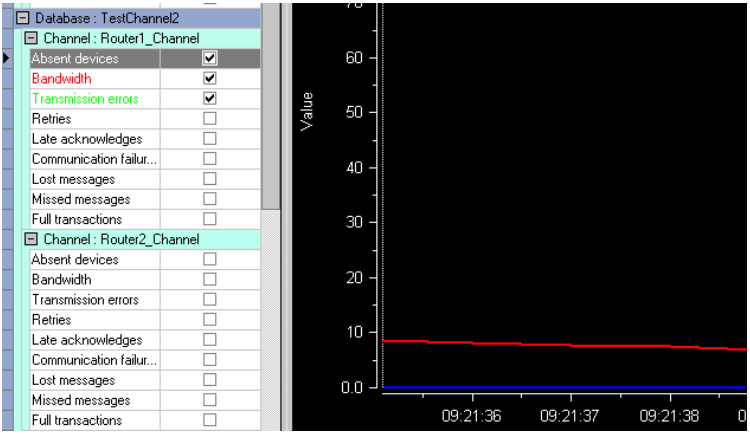
For example here is a **family** grouping :



You can double click on an alarm to see the detail of the alarm.

Diagnostics

Channels Diagnostics  ->



This screen can be used to make diagnostics on channels.

Diagnostics are real time data read from network and displayed as graphs or as gauges.

Note : Diagnostics is available only in maintenance mode.

You can change the frequency of the channels diagnostics by

You can make diagnostics only one channel at a time.

To change the displayed channel, left click on one of the tests available for the channel. This will automatically change the tested channel.

You can reduce the left list by clicking on .

When reduced you can restore the list by clicking on the vertical tab Channel selection and then clicking on .

You can select up to eight tests for one channel at a time.

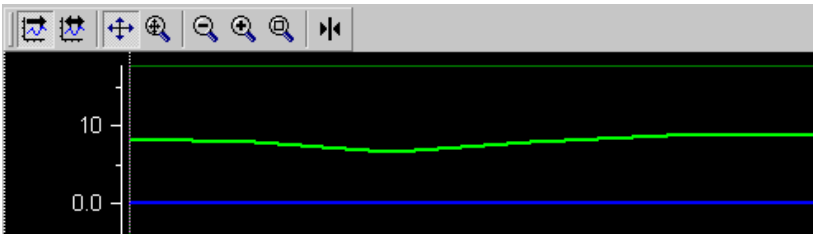
To select a test to do check it ( )in the left list.

To unselect a test to do uncheck ( )it in the left list.

You can display the tests as :

- Graphs : Click on the tabulation Graphs
- Gauges : Click on the tabulation Gauge

Diagnostics as graph



Press it to force automatic scroll. Graphs will scroll when data are added to the graphs.

Press it to stop automatic scroll.

 Press it to enable axes scrolling. In this mode you can scroll the X and Y axes by left clicking on an axe and moving the axe by keeping the left mouse button pressed.

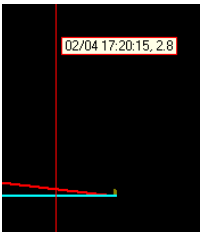
 Press it to enable axes sizing. In this mode you can change the X and Y axes scale by left clicking on an axe and changing the scale by keeping the left mouse button pressed.

 Click on it to zoom out.

 Click on it to zoom out.

 Press it to draw a zoom square.

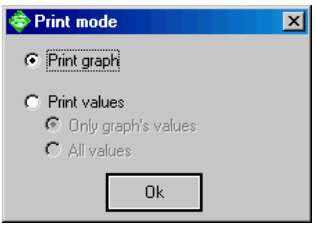
 Press it to show/hide markers.



When markers are visible you can drag the marker to move it.

Right click on a marker to be able to change the graph or the type of the marker.

You can click on  in the menu to print the current graph.



You can print :

The graph itself (with or without legend)

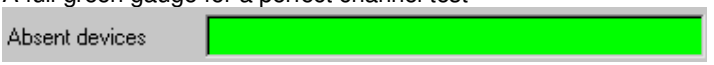
The data points of the graph (only for points visible on the graphs depending on the X axe scale)

The data points of the graph (all points in the database for displayed graphs)

Diagnostics as gauge

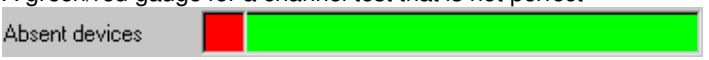
Each test will be displayed as a gauge with :

- A full green gauge for a perfect channel test



- A full red gauge for a complete bad channel test

- A green/red gauge for a channel test that is not perfect



Devices Diagnostics 

Device	Sel.	State	Sub...	Node	CRC	Failed	Full	L2r	L3r	L3t	Retri
Device5	☑	Absent	3	3	0	0	0	3034	262	261	0
Device6	☑	Configured on line	3	4	0	0	0	3204	278	277	0
Device7	☑	Configured on line	3	5	0	0	0	3206	276	275	0
Device8	☑	Configured on line	3	6	0	0	0	3187	272	271	0
Device9	☑	Configured on line	3	7	0	0	0	3189	272	271	0
Device10	☑	Configured on line	3	8	0	0	0	3191	272	271	0
Device1	☑	Configured on line	3	9	0	0	0	3193	270	269	0
Device2	☑	Configured on line	3	10	0	0	0	3195	270	269	0
Device3	☑	Configured on line	3	11	0	0	0	3197	270	269	0
Device4	☑	Configured on line	3	12	0	0	0	3199	270	269	0
Router3_Channel	☑	Configured on line	3	2	0	0	0	3201	486	485	0

This screen can be used to make diagnostics on devices of one channel.

Diagnostics are real time data read from network.

Note : Diagnostics is available only in maintenance mode.

You can make diagnostics only one channel at a time.

To change the tested channel, left click on the channel in the left list.

You can reduce the left list by clicking on .

When reduced you can restore the list by clicking on the vertical tab Channel selection and then clicking on .

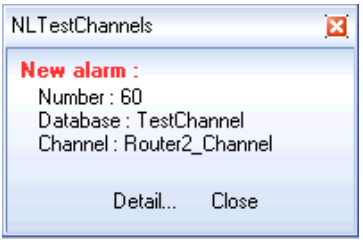
You can change the frequency of the devices diagnostics by

Each line display a device with the state and network statistics of the device.

Check (☑) a device to test it.

Uncheck (☐) a device remove it from test.

Alarm Popups



Popups are displayed when :

- **NLTestChannel** is reduced as a tray icon
- A new alarm or warning appears on a channel
- A new alarm or warning disappears on a channel

Note :

Alarms and warnings on devices and routers are not displayed in popups to avoid to overload the screen with popups.

Click on Detail... to display the detail of the alarm/warning

Click on Close to close the popup (in all cases it will close by itself)

You can configure popups in the Configuration Tool.

Print engine

In NLTestChannel you can print out most of the data :

- Current alarms and warnings
- Tendencies graph
- Logged alarms and warnings
- Channels diagnostics
- Devices diagnostics

: Display Topics

: Define page setup (size, source, orientation, margins, ...)

: Print out to any available printer

: Copy actual page as a bitmap in clipboard

: Single page display

: Multi pages display

: Zoom out

: Zoom in

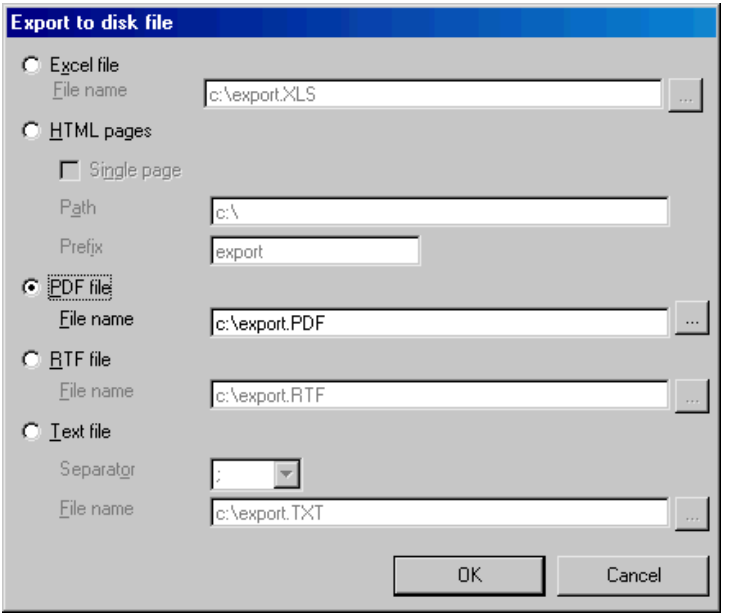
: Previous page

: Next page

: Backward

: Forward

: Export (see below)



You can export the data as :

An excel file (XLS)

HTML pages

An Acrobat file (PDF)

A rich text format file (RTF)

A text file (TXT)

LIST OF TESTS

Available tests for alarms

The tests available for **Alarms** are :

Channel Alarms	
Absent devices	Percentage of absent devices on the channel
Bandwidth	Number of messages per second on the channel
Communication failures	Average percent of communication failures (crc) on the channel
Device alarms	
Absence	Cannot communicate with the device
Application less state	The device is application less
Bypass state	The device is configured bypass
Communication failures	Percent of communication failures (crc) on the device
Error : application checksum error (152)	An application checksum error was detected by the device
Error : configuration checksum error (153)	A configuration checksum error was detected by the device
Error : division per zero (148)	A division per zero occurs on the device
Error : eeprom write error (132)	A eeprom write error occurs on the device
Error : incorrect authentication (160)	The device receives a message with a bad authentication key
Error : self test failed (158)	The self test on reset failed on the device
Error : timeout mode	The device goes in preemption mode

preemption (134)	
Error : write pass end of application buffer (156)	The device tries to send a message too long considering the size of the application buffer
Error : write pass end of network message (140)	The device tries to send a message too long considering the size of the buffers
Error : write pass end of network buffer (151)	The device tries to send a message too long considering the size of the network buffer
Error detected	An error was detected on the device
Late acknowledges	Number of late acknowledges on the device Late acknowledges are increased when a device receives an acknowledgement or a response too late.
Lost messages	Number of lost messages on the device Lost messages are increased when a device rejects a message because there is no more free application input buffer.
Missed messages	Number of missed messages on the device Missed messages are increased when a device rejects a message because there is no more free network input buffer.
Reset hardware	An hardware reset occurs on the device
Reset power up	A power up reset occurs on the device
Reset software	A software reset occurs on the device
Reset watchdog	A watchdog reset occurs on the device
Soft offline state	The device is soft offline
State offline (hard offline)	The device is hard offline
Too much messages received	Too much messages are addressed to the device
Too much messages sent	The device sends to much messages

Transactions full	Too much full transactions on the device Full transactions are increased when a device rejects a message because there is no free receive transaction.
Transmission errors	Too much transmission errors on the device Transmission errors are increased when a device do not receive the expected acknowledge or response in time.
Unconfigured state	The device is unconfigured
Router alarms	
Absence	Cannot communicate with the router
Application less state	The router is application less
Bypass state	The router is configured bypass
Error : application checksum error (152)	An application checksum error was detected by the router
Error : configuration checksum error (153)	A configuration checksum error was detected by the router
Error : eeprom write error (132)	A eeprom write error occurs on the router
Error : incorrect authentication (160)	The router receives a message with a bad authentication key
Error : self test failed (158)	The self test on reset failed on the router
Error : write pass end of application buffer (156)	The router tries to send a message too long considering the size of the application buffer
Error : write pass end of network message (140)	The router tries to send a message too long considering the size of the buffers
Error : write pass end of network buffer (151)	The router tries to send a message too long considering the size of the network buffer
Error detected	An error was detected on the router

Missed messages	Number of missed messages on the router Missed messages are increased when a device rejects a message because there is no more free network input buffer.
Reset hardware	An hardware reset occurs on the router
Reset power up	A power up reset occurs on the router
Reset software	A software reset occurs on the router
Reset watchdog	A watchdog reset occurs on the router
Soft offline state	The router is soft offline
State offline (hard offline)	The router is hard offline
Transmission errors	Too much transmission errors on the router Transmission errors are increased when a device do not receive the expected acknowledge or response in time.
Unconfigured state	The router is unconfigured

Available tests for Channels State

The tests available for **Channels State** are :

Absent devices	Percentage of absent devices on the channel
Bandwidth	Number of messages per second on the channel
Communication failures	Average percent of communication failures (crc) on the channel
Late acknowledges	Average percent of late acknowledges on the channel Late acknowledges are increased when a device receives an acknowledgement or a response too late.
Lost messages	Average percent of lost messages on the channel Lost messages are increased when a device rejects a message because there is no more free application input buffer.

Missed messages	Average percent of missed messages on the channel Missed messages are increased when a device rejects a message because there is no more free network input buffer.
Not online devices	Percent of devices of the channel that are not configured online
Retries	Average percent of retries on the channel Retries are increased when a device sends a retry on the network.
Transactions full	Average percent of full transactions on the channel Full transactions are increased when a device rejects a message because there is no free receive transaction.
Transmission errors	Average percent of transmission errors on the channel Transmission errors are increased when a device do not receive the expected acknowledge or response in time.

Available tests for Tendencies

The tests available for **Tendencies** are :

Absent devices	Percentage of absent devices on the channel
Bandwidth	Number of messages per second on the channel
Communication failures	Average percent of communication failures (crc) on the channel
Devices in alarm	Number of devices of the channel with at least one alarm
Devices in warning	Number of devices of the channel with at least one warning
Late acknowledges	Average percent of late acknowledges on the channel Late acknowledges are increased when a device receives an acknowledgement or a response too late.
Lost messages	Average percent of lost messages on the channel Lost messages are increased when a device rejects a message because there is no more free application input buffer.

Missed messages	Average percent of missed messages on the channel Missed messages are increased when a device rejects a message because there is no more free network input buffer.
Not online devices	Percent of devices of the channel that are not configured online
Routers in alarm	Number of routers of the channel with at least one alarm
Routers in warning	Number of routers of the channel with at least one warning
Retries	Average percent of retries on the channel Retries are increased when a device sends a retry on the network.
Transactions full	Average percent of full transactions on the channel Full transactions are increased when a device rejects a message because there is no free receive transaction.
Transmission errors	Average percent of transmission errors on the channel Transmission errors are increased when a device do not receive the expected acknowledge or response in time.

Available tests for Channels Diagnostic

The tests available for **Channels Diagnostic** are :

Absent devices	Percentage of absent devices on the channel
Bandwidth	Number of messages per second on the channel
Communication failures	Average percent of communication failures (crc) on the channel
Full transactions	Average percent of full transactions on the channel Full transactions are increased when a device rejects a message because there is no free receive transaction.
Late acknowledges	Average percent of late acknowledges on the channel Late acknowledges are increased when a device receives an acknowledgement or a response too late.

Lost messages	Average percent of lost messages on the channel Lost messages are increased when a device rejects a message because there is no more free application input buffer.
Missed messages	Average percent of missed messages on the channel Missed messages are increased when a device rejects a message because there is no more free network input buffer.
Retries	Average percent of retries on the channel Retries are increased when a device sends a retry on the network.
Transmission errors	Average percent of transmission errors on the channel Transmission errors are increased when a device do not receive the expected acknowledge or response in time.