

General Communication Service R6.3 User Manual

DN011794

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1 About this manual

This manual is intended for users of Nokia Siemens Networks Node Managers that use connectivity and database services of General Communication Service GCS R6.3. GCS R6.3 provides these services to those applications that use Nokia Siemens Networks Q1 and MML protocols. The manual covers all information needed to install and use GCS R6.3 with Nokia Siemens Networks network elements.

This *User Manual* covers the following topics:

- Chapter , [Introduction to General Communication Service GCS R6.3](#)
- Chapter , [Installing GCS](#)
- Chapter , [Defining connections to nodes](#)
- Chapter , [GCS Multiple Database Integration](#)
- Chapter , [GCS database](#)
- Chapter , [GCS Remote Database Update](#)
- Chapter , [GCS User Management Functionality](#)
- Chapter, [Troubleshooting](#)
- Chapter, [Appendix A: Connection Parameters](#)
- Chapter, [Appendix B: Node Parameters](#)
- Chapter, [Appendix C: Keyboard support for GCS Connection Tool](#)
- Chapter, [Appendix D: Administration](#)

1.1 Summary of changes

Changes in this document issue

The following changes have been made to this document since the previous issue:

- The product information related to GCS R6.3 has been updated.

Features added to the GCS R6.3 release

- NetAct (OSS 5.x) User Management support for the NE's under BSC/BTS polling.

1.2 Where to find more information

NMS/10

For information about NMS/10, see *NMS/10 SR Help* and *NMS/10 SR User Manual*.

NetAct

For information on transmission node management in Nokia Siemens Network NetAct, refer to the NetAct document *Cellular Transmission Management Principles*.

Agents and mediators

For information on agents and mediators, consult the relevant user manual for the agent or mediator concerned.

Network elements and node managers

For information on individual network elements and their node managers, consult the relevant user manual for the network element or node manager concerned.

1.3 Typographic conventions

The table below presents the conventions that are used in this *User Manual*:

Convention	Explanation
Initial Upper Case	Names of applications, windows and dialogs.
<i>Italic</i>	Emphasis or referenced document titles.
<code>Courier</code>	System output, user input, user names, file and directory names, database table names and counters
UPPER CASE	Keys on the keyboard
Click File → Exit	Select Exit from the File menu
<text in angle brackets>	Variable user input
[text in brackets]	Optional information in a command

Table 1 Typographic conventions

2 Introduction to General Communication Service GCS

This chapter contains the following sections, which provide an overview of General Communication Service GCS:

- Section 2.1, [Features](#)
- Section 2.2, [Architecture](#)
- Section 2.3, [Compatibility with earlier versions](#)

2.1 Features

General Communication Service GCS is a communication stack that is used by Nokia Siemens Networks agents, node managers and NMS/10 Command Scripting (RCM) to communicate with Nokia Siemens Networks PDH/Primary Rate network elements. GCS is also used by MML Alarm Manager to communicate with MML network elements.

GCS provides, for example, the following types of connections. For more about the connections, see Section [Connection types](#).

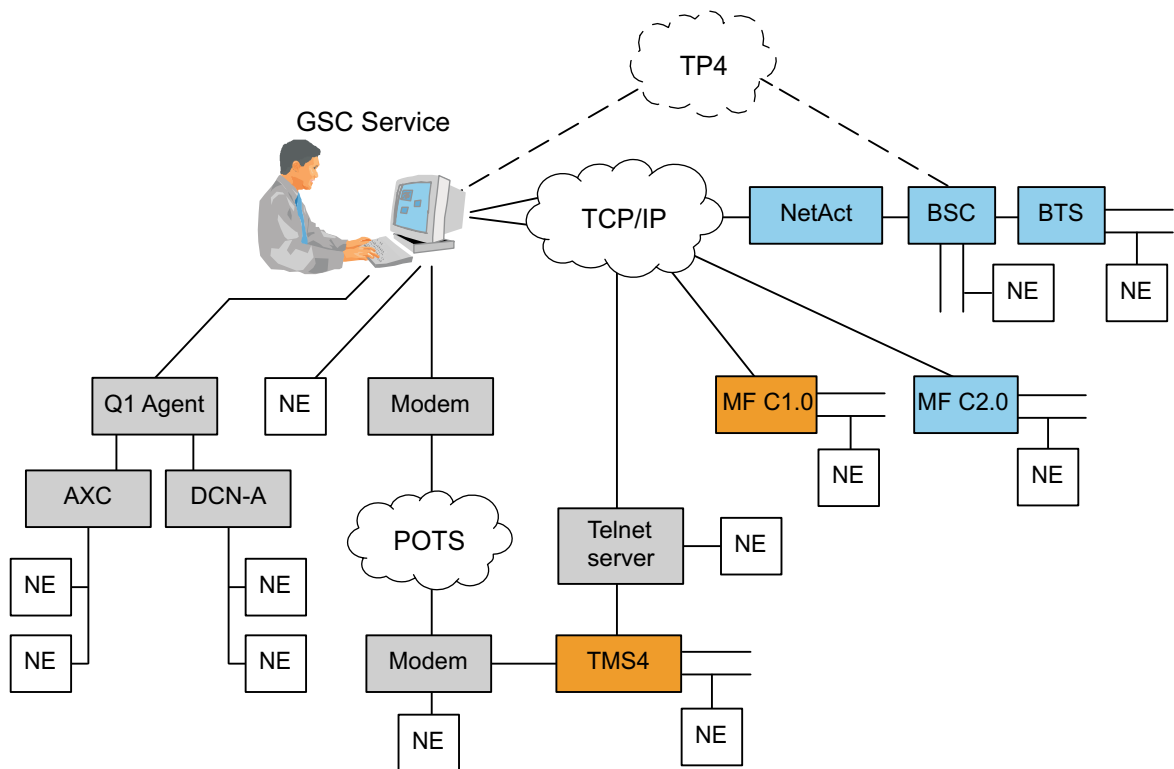


Figure 1 Example of connections provided by GCS

GCS provides a uniform communication interface for all applications by hiding protocol differences and complexity of network topology. GCS uses the GCS database and GCS Connection Tool for node name and address management.

GCS supports multi-user functionality starting Windows 2003 Server and later, Terminal services enabled (Node Manager Server).

Network Management Systems use GCS Remote Database Update to update the GCS database. Node manager applications use this information when they make connection to the node.

The GCS database could be the local MS Access database or remote NetAct topology database. The NetAct topology database would be used for node manager launching of network elements under 2G (BSC/BTS) and 3G (Q1 Agent) scenarios.

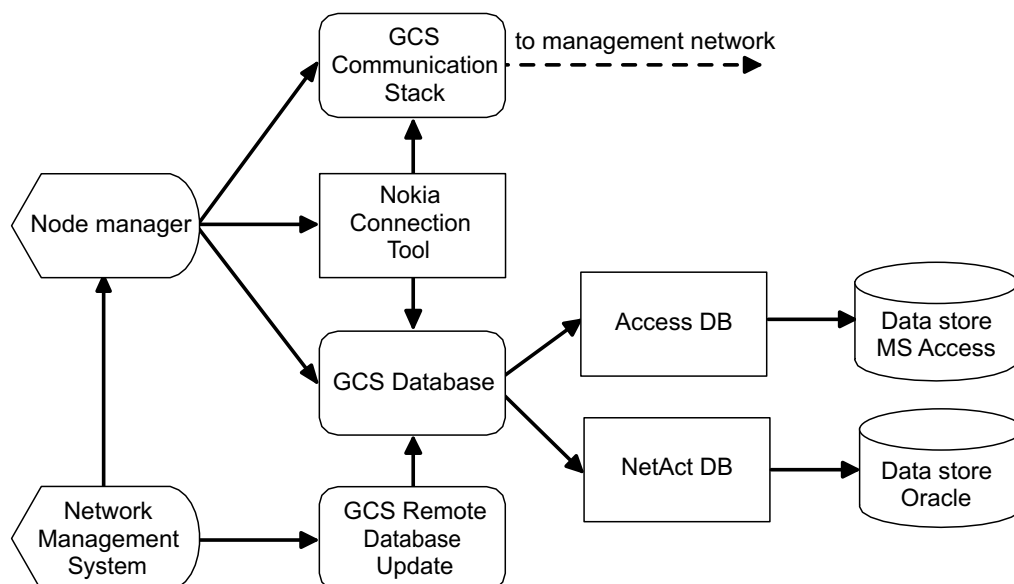


Figure 2 Functional components of GCS

2.2 Architecture

GCS can be used in several different configurations:

- Part of NetAct (management of cellular networks)
- Part of NMS/10 or NetViewer
- Stand alone with node manager(s) (local management and commissioning)

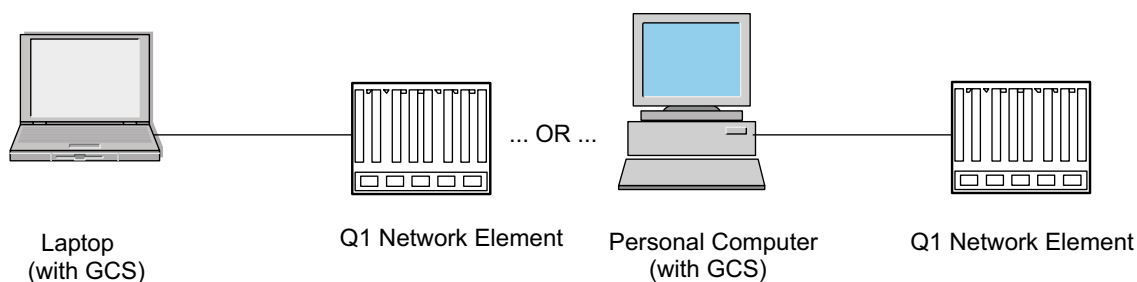


Figure 3 Local management with GCS

When GCS is used as a stand-alone application, it is installed in a PC with the required node manager software. Typically this kind of solution is used during network commissioning when new equipment is configured locally before connecting it to transmission and management networks. Local management may be needed also for diagnostics and troubleshooting purposes.

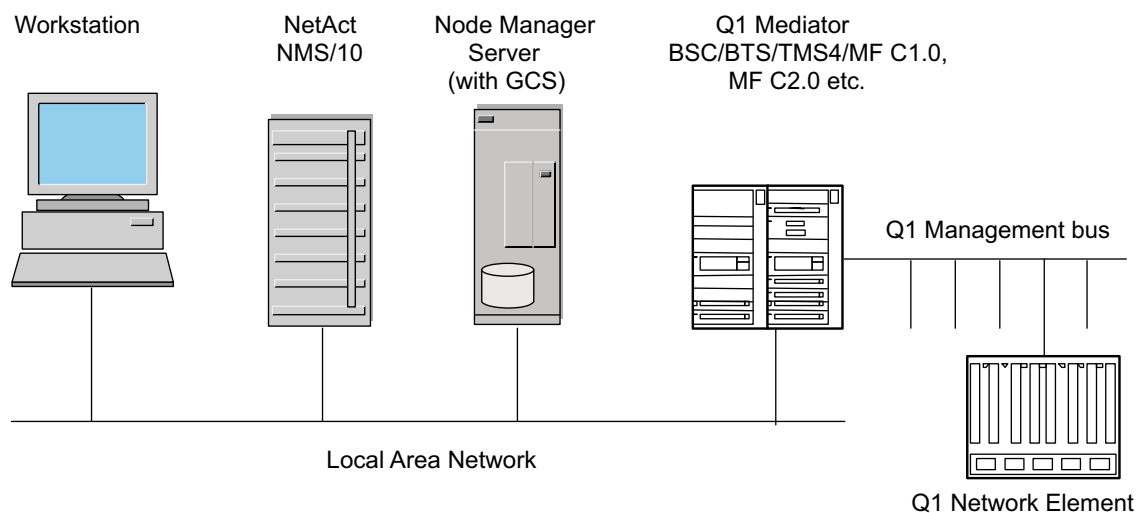


Figure 4 Remote management with GCS

In remote management the architecture is more complicated: It consists of a management centre that contains GCS, some Node Management System, and mediator devices for providing access to management buses via LAN. When using NMS/10, all these can be in the same PC or they can be distributed in different PCs which have distinct roles. In NetAct environment, GCS and node managers are installed to GUI Server.

2.3 Compatibility with earlier versions

GCS R6.3 is backwards compatible with earlier versions of GCS. When an older GCS version is upgraded to GCS R6.3, the settings and contents of the GCS database are preserved. In most cases the node managers and other applications using GCS will work as they did with the earlier GCS version. The earlier versions are listed in the following table:

Version	Explanation
GCS R5.0	General Communication Service R5.0
GCS R6.0	General Communication Service R6.0
GCS R6.1	General Communication Service R6.1
GCS R6.2	General Communication Service R6.2

Table 2 Earlier GCS versions



Some node managers have not been upgraded to the Windows 2003 requirements. This means that they do not use the registry variable to find the directories where the node managers are installed but expect the `NOKIAMGR` environment variable to be set. GCS installations from version R4.2 onwards does not install this variable at installation, so this variable must be manually set for those node managers that initially fail to be installed.

3 Installing GCS

This chapter describes how to install GCS on the hard disk of your computer. It covers the following topics:

- Section [Prerequisites for installing GCS](#)
- Section [Installing GCS](#)
- Section [Prerequisites for uninstalling GCS](#)
- Section [Uninstalling GCS](#)

3.1 Prerequisites for installing GCS

Prerequisites for installing GCS are:

- You have the GCS R6.3 installation files available.
- Oracle Client is required only if the user selects the complete installation or GCS NetAct database integration feature in custom installation of GCS. The version of Oracle Client to be installed depends on the GUI server.

GCS R6.3 is compatible with the following operating systems:

- Windows 7
- Windows XP Professional (SP2 is optional)
- Windows 2003 Standard and Enterprise Editions (SP1 is optional)
- Windows Vista 32 bit Business Edition (SP1 is optional)
- Windows Server 2008 32/64 bit Standard and Enterprise Edition.



Do not install GCS in a computer with dual-boot operating systems if they share the same disk where GCS is installed.

3.2 Installing GCS

The GCS software is supplied in several different ways. Depending on delivery media, the instructions and installation procedure of GCS can be slightly different.

GCS supplied with node managers

Refer to the related node manager documentation for starting GCS installation.

Usually GCS installation is integrated within node manager installation and started automatically if required.

GCS (Service Pack) downloaded from Nokia Siemens Network Online Services (Nokia Siemens Network OLS)

GCS software can be downloaded from Nokia Siemens Network Online Services (Nokia Siemens Network OLS).

To download GCS from Nokia Siemens Network Online Services (Nokia Siemens Network OLS)

1. Open the Nokia Siemens Network OLS home page in the following URL:
`https://online.portal.nokiasiemensnetworks.com`
2. Fill in the **Username** and **Password** fields and click the **Log-In** button.

3. Navigate to the NMS/10 download section. Choose the correct System Release version (for example, R6.3), locate the GCS software from the appropriate Release or Download page, and download it to your hard disk.

Extract the file and double-click `setup.exe` file to start the GCS installation. Follow the on-screen instructions.

The default location for installing GCS is `C:\Program Files\Nokia`

Sometimes installation order of network management products is significant. To ensure the correct order, install the latest GCS version once more after you have installed all other products.

GCS can be installed by double clicking `setup.exe` file or from Add/Remove programs.

GCS supports two kinds of installations - Complete and Custom. Complete type of installation will install all the features of GCS. In Custom type, user can select/deselect the features like 'GCS Remote database update' and 'GCS NetAct Database Integration' other than the mandatory feature 'General Communication Stack'.

Read all documentation to find out possible installation or coexistence issues.



User is recommended to restart the PC after installing the Oracle8i/9i to overcome the ODBC errors.

Installation of GCS Multiple Database Feature

For Windows XP and above operating systems, GCS Multiple Database is an optional feature provided in the new release of GCS. GCS multiple database feature can be installed while installing the GCS by selecting the Complete option or selecting GCS NetAct database integration feature in custom installation.

Microsoft Data Access Components 2.5 SP3 (MDAC)

GCS uses Microsoft Data Access Components for its ODBC connectivity. If MDAC has to be installed or updated, the computer has to be restarted to complete the installation process. The GCS setup will continue automatically after restart.



If the Oracle Client is not installed then the information "GCS has detected that Oracle Client is not installed on the system. For using GCS Q1DB service Oracle Client need to be installed" will appear in the beginning of the installation of GCS. This message will appear even user deselects the NetAct feature while custom installation of GCS. Please ignore this message when user deselects the NetAct feature.

3.3 Upgrading GCS



Read the following before upgrading GCS:

- You should take a backup copy of the GCS database before upgrading. For the database location, see section 6.1, [Introduction to the GCS database](#).
- If you have upgraded GCS to a newer version, it is not possible to return to the previous version without first uninstalling GCS. This means that the current GCS database contents are lost in downgrade. After downgrade you can restore the GCS database from a backup copy if it is available for that GCS version.

Upgrading GCS R5.x/R6.0/R6.1/R6.2

1. Launch the setup using the `setup.exe` file and proceed with the installation by clicking the **Next** button.

After the installation is completed, Installation of GCS R6.3 has been successfully completed dialog is displayed.

3.4 Prerequisites for uninstalling GCS

Prerequisites for uninstalling GCS R6.3 are:

- The applications that use GCS have to be uninstalled first because they cannot work without GCS.

3.5 Uninstalling GCS

Use the Control Panel's Add/Remove programs for uninstalling GCS. Follow the instructions on the screen or the operating system's manuals. For example:

To uninstall GCS from Windows:

1. Open the **Start** menu and select **Settings** → **Control Panel**. Open **Add/Remove Programs**. (In Windows Vista, Windows Server 2008 and Windows 7 OS **Add/Remove Programs** can be found in **Programs and Features**).
2. Select **General Communication Service R6.3** from the program list and click **Add/Remove....**
3. To continue, follow the instructions on the screen.

4 Defining connections to nodes

This chapter explains how to define connections to nodes with GCS Connection Tool.

This chapter covers the following topics:

- Section [Introduction to GCS Connection Tool](#)
- Section [Security](#)
- Section [Starting GCS Connection Tool](#)
- Section [Connecting to nodes with GCS Connection Tool](#)
- Section [Main functions of GCS Connection Tool](#)
- Section [Connection types](#)
- Section [Node properties](#)
- Section [Configuring modems](#)

4.1 Introduction to GCS Connection Tool

GCS Connection Tool allows you to make connection and node definitions for identifying objects on a network, and save them permanently to the database.

The information in the database is organised by connections and nodes. The connections must be defined first before any nodes can be saved within them. Each node in the database must have a designated connection type.

In addition to adding, modifying and deleting connection and node definitions, you can also scan network elements (nodes) with GCS Connection Tool. Scanning network elements is available only for some connection types supporting Nokia Siemens Networks Q1 protocol.

You can use GCS Connection Tool in standalone mode for database maintenance or open it from a node manager. When you start it from the node manager, you can select a node and establish a connection to it, for example, for commissioning purposes.

The buttons displayed on the screen and their mode (enabled/disabled) depends on the Connection Tool mode. You can find examples of the displayed buttons in Section [Starting GCS Connection Tool](#). The keyboard shortcuts are described in [Appendix C: Keyboard support for GCS Connection Tool](#).

GCS has support for multiple database integrations. GCS Q1 Database interface is capable of fetching the sobriquet from multiple configured databases (MS Access Database and NetAct database). Node manager launched from NetAct TLUI does not need connection details to be in GCS database (Access). User can choose the default database by selecting the Access or NetAct from the Database drop down box provide in GCS Connection Tool UI. Node configurations can only be read from NetAct database but cannot perform save or scan operations. Connecting to the node can be done by selecting the entire row in the displayed node details list after connecting NetAct database. Node connection details can be imported from NetAct database to Access for future references.

GCS R6.3 has support for NetAct User Management for NE's under BSC/BTS Q1 Polling. This feature enables NetAct User Management for providing restricted access to the Q1 managed Network elements. GCS when launched, users will be able to view the connections and nodes in GCS for only those NE's where the user has the access.

4.2 Security

GCS Connection Tool disables and enables save and search functions according to the custom user groups of NMS/10. The **NMS/10 Operator** user can only view saved connections and nodes, and the **NMS/10 Basic** user can search for the network elements but is not allowed to save, whereas other types of users can carry out all actions. See below table for details.

	NMS/10 custom groups				User Groups (Other than Admin, NMS10 and power user Groups)
Allowed actions	NMS10 Operator	NMS10 Basic	NMS10 Experi- enced	NMS10 Network Admin	Yes
Add and remove connections and nodes	No	No	Yes	Yes	Yes
View properties of connections and nodes	Yes	Yes	Yes	Yes	Yes
Save connections and nodes	No	No	Yes	Yes	Yes
Search for network elements	No	Yes	Yes	Yes	Yes
DBConnect and Import operations of NetActUI	Yes	Yes	Yes	Yes	Yes

Table 3 Actions permitted for the NMS/10 user groups

For the users in Window XP and above operating systems Adding, Deleting and Modifying "NetAct DB Configuration parameters" are available only for Administrators.

4.3 Starting GCS Connection Tool

You can start GCS Connection Tool in two ways:

- In standalone mode from Windows Start menu
- In "Connect to Node" mode from a node manager application

To start GCS Connection Tool in standalone mode:

1. Open the **Start** menu and select **Programs** → **Nokia Siemens Networks Applications**. Open **GCS Connection Tool**.

GCS Connection Tool is displayed.

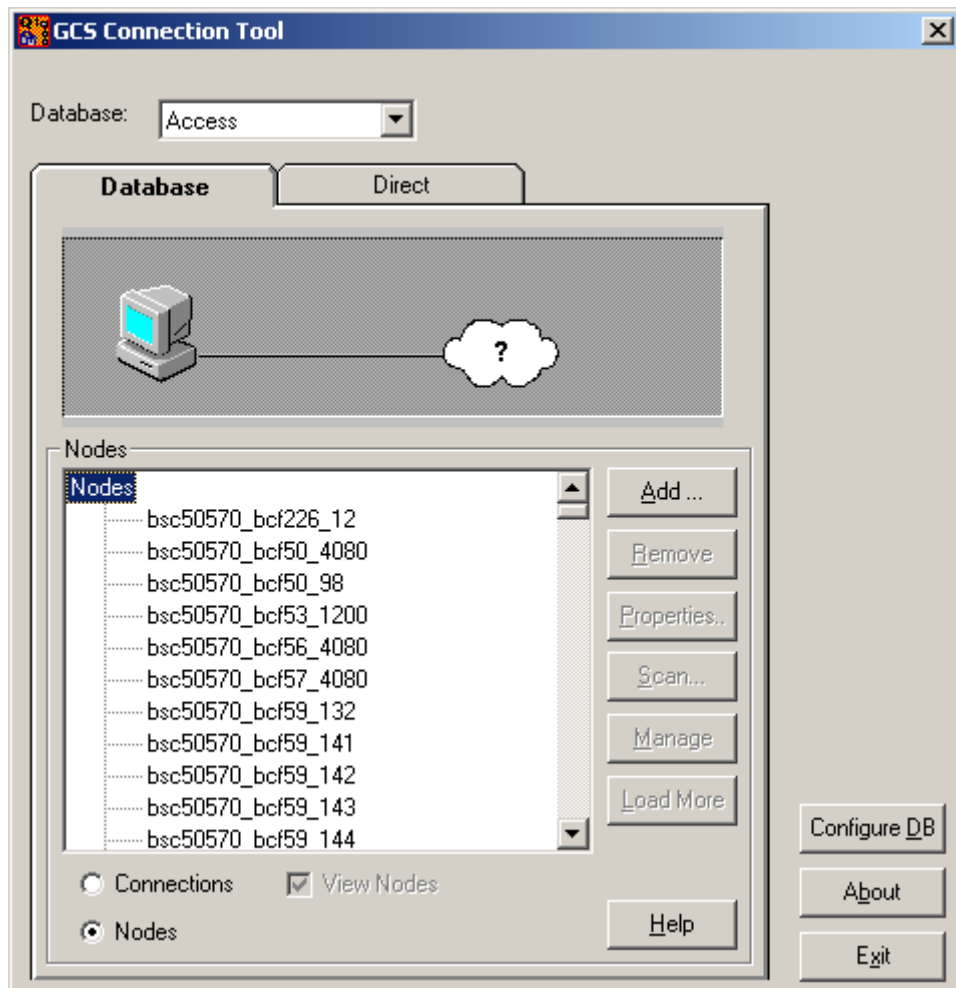


Figure 5 GCS Connection Tool started from Windows Start menu

To start GCS Connection Tool from a node manager application:

1. Select **Manage** → **Connect...** from the menu.

GCS Connection Tool is displayed.

If the GCS database contains thousands of nodes, it may take a while before GCS Connection Tool is displayed when starting it.

There will be a **Connect** button on right of the GCS Connection Tool among with another buttons Cancel, About and Configure DB, if we launched it from a Node Manager, to establish connection to the node.

NetAct database service parameters can be configured using **Configure DB** button. This 'Configure DB' will be visible only when GCS is installed with complete option or 'GCS NetAct Database Integration' feature is selected while custom installation.

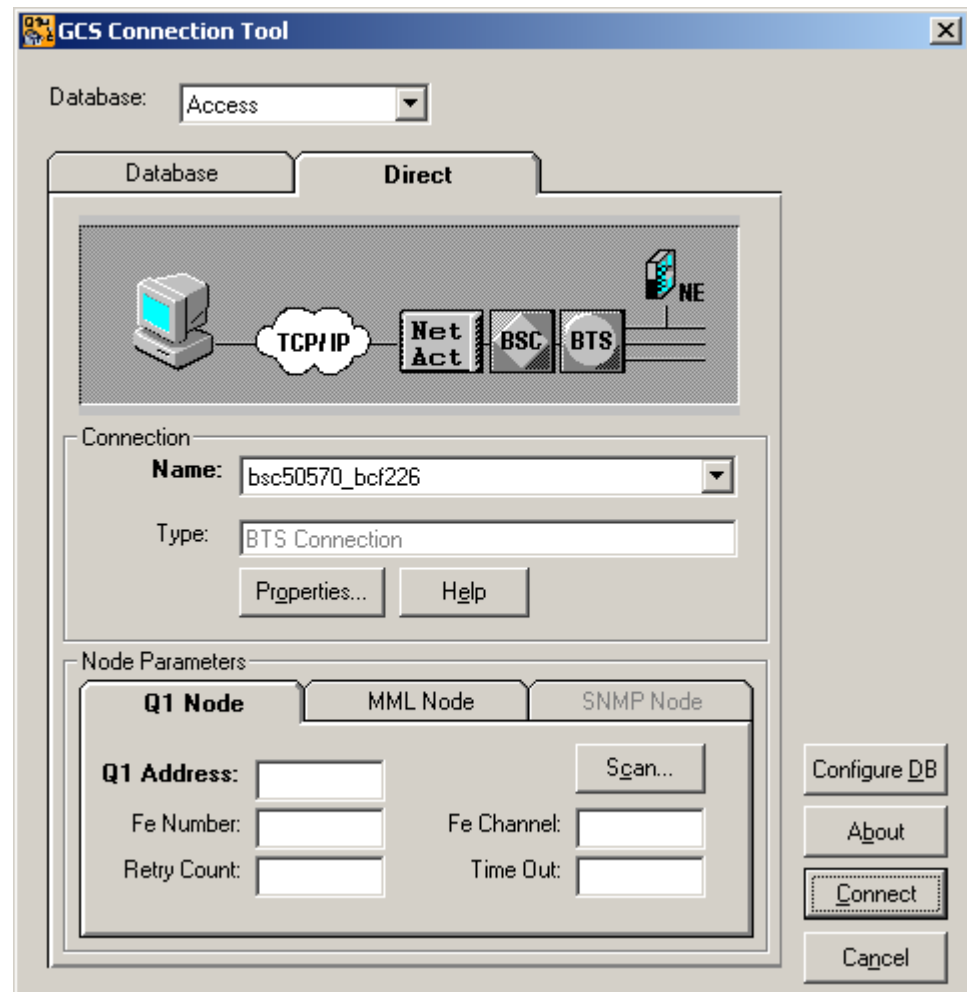


Figure 6 GCS Connection Tool started from a node manager application



You can see the version information of GCS Connection Tool by clicking the **About** button.

You can close GCS Connection Tool by clicking **Cancel**.

4.4 Connecting to nodes with GCS Connection Tool

You can start GCS Connection Tool from a node manager application if you wish to make a connection to a node. For starting, see section 4.3, [Starting GCS Connection Tool](#).

After GCS Connection Tool is displayed, there are two ways to connect to a node:

- From the Direct tab that is displayed by default when GCS Connection Tool is started. The Direct tab enables to connect to a node that is not saved in the database.
- From the Database tab. The Database tab enables you to connect to a node that is already in the database.

To connect to a node via the Direct tab:

When GCS Connection Tool is displayed, it shows the Direct tab by default.

1. If the **Direct** tab is not selected, select it first.
2. Select the connection you wish to use in the **Name** combo box. Note that the connection type is shown below in the Type field.
3. In **Node Parameters**, select **Q1 Node** or **MML Node** depending on the node type you wish to make a connection to.



Node manager applications support usually only one node type. Find out the node type in advance before connecting to the node.

4. In **Node Parameters**, fill in the appropriate parameters, for example, **Q1 Address** for **Q1 Node**.
5. Click **Connect** to open the connection.

GCS Connection Tool is closed and the node manager application starts its own connection establishment phase. Usually it contains a progress bar or similar indicator that shows how connection establishment advances.

To connect to a node via the Database tab:

1. If the **Database** tab is not selected, select it first.
2. Select the node you wish to connect to in the **Nodes** list.
3. Click **Connect** to open the connection.

GCS Connection Tool is closed and the node manager application starts its own connection establishment phase. Usually it contains a progress bar or similar indicator that shows how connection establishment advances.

Refer to the corresponding alarm or node manager's user documentation for details on making connections.

4.5 Main functions of GCS Connection Tool

This section covers the following topics:

- Section [Defining connections](#)
- Section [Defining nodes](#)
- Section [Viewing connections and nodes](#)
- Section [Scanning for network equipment \(nodes\)](#)
- Section [Selecting database](#)
- Section [Support for Audit Trail Logging](#)

For details on the connection types and node properties, refer to sections [4.6 Connection types](#), [4.7 Node properties](#), [Appendix A: Connection Parameters](#) and [Appendix B: Node Parameters](#).

4.5.1 Defining connections

With GCS Connection Tool, you can define the following connections between the management workstation and nodes:

- Q1 connections (always to a Q1 bus containing zero, one or more network elements)
- MML connections (to one network element)

- SNMP connections (currently not supported by GCS)

To define a connection:

1. Select the **Connections** option button in the **Database** tab.
2. If you want to create a new connection, select the **Connections** line in the connection list. If you want to copy an existing connection as a basis for the new connection, select it in the tree control.
3. Click **Add...**
4. The Connection Properties dialog box is displayed with the text *New Connection* in the Name field (see [Figure 7](#)). If you selected an existing connection, its properties are copied to this new connection.
5. Give a name to the connection in the **Name** field. The maximum length of the name is 32 characters. Single quotation marks are not allowed in the name.
6. If you are creating a new connection, select a proper connection type in the **Type** combo box.

Each connection type has different parameters that are shown in the Connection Definition list box. Each line in the Connection Definition box represents an interrelated set of parameters for the selected connection type. For details, refer to section [Connection types](#) and [Appendix A: Connection Parameters](#).

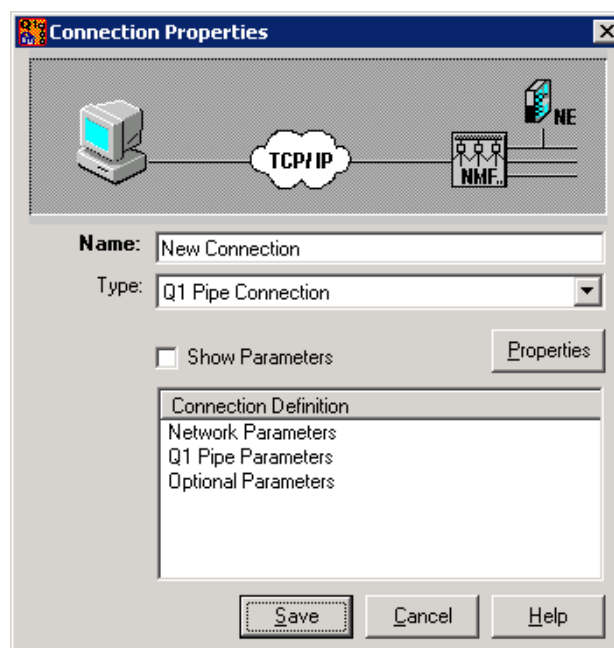


Figure 7 Connection Properties for a new connection

7. If you want to see a full list of parameters, click **Show Parameters**.
All parameters for the selected connection type are displayed in the Connection Definition list box.
Definitions that require a value are marked with an **M** (mandatory) in the M/D column in the Connection Definition list box.

Definitions with default parameter values are marked with a D (default) in the M/D column in the Connection Definition list box. You do not need to give values to any of these parameters if the default values are suitable.

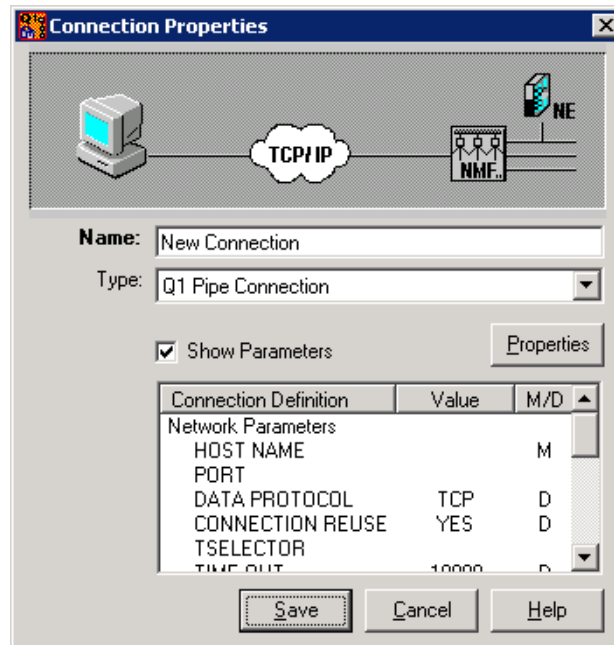


Figure 8 Connection Properties with all parameters visible

8. Select each line in the **Connection Definition** list box and click the **Properties** button to modify it. The Properties dialog box is displayed (see Figure below).
- 9.

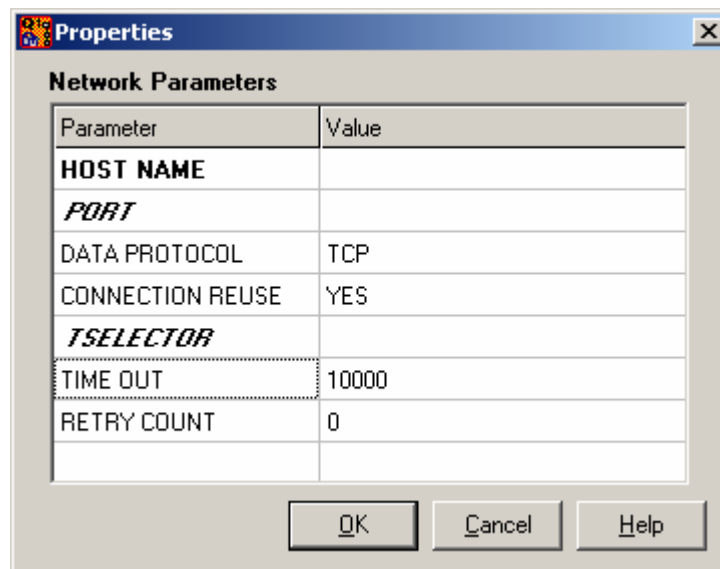


Figure 9 Properties dialog box for Network Connection Parameters

10. Once you have selected an edit field, you can type in a value, scroll the parameter value with the keyboard up and down arrow keys, or select a value in a list box. Use the SHIFT and UP/DOWN ARROW keys to navigate between edit fields.
- It is not possible to type in or select too small or large values.



Parameters marked with bold italic font (***PORT*** and ***TSELECTION*** in [Figure 9](#)) are mutually exclusive, that is, you can only give value to one of them at the same time.

11. If the connection requires a username and a password, give them according to the following rules:

The length of **Username** and **Password** can be up to 32 characters. The string ********* (6 *'s) is always shown in the Password field regardless of the actual length of the password.



Only 7-bit US ASCII characters are recommended to be used in the username and password.

12. Click **OK** after you have entered the correct data.
13. Click **Save** to save the definitions to the database (disk).

4.5.2 Defining nodes

You can add new nodes to the database and modify existing nodes.

To add a node:

1. Select the **Nodes** option button in the **Database** tab to view the nodes defined in the database.
2. Click **Add** to display the Node Properties dialog box (see [Figure 10](#)). If you wish to copy values from an existing node, select the node first in the list box and then click **Add**.
3. Select a connection for the node in the **Connection Name** field.
4. Name the node in the **Node Name** field. The maximum length of the node name is 32 characters. Single quotation marks are not allowed in the name.
5. Select a node class in the **Node Class** list box. **Q1 Node** denotes Nokia Siemens Networks Q1-managed nodes, and **MML Node** Nokia Siemens Networks MML nodes.
6. The selected nodes are displayed in the Parameters list box. The parameters shown in bold typeface are mandatory (such as **Q1 ADDRESS** in [Figure 10](#)).



You do not need to give values to any parameters with a default value if the default values are suitable.

7. Click **Manager Info** to select a node manager for the node. The Manager Info dialog box is displayed (see [Figure 11](#)).

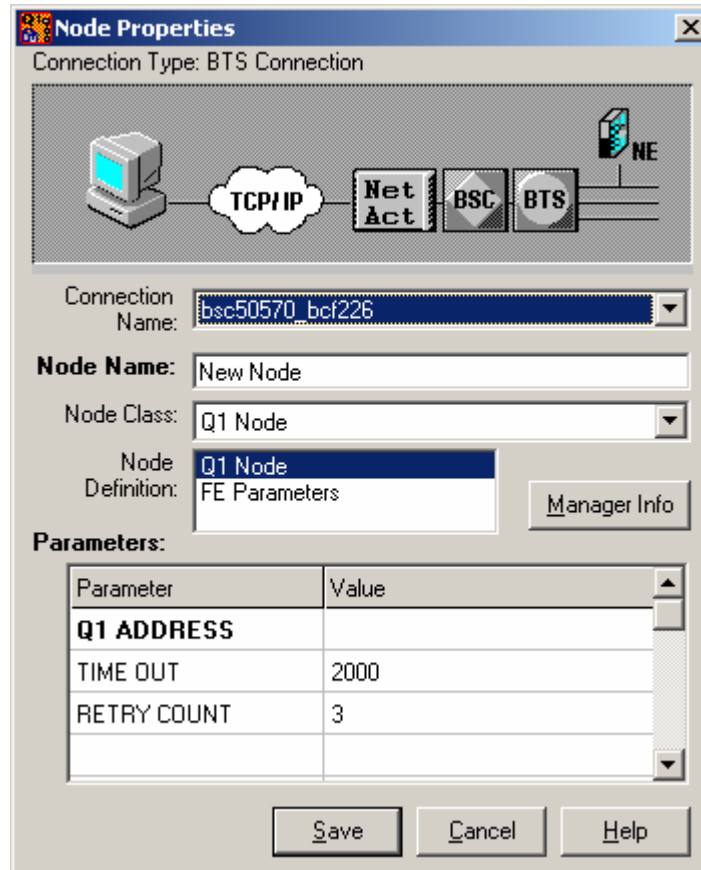


Figure 10 Node Properties dialog box

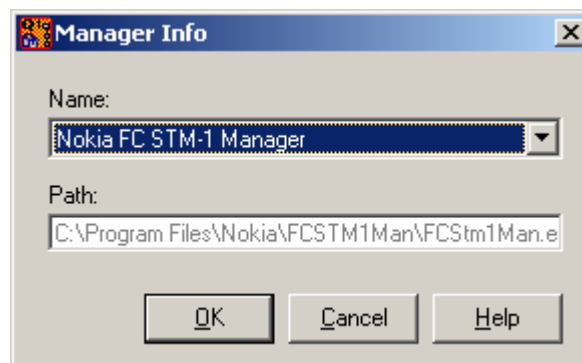


Figure 11 Manager Info dialog box

8. Click **Save** to save the defined node to the database.

To modify a node:

1. Select the **Nodes** option button in the **Database** tab to view the nodes defined in the database.
2. Select a node in the **Nodes** list and click **Properties** to display the Node Properties dialog box (see Figure 10).
3. Modify the parameters as explained above.
4. Click **Save** to save the defined node to the database.

4.5.3 Viewing connections and nodes

You can view the connections and nodes stored in the database in the **Database** tab (see Figure 12). There are three different views available in the list box: connections only, connections and nodes, and nodes only.

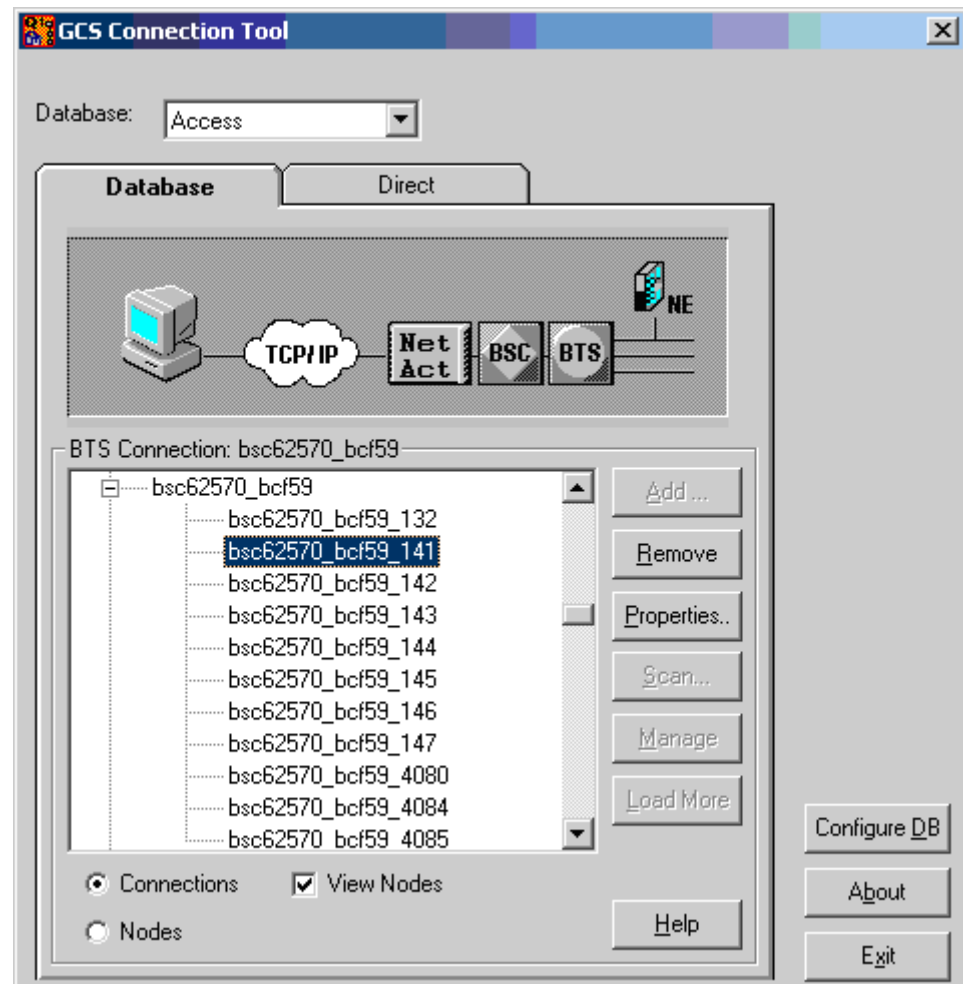


Figure 12 GCS Connection Tool, Database tab



If **Enable User Management functionality** is selected, then the User access restriction is applicable for BSC/BTS polling. For more information, refer to [Chapter , GCS User Management Functionality](#).

Command buttons

Add... displays a Connection Properties or Node Properties dialog box, depending on what is selected in the list box. If a connection or node is selected, its parameter values are copied as a basis for the new connection or node. If no connection or node is selected, the dialog box contains default values.

Remove deletes a selected connection or node.

Properties... displays the Connection Properties or Node Properties dialog box and allows you to modify the selected connection or node information.

Scan... displays the Scan dialog box for searching for nodes on the selected connection. This button is enabled when a connection that supports scanning for nodes is selected.

Manage is enabled if the Manager Info properties have been set for the highlighted node. For more, see Section [Defining nodes](#).

The **Load More** button retrieves missing nodes to work memory. The progress bar shows an up-to-date status of the percentage of loaded nodes. If **Connections** and **View Nodes** are selected, only the nodes on the selected connection are retrieved.

Help displays the context-sensitive Help.

To view connections and nodes in the database:

1. Click the **Database** tab and select the **Connections** option button. The Connections list box is displayed with all connections defined in the database (see [Figure 12](#)).
2. Check **View Nodes** if you want to see both connections and nodes at the same time in the Connections list box.
3. You can expand a connection view by double-clicking the connection name. All definitions that contain any values are shown.
4. If there are more nodes in the database that can be loaded at once, the **Load More** button is enabled. Clicking this button retrieves the missing nodes and brings them to be seen on the screen.
5. Select a connection, and click **Properties...** to display the Connection Properties dialog box (see [Figure 8](#) and [Figure 9](#)).
6. Select the **Nodes** option button to view only the nodes in the database.

For details on adding and modifying nodes, refer to Section 4.5.2, [Defining nodes](#).



If there are more than 5000 nodes in the database, GCS Connection Tool loads 5000 nodes initially. The remaining nodes can be loaded by clicking the button **Load More**.

4.5.4 Scanning for network equipment (nodes)

Scanning for new nodes is a useful function when you wish to save a node to the database (Database tab), or establish a connection between a node manager and a node (Direct tab).

Scanning for nodes

To scan for nodes:

1. Select a connection in the **Database** or **Direct** tab.
2. Click **Scan....** The Scan dialog box is displayed. See [Figure 13](#).
3. Select the address range to be searched for. The accepted values are 0...4094 and **End** must be equal or greater than **Begin**.



Searching through an address range with lots of empty addresses (without nodes) can take a long time. It can be calculated using the following formula: (number of empty addresses) * (retries + 1) * (time-out). The default value for retries is 3 and for time-out 2000 milliseconds (2 seconds).

4. Give values for **Retries** and **Time-out** (optional).
5. Click **Start** to search for the nodes. The Start button is replaced with the Stop button during scanning. You can stop scanning at any time by clicking **Stop**.

There can be a delay of up to 2 minutes before searching stops.

If you wish to continue searching after the first round, check the **Repeat** check box and click the **Start** button. When you want to stop scanning, click **Stop**.

If new nodes are found after the previous round, they are added to the list according to their address. If nodes that are already in the list do not respond to the scan command, their rows are shown in italics. If these nodes start to respond again to the scan command, they are shown in normal font.

Thus a node list row in italics means that there is some trouble either with the connection or with the node itself.

6. After the searching is finished, all the found nodes are shown on the list (see [Figure 13](#)).

The **Scan DCNA** dialog box contains the following sections:

- Address Range:** Begin: 51, End: 53
- Timing:** Retries: (empty), Time-out: (empty)
- Nokia Mediation Function Bus:** Selected Bus: 2, Show List button
- Scan progress:** (empty progress bar)
- Repeat:** ☐ Repeat, Start button
- Table:**

Address	Type	Identification
51	DN 2	I_DN2_51
52	DMF 16x2	ISSSSSS
53	DM2	DM2+/1
- Buttons:** Save..., Save All..., Select, Close, Help

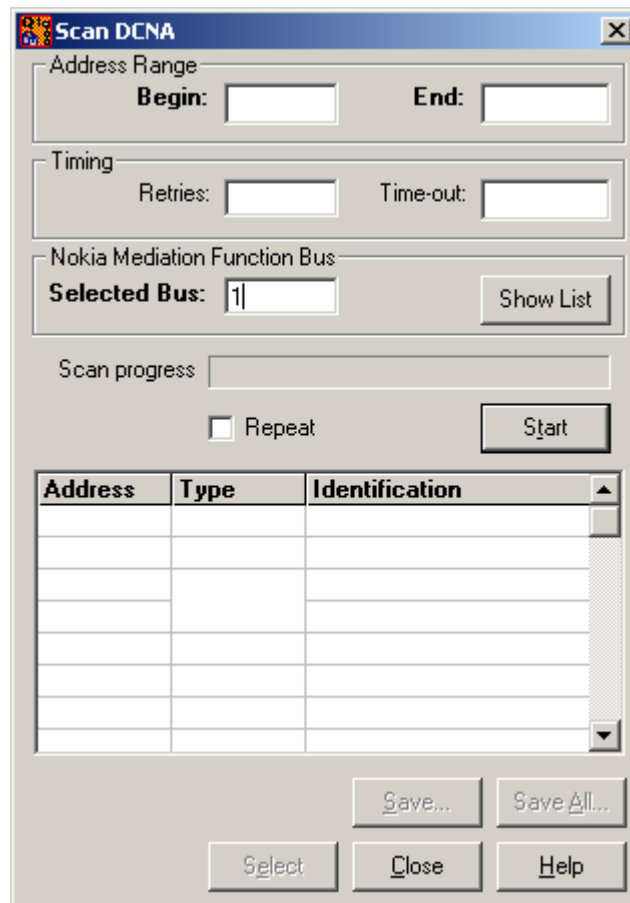
Figure 13 Scan dialog box

Listing for buses on NMF (Nokia Siemens Networks Mediation Function)

The **Show List** button is enabled if the connection supports the bus list function.

To list buses on NMF:

1. Select a connection in the **Database** or **Direct** tab.
2. Click **Scan...** The Scan dialog box is displayed.



The image shows a Windows-style dialog box titled "Scan DCNA". It contains several sections: "Address Range" with "Begin:" and "End:" text boxes; "Timing" with "Retries:" and "Time-out:" text boxes; "Nokia Mediation Function Bus" with a "Selected Bus:" text box containing the value "1" and a "Show List" button; a "Scan progress" progress bar; a "Repeat" checkbox; and a "Start" button. At the bottom, there is a table with three columns: "Address", "Type", and "Identification". The table is currently empty. Below the table are buttons for "Save...", "Save All...", "Select", "Close", and "Help".

Address	Type	Identification
---------	------	----------------

Figure 14 Scan dialog box with Show List button enabled

3. Click **Show List**. The list of buses is shown in a dialog box. See [Figure 15](#).



The following Q1 mediator equipment and respective connection types support bus list query:

- Q1 Pipe Connection
- Telnet Connection
- Q1 Agent Connection
- DCN-A Connection.

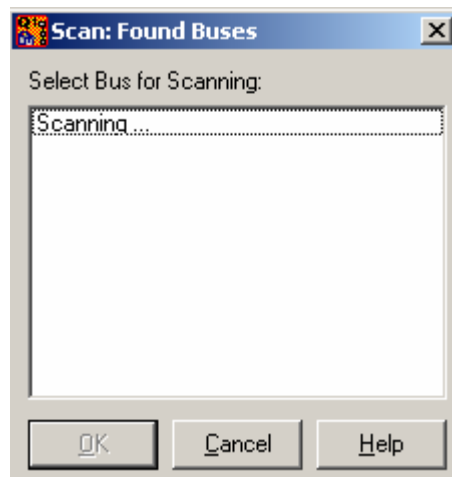


Figure 15 Scan: Found Buses dialog box

4. Select a bus, and click **OK**.
5. You can continue scanning for nodes on the given address range.

If the bus number has been changed

GCS Connection Tool requires you to create a new connection and save it before any found nodes can be saved if you have changed the Selected Bus number.

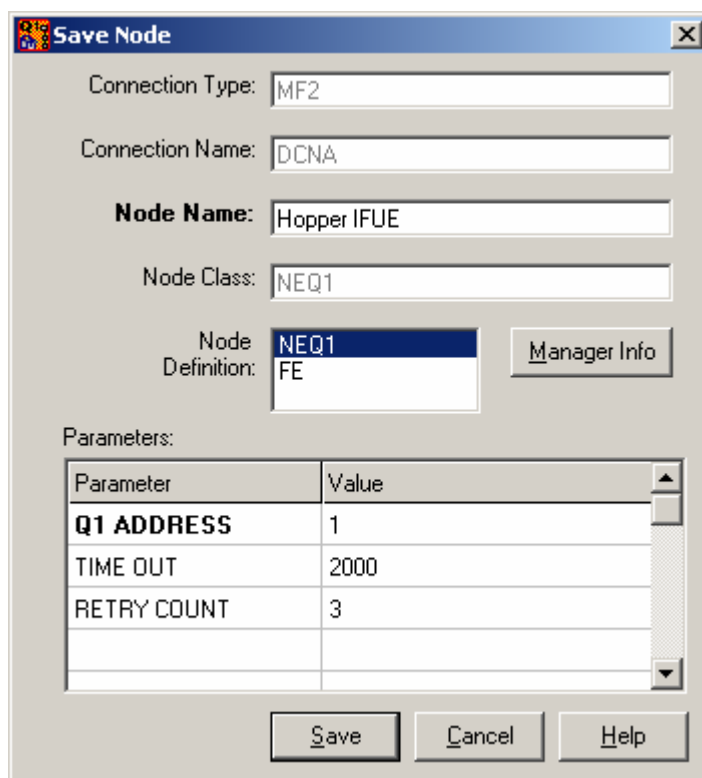
To save the changed connection to the database

1. In the following box, click **OK** to confirm that you want to save a new connection.
The Connection Properties dialog is shown. All connection parameters are preset and there is no need to change them.
2. Give a name for the connection and click Save to proceed with saving a node.

Saving a node

To save a node to the database:

1. Select a node in the search list.
2. Click **Save**. The Save Node dialog box is displayed with the node information (see [Figure 16](#)).



The 'Save Node' dialog box contains the following fields and controls:

- Connection Type: MF2
- Connection Name: DCNA
- Node Name: Hopper IFUE
- Node Class: NEQ1
- Node Definition: A list box showing 'NEQ1' (selected) and 'FE'. A 'Manager Info' button is to the right.
- Parameters: A table with the following data:

Parameter	Value
Q1 ADDRESS	1
TIME OUT	2000
RETRY COUNT	3

At the bottom are 'Save', 'Cancel', and 'Help' buttons.

Figure 16 Save Node dialog box

3. You can change the name of the node in the **Node Name** field.
4. Click **Manager Info** to select a node manager for the node. The Manager Info dialog box is displayed.
5. Click **Save**. The node is saved to the database.

Saving all nodes

To save all nodes to the database after scanning for nodes:

1. Click **Save All...** in the Scan dialog box (see [Figure 13](#)). The Scan Results: Save All dialog box is displayed (see [Figure 17](#)).

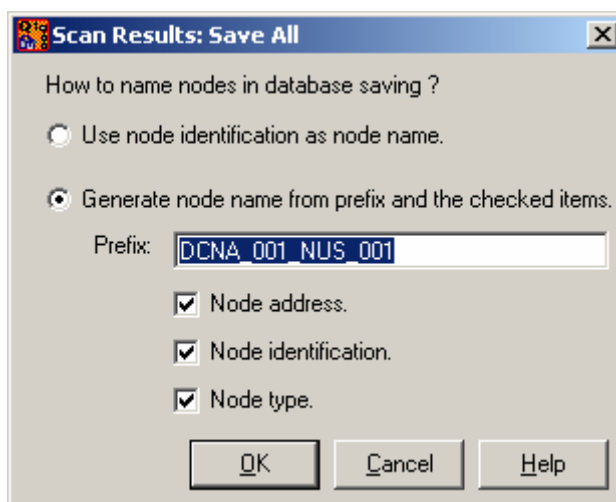


Figure 17 Scan Results: Save All dialog box

2. Depending on how you wish the found nodes to be named in the database, select either **Use node identification as node name**, or **Generate node name from prefix and the checked items**.

You can enter a prefix in the **Prefix** field. Any checked items (**Node address**, **Node identification**, **Node type**) are added to the node name, following the prefix. The maximum length of the prefix (and the whole name) is 32 characters.

3. Click **OK**. The Scan Results Selection for Database Saving dialog box is displayed, containing a list of nodes found in the search (See Figure 19).

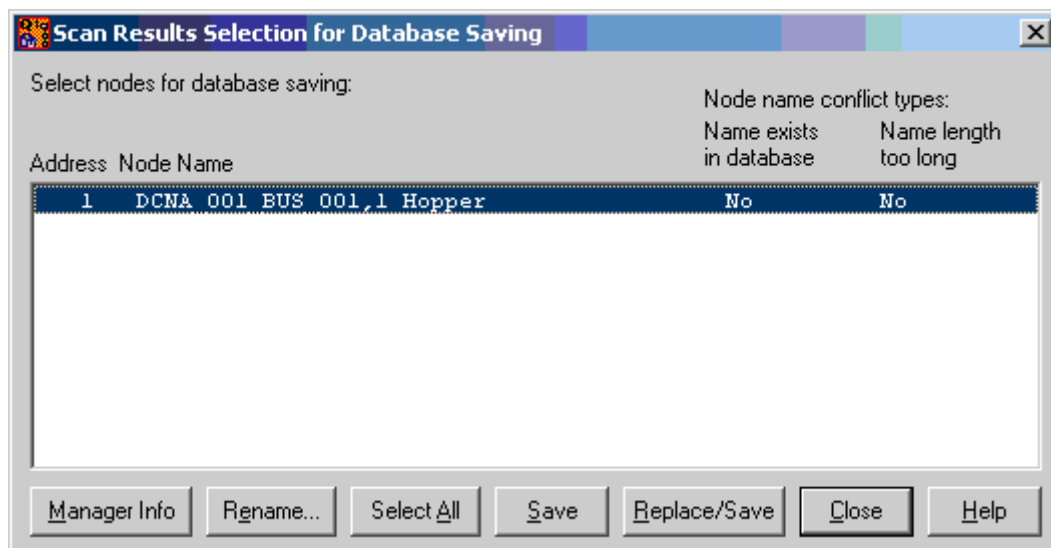


Figure 18 Scan Results Selection for Database Saving dialog box

If **Yes** is displayed in the field **Name length too long**, click **Rename...** to shorten the name. The Rename Node dialog box is displayed (See Figure 19). The maximum length of the node name is 32 characters. Single quotation marks are not allowed in the name.

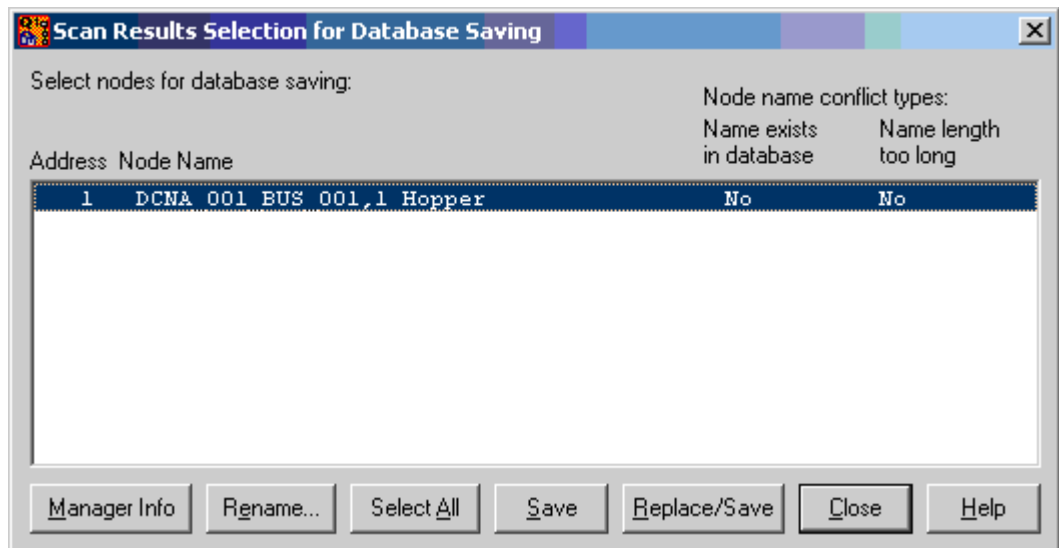


Figure 19 Rename Node dialog box

If **Yes** is displayed in the field `Name exists in database`, click **Replace/Save** to replace and save the selected nodes to the database. The node that already is in the database will be overwritten. Rename the node if you do not want the old definition to be overwritten.

4. For selecting a node manager for the node, see the procedure *To save a node to the database* in this section, step 4.
5. Click **Select All** and then **Save** to save all the nodes in the list to the database. Once a node has been saved to the database, it is not shown in the list.

4.5.5 Selecting database

A combo box is provided to select the database sources - `MS Access` or `NetAct` in GCS R6.3 release. Based on the database selected, the respective UI will be displayed.

4.5.5.1 NetAct UI in GCS tool

UI is provided to load and import the node details from the NetAct database (Oracle) to GCS database (MS Access). Loading of nodes into the list can be done in two ways:



If **Enable User Management Functionality** is selected in GCS Connection Tool, then the nodes under BSC/BTS polling in NetAct database will be imported to GCS database with User access restrictions. For more information, refer to [Chapter , GCS User Management Functionality](#).

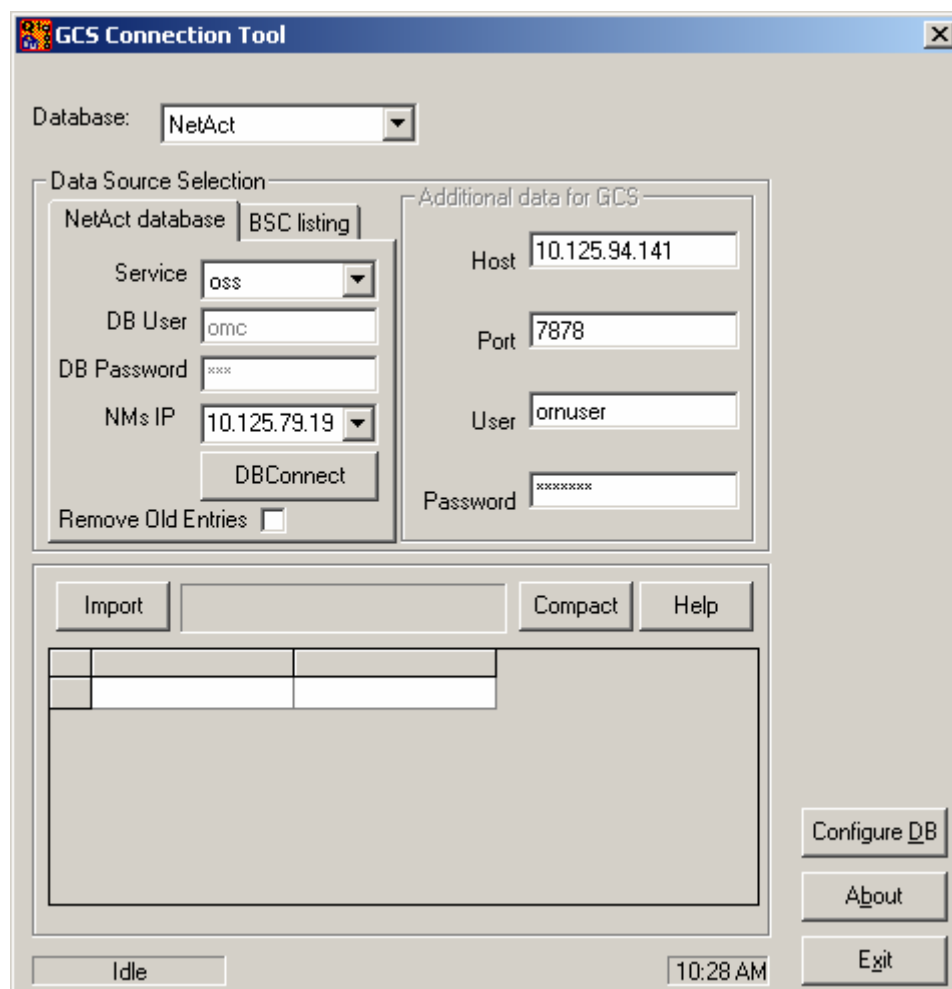


Figure 20 Selecting NetAct database in NetAct UI

1. Select the DB service configured and press the **Connect** button to connect to the DB server. All the node details will be populated in the list.



The service name mentioned in the Service list should have been configured as a net service name in the Oracle net manager and test connection should be successful.

2. **BSC listing:** Specify the log file in the BSC listing tab of the NetAct UI of GCS and press the **Load** button. All the node details from the file are populated into the list.

4.5.5.2 Importing nodes to GCS database

You can import the node details into GCS database (MS Access) by pressing the **Import** button provided after the node details are populated in the list for future reference. All the nodes in the list will be imported into the database. However, a single node/selected node cannot be imported individually.

Status of the nodes imported is shown as a text at the bottom of the NetAct UI of GCS Connection Tool in the `Same/Upd/Add/Del/Fail Node` form. This format shows the

number of nodes are same, added, deleted, updated, and failed after importing. This information is also logged into the Event Viewer in 'Nokia GCS' events.

Importing of database can also be done through command line, refer to the Section 5.4 [Automating the import using GCS Connection Tool](#) for more details. When executed from command line, all the errors that occur during import will be logged into Event Viewer in the 'Nokia GCS' sub node. These errors will also be logged into a log file when `/logfile` parameter is used along with `/import` parameter.



NetAct User Management functionality will not function in GCS for the nodes under BSC/BTS polling when imported from BSC listing file (*.zgw1.log). For more information on User access restriction in GCS, refer to [Chapter , GCS User Management Functionality](#).

4.5.5.3 Compacting the database

Compact database file operation requires the connection tool to be closed after compact operation. Clicking the Compact button in the NetActUI will display the following confirmation message box.

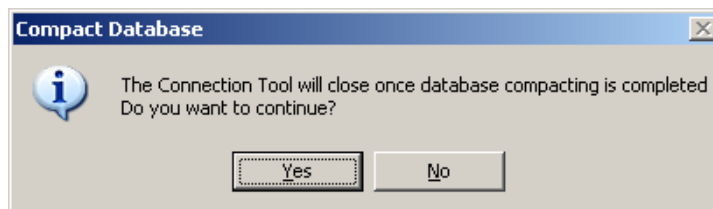


Figure 21 Compacting the database in NetAct UI

Clicking the "Yes" button will compact the database and the application will be closed.

Clicking the "No" button will not start the compact operation and the application will not be closed.

4.5.5.4 Connecting to a node

When the connection tool is launched from the node manager, you can directly connect to the node by pressing the **Connect** button of the tool after the node details are listed. This can also be done by selecting the entire row in the list without importing the nodes. Connecting to the node by selecting the row can only be possible if the nodes are retrieved from NetAct data base tab. User cannot connect to the node if nodes are loaded from the BSC Listing log file. After the import is completed, the sobriquets of the nodes are reflected in the Database tab of the Access UI.

4.5.6 Support for Audit Trail Logging

A separate log named "GCS" will be created in the Event viewer of the system and the operations performed like scanning and connecting to the node will be reflected in this log file. This logging is specifically for the purpose of centralized logging of "Audit Trail" support. Exceptions and errors that occur while connecting to the node or sending commands to the node will be logged in to this log. This log file has the same format of the application log of the system like type, date, time, source, category, event, user and computer. Typical types of events logged are "Information, Warning, and Error".

Logging of events into GCS log can be controlled i.e. enabled/disabled by changing the respective registry keys. Four keys are maintained namely `EnableConCloseEvents`, `EnableConOpenEvents`, `EnableExceptionEvents` and `EnableSendEvents` to enable/disable the logging of the respective events. Initially first 3 of the keys are enabled and `EnableSendEvents` is disabled and events related to send will not be logged into log. You can enable/disable the logging by setting 1 or 0 to these values respectively. Keys will be created in the following location in the registry:

HKEY_LOCAL_MACHINE\SOFTWARE\Nokia\GCS Communication Service\GCSServices\GCSR4\Setting (for **32 bit operating system**) OR
HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Nokia\GCS Communication Service\GCSServices\GCSR4\Setting (for **64 bit operating system**).



GCS server has to be restarted to reflect the changes. Before restarting the service all GCS related applications should be closed.

The following is the format of the description field:

```
Audit[User='nms10usr' Client_address='10.125.64.231'
server_address='10.125.65.139' session=' '
operation='The Sync open connection is successful'
success='T' operation_effect=' ' operation_class=' ']
SID='S-1-5-21-197005741-1729644109-311576647-2379'.
```

Description of the fields

User:	Name of the user who launched the GCS Connection Tool.
Client_address:	IP address of the system in which GCS is installed
Server_addresses:	IP address of the poller to which GCS is trying to connect.
Session:	Current session number (Not used in GCS).
Operation:	The operation being performed
Success:	The status of the operation success or failure ('T' for success and "F" for failure)
Operation_effect:	To categorize the effect of the operation viz. Create, Read, Write and delete (Not used in GCS).
Operation_classes:	To specify any additional information about the operation. (Not used in GCS)
SID:	Security Identifier of the user is specific for GCS and not used for audit trail logging support so this is out of the Audit[].

Target string is displayed as a part of the description of send event.

To see the GCS log file open **Control Panel** → **Administrative Tools** → **Computer Management** → **System Tools** → **Event Viewer**.

Event ID	Description
53	This ID represents Opening of connections related events.

Table 4 Event IDs and their description used in the GCS

Event ID	Description
54	Represents the Closing of connections related events.
55	Represents the Sending of data to the node.
56	Represents the Exceptions and Errors related events

Table 4 Event IDs and their description used in the GCS (Cont.)

“GCS” log will have the default settings which are same for the application log of the system like, Maximum log size as 1024; overwrite events older than 7 days. You can change the default settings as per the requirement.

4.6 Connection types

This chapter describes all connection types that GCS Connection Tool supports. Each connection type contains parameters that can be modified. The accepted values and default values are listed in tables in Appendix A.

The connection types listed in this section are:

- [Section A.1 Serial Port Connection](#)
- [Section A.2 Modem Connection](#)
- [Section A.3 Network Connection](#)
- [Section A.4 Telnet Connection](#)
- [Section A.5 Q1 Pipe Connection](#)
- [Section A.6 BSC Connection](#)
- [Section A.7 BTS Connection](#)



Some connection names have been changed. The new and old names of the connections are listed in the table below:

New name	Old name
Q1 Pipe Connection	Nokia Q1 Pipe Connection

Table 5 Old and new connection names

Node properties are described in section 4.7, [Node properties](#).

Node parameters are listed in [Appendix B: Node Parameters](#)

4.6.1 Serial Port Connection

Serial Port Connection is a direct connection to one or more Q1 or MML nodes using a serial port of a PC and a cable. When connecting to Nokia Siemens Networks Q1 node(s), a V.11/V.28 (RS-232/RS-422) converter and/or a special cable may be needed. For more about detailed cabling instructions, see the related node documentation.



Figure 22 Serial Port Connection

4.6.2 Modem Connection

Modem Connection is a connection via a modem to one or more nodes. See Section 4.8, [Configuring modems](#) for instructions on setting up modem connections.

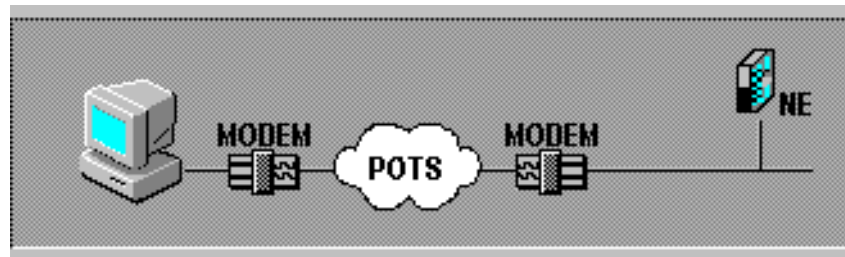


Figure 23 Modem Connection

4.6.3 Network Connection

Network Connection is a LAN connection to one or more nodes that have NIC (Network Interface Card) with the TCP/IP protocol stack.

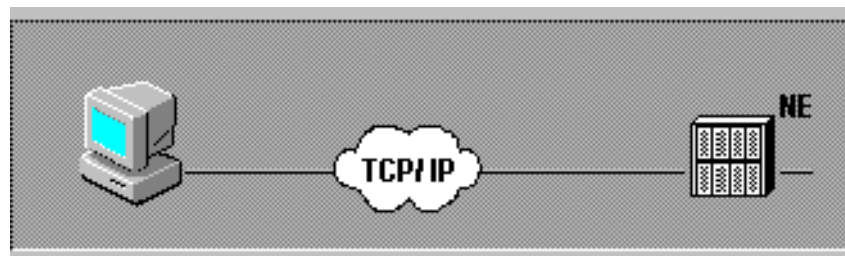


Figure 24 Network Connection

4.6.4 Telnet Connection

Telnet Connection is a LAN connection to one or more Q1 or MML nodes that are located behind a Telnet Terminal Server.

In GCS connections, Telnet Terminal Server means a multiprotocol communications server for Ethernet (LAN). It is used to connect GCS to network equipment with serial interface (RS-232 or similar) attached to Telnet Terminal Server.



Telnet Connection uses always Binary Telnet protocol between GCS and Telnet Terminal Server to ensure free of losses data communication.

In Telnet Connection, GCS supports Shiva Port and Shiva Port Atom devices.

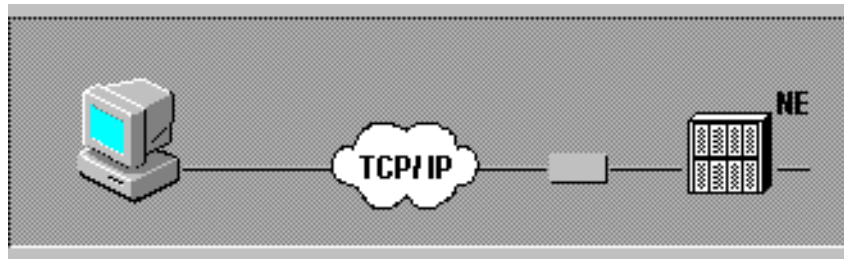


Figure 25 Telnet Connection

4.6.5 Q1 Pipe Connection



A node manager may lose the connection to a network element made via an NMS/10 MF C2.0. The loss of connection occurs if no data is sent between the node manager and the network element for a period of time. The default value is 24 h. If NMS/10 MF C2.0 has been upgraded from MF C1.0, the default value is 60 seconds! You must manually replace it with 24 h to ensure that connections are not lost because of too short timeout.

Q1 Pipe Connection is a LAN connection to one or more Q1 nodes that are located behind NMF using GCS Q1 Pipe Protocol. NMF can be:

- Nokia Siemens Networks MF C2.0
- AXC ATM Cross-connect
- Q1 Agent
- DCN Adapter.



After 10 minutes of inactivity, AXC and DCN Adapter will drop the Q1 Pipe Connection. The timeout for Q1 Agent is 24 hours.

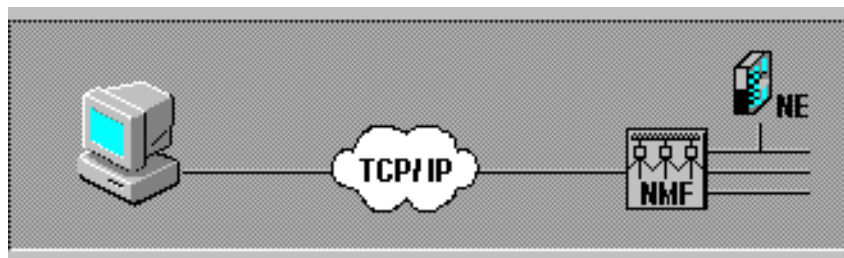


Figure 26 Q1 Pipe Connection

4.6.6 BSC Connection



A node manager may lose the connection to a network element made via a BSC (Base Station Controller). The loss of connection occurs if no data is sent between the node manager and the network element for a period of time. The default value is 5 minutes. The connection must be re-established for further operations between the node manager and the network element.

BSC Connection via NetAct

This kind of BSC Connection is to nodes that are located behind the NetAct management system and a Base Station Controller. NetAct works as a protocol converter between LAN and OSI X.25 TP protocol.

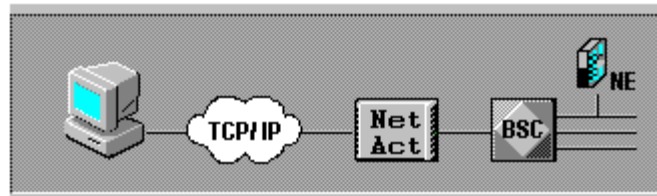


Figure 27 BSC Connection via NetAct

BSC connection without NetAct

This kind of BSC Connection is to nodes that are located behind a Base Station Controller without NetAct in between. This connection requires the OSI X.25 TP4 protocol installed.

4.6.7 BTS Connection



A node manager may lose the connection to a network element made via a BTS. The loss of connection occurs if no data is sent between the node manager and the network element for a period of time (5 minutes as a default). The connection must be re-established for further operations between the node manager and the network element.

BTS Connection via NetAct

BTS Connection is a connection to nodes that are located in a Base Station.

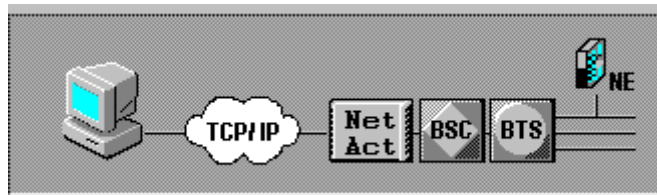


Figure 28 BTS Connection

BTS Connection without NetAct

BTS Connection without NetAct is a connection to a base station that is located behind a Base Station Controller without NetAct in between. This connection requires the OSI X.25 TP4 protocol installed.

4.7 Node properties

This section describes network elements (nodes) that can be accessed and managed using GCS. It contains the following subsections:

- Section 4.7.1 [Q1 node](#)
- Section 4.7.2 [MML node](#)

Node parameters are listed in [Appendix B: Node Parameters](#).

4.7.1 Q1 node

Q1 node is a network element that is managed using Nokia Siemens Networks proprietary Q1 network management protocol. Functionality of the Q1 node is hierarchically divided into the following groups:

Group	Explanation
Q1 node	Represents the node itself. The Functional Entity number zero (0)
Functional Entity (FE)	Main functionality of the node is mapped into Functional Entities. Older Nokia Siemens Networks Q1 nodes consist usually of only one FE, the Q1 node itself. Newer Nokia Siemens Networks Q1 nodes may have several FEs. In some cases their number varies depending on the node configuration.
Supervision Block (SB)	Not visible to GCS. Used to locate the origin of alarms raised in FEs

Table 6 Functionality of the Q1 node

The GCS database has separate settings for the Q1 node itself and an option to specify the FE parameters. The FE parameters are, however, usually not specified in the GCS database, but the node manager application supplies the parameters when required. Note that some node managers may ignore the FE parameters and specify their own. They may even refuse to connect to a node if any of the FE parameters have been specified.

4.7.2 MML node

MML node is a network element that is managed using GCS proprietary MML network management protocol. A large cross-connection device, SXC-T node uses MML as its management protocol. SXC-T Node Manager uses the GCS database for saving and retrieving the MML node addresses.



MML connections cannot be shared between several applications or users because the MML protocol itself does not support it.

4.8 Configuring modems

This section describes the settings that are needed to make the GCS computer and a Nokia Siemens Networks modem to serve as a front end for dial-up connections from computers running GCS R6.3. It contains the following sections:

- [Section 4.8.1 Prerequisites for the computer containing GCS](#)
- [Section 4.8.2, Physical configuration](#)
- [Section 4.8.3, Modem B sample settings](#)

4.8.1 Prerequisites for the computer containing GCS

The prerequisites for the computer containing GCS are:

- A modem is installed in the PC with a maximum speed of 9600 bit/s or slower, depending on the Q1 bus speed
- The modem is properly configured
- TAPI and support for the modem are available on the PC.



GSC uses TAPI (telephony API; a Windows component) to access the modem. Hence, if there are more than one modem installed in the PC, GCS selects the first available modem that supports data calls.

4.8.2 Physical configuration

The following figure illustrates the physical connection of modems when connecting a GCS computer with a TMC.

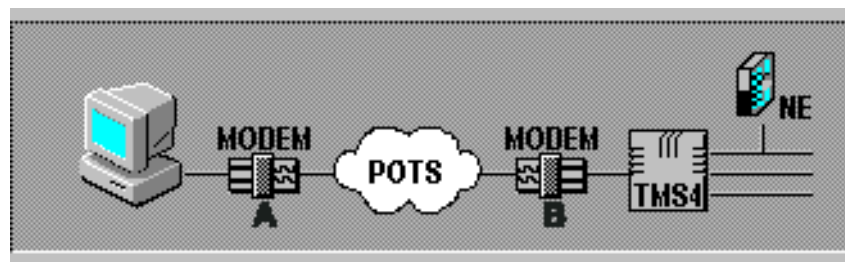


Figure 29 Physical connection of modems

4.8.3 Modem B sample settings

The settings shown in the following tables are done to the modem B. In this example it is a Nokia Siemens Networks modem. You can use the matching settings in modem A as well.



The settings shown in this example are valid for Nokia Siemens Networks modems only. You may have to use different settings if you are using other than Nokia Siemens Networks modems.

DTE settings	Value	Note
AT	Selected	
108.2	Ignored	
DSR	Always ON	
DCD	Carrier	
Delay (ms)	10	
DTE speed (bit/s)	9600	Must match with the used TMC terminal port setting.
Deviation (%)	2.3	The default is 1%.
Flow control	None	Q1 has its own flow control.
Data bits + Parity	8 + Even	Must match with the used TMC terminal port setting.

Table 7 Modem B: DTE settings

DTE settings	Value	Note
Dir	Asy 9 Data	
AT set	Whole	
Break	Ignored	Q1 has its own flow control.

Table 7 Modem B: DTE settings (Cont.)

Auxiliary settings	Value	Note
Character echo	OFF	TMC must not get characters echoed back.
Result codes	NO	TMC must not get characters echoed back.
Connection msg	Disabled	TMC must not get extra messages added back.

Table 8 Modem B: auxiliary settings

Other settings	Value	Note
Compression	Auto V-42 sc	
Automatic speed negotiation	300-19200	Modem B adjusts automatically to the speed of modem A.
Auto answer	After 1 ring	Modem B connects automatically after one ring.

Table 9 Modem B: other settings

5 GCS Multiple Database Integration

This chapter contains the following sections:

- Section 5.1, [Introduction to GCS Multiple Database Integration](#)
- Section 5.2, [Configuring GCS Multiple Database](#)
- Section 5.3, [Importing the NetAct topology database using Import functionality of GCS](#)
- Section 5.4, [Automating the import using GCS Connection Tool](#)

5.1 Introduction to GCS Multiple Database Integration

GCS R6.3 supports multiple database integration. GCS R6.3 uses both local GCS database as well as the NetAct topology database. The NetAct topology database would be used for fetching connection details of network elements in 2G (BSC/BTS) and 3G (Q1 Agent scenario) environments. This feature eliminates the need for the importing of nodes to the local MS Access GCS database. When the Node Manager launch is initiated from TLUI of NetAct, the connection details are directly fetched from the NetAct database to formulate the target strings dynamically and no connection details are needed in GCS local database.

In case of the node manager launch, the database module will first try finding the sobriquet requested in the local MS Access GCS database and returns the target string, if the sobriquet is found. If the specified sobriquet is not found in the local MS Access GCS database then the sobriquet will be searched from all Configured NetAct Databases instances.

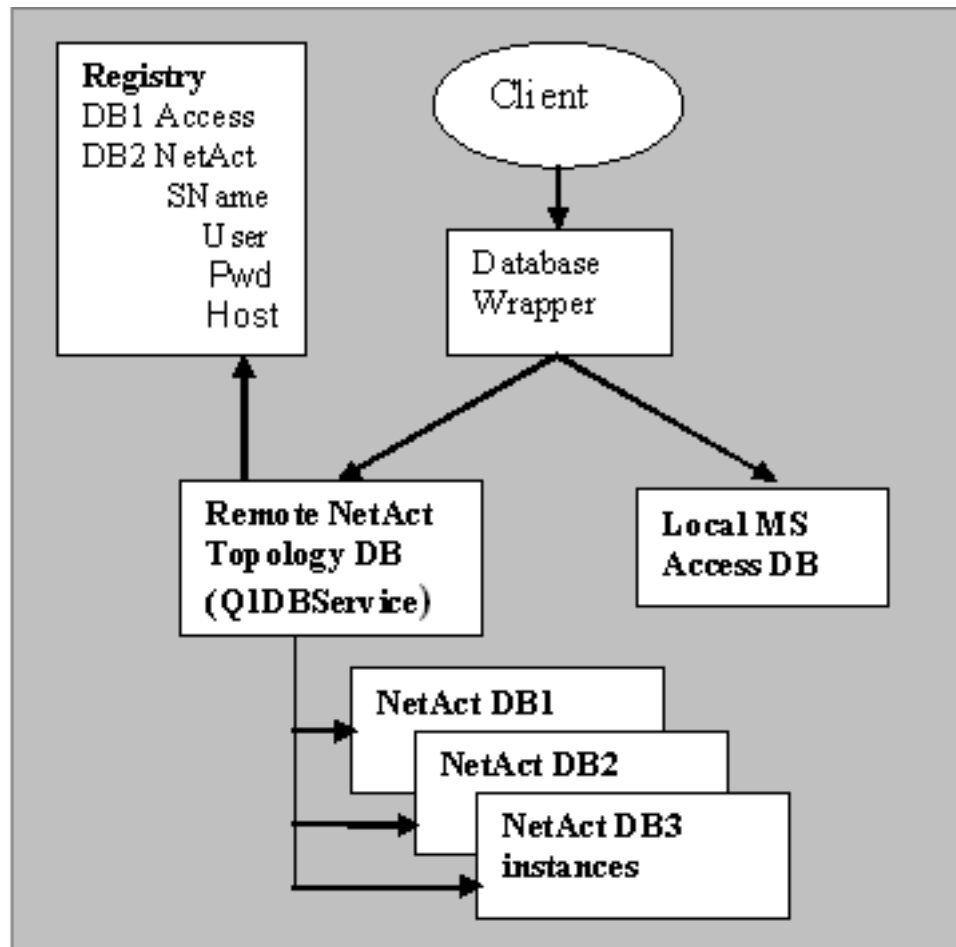


Figure 30 Multiple Database Integration in GCS

Here, the Q1 DBService would check the registry for accessing the DB connection parameters (username, password, oracle service name and host IP address) for the installed databases. The service on finding configured NetAct database server(s) would instantiate the configured DB instances. Each of these DB instances would be responsible for the connection established to the NetAct database server (topology database) and to fetch the needed parameters for formulating the target string based on the passed sobriquet or NodeID. In case, if multiple NetAct databases return has the same nodeID configured, the target string from the first matching NetAct DB instance is returned back to the client. The availability of such duplicate nodeIDs in the topology database is recorded in the database log file.

5.2 Configuring GCS Multiple Database

The NetAct DB connection parameters that are needed for instantiation of the connection are added using below dialog as shown in [Figure 31](#). Restart of GCS Connection Tool or the client application is needed before taking these parameters into use for establishing the connection to the nodes.

The screenshot shows the 'GCS DB Configuration Tool' dialog box. It has a title bar with a close button. The main area is divided into several sections. The 'DB Parameters' section contains fields for 'Service Name' (a dropdown menu showing 'oss'), 'User ID' (text field with 'omc'), and 'Password' (text field with 'xxx'). Below this is the 'Connection Type' dropdown menu showing 'BSC / BTS Connection'. The next section is for 'OSSPKG/CORE IP Address', which includes four separate text boxes for the IP octets: '10', '125', '104', and '221'. Below these are fields for 'Port' (text field with '7878'), 'User' (text field with 'omuser'), and 'Password' (text field with 'xxxxxxxx'). There are three buttons: 'Add', 'Modify', and 'Delete'. The bottom section contains two checked checkboxes: 'Enable Log for all configured DB instances' and 'Enable User Management Functionality'. Below these is the 'LDAP Credentials' section with fields for 'Username' (text field with 'cn=Directory Manager') and 'Password' (text field with 'xxxxxx'). At the very bottom are three buttons: 'OK', 'Cancel', and 'Help'.

GCS DB Configuration Tool

DB Parameters:

Service Name: oss

User ID: omc

Password: xxx

Connection Type: BSC / BTS Connection

OSSPKG/CORE IP Address: 10 125 104 221

Port: 7878

User: omuser

Password: xxxxxxxx

Add Modify Delete

☒ Enable Log for all configured DB instances

☒ Enable User Management Functionality

LDAP Credentials:

Username: cn=Directory Manager

Password: xxxxxx

OK Cancel Help

Figure 31 BSC/BTS Connection parameter

Figure 32 Q1 Pipe Connection Parameter

UserID and Password parameters are used to connect to NetAct Oracle database. Service Name should have been configured as a net service name in the Oracle Net manager tool. The server IP address (OSSPKG/CORE IP Address parameter) is referred as 'osspkg' in OSS3.1 or 'core IP' in OSS4.0/OSS4.1. Enter the Port, User and Password details of the NetAct core server. Enter the port number, user and password of Q1 pipe required for GCS to format the target string by selecting the Q1 pipe type of connection.

Logging has been provided for Q1 database modules. You can enable the logging by selecting the check box in the **Configure DB** button of GCT. . Log file will be created in the Documents and Settings\AllUsers\Application Data\Nokia\GCS folder (Windows 2003 and XP) ProgramData\Nokia\GCS folder (Windows Vista, Windows 2008 server and Windows 7) in the installed drive of GCS (for example C:\). Back up of log file will be created automatically once the size of the file increases to 512 KB by appending the date and time to log file. Typical back up file name is GCSDBLogDD-MM-YYYY, HH-MMSS.



There are additional Q1 parameters required for GCS target string in addition to those configured in above dialog such as host IP address and timeout. These parameters remain the same or end user choice for all the configured NetAct topology databases, which would be stored in the registry.



Follow the steps given below to configure service name using Oracle net manger:

1. Open Net Assistant from **Programs** → **Oracle** → **Network Administration** → **Net Assistant**.
2. Select Service Naming and go to Edit. Click the **Create** button.
3. Enter Net Service Name, and click the **Next** button. For example: The Net Service Name could be Aditya.
4. TCP/IP (Internet Protocol) is default. Click the **Next** button again.
5. Enter Host Name/Host IP Address (DB IP). The port number is default. Click the **Next** button.
6. Enter Service Name (for example: oss) and click the **Next** button.
7. Click **the Test** button to make changes such as login as omc, or provide your credentials for testing. Click the **OK** button and check whether the connection is successful or not.
8. Click the **Finish** button.

The service name mentioned in the Service Name list should have been configured as a net service name in the Oracle net manager and test connection should be successful.

Checking the “Enable Log for all configured DB instances” check box will create a log file and generate log statements to help the end user while debugging in the failure cases of accessing configured NetAct Database services.

GCSDBLog.txt file will be created in the database folder of GCS, i.e. Documents and Settings\All Users\Application Data\Nokia\GCS folder in the installed drive of GCS (for example C:\)”

When more than one user is using the GCS connection tool through the terminal server client or any remote client to modify/delete the NetAct DB credentials (like Service-Name, UserID, Password and IP address) using DB Configuration Tool, the users cannot view the updated information until the user re-starts GCS Connection Tool. Also, if simultaneous users update the same record, the record which is last updated would be the one to be retained in the registry.



If Oracle client is not installed on the PC and the NetAct DB connection parameters are configured then ODBC errors will come for each service configured using DB Configuration Tool.



Opening of GCT is slow when service parameters are configured.

When NetAct DB services are configured then in case of Oracle client configuration may get problem or NetAct Oracle server might be not responding. Either of the cases GCS UI takes too long time showing the progress bar and gets stuck while opening the database. If user clicks the progress bar 'the action cannot be completed because the other app is busy....choose Switch to....' Message will be appeared.



When GCSR6.3 is installed without the Oracle Client Software installed and configured the NetAct services using the GCSDB Configure Tool then while opening the GCS Connection Tool the following Message will appear "The Oracle(tm) Client and networking

components were not found. These Components are supplied by Oracle Corporation and are part of Oracle Version 7.3 (Or greater) client software installation”.

5.3 Importing the NetAct topology database using Import functionality of GCS

This section provides instructions on how to add nodes with GCS Connection Tool using Import functionality. This procedure requires GCS R6.3 to be installed as a pre-requisite.

To add nodes with the GCS Connection Tool using Import functionality of GCS:

1. Login to GUI as domain administrator.
2. Open GCS Connection Tool from **Start → Programs → Nokia Siemens Networks → GCS Connection Tool**.
3. In the Database drop-down menu, select NetAct.
4. Click **Configure DB**. GCS DB Configuration Tool opens.
5. In GCS DB Configuration Tool, add the information for the DB Parameters and additional parameters fields.
6. Click **OK**. GCS DB Configuration Tool closes.
7. In the Data Source Selection pane of the GCS Connection Tool, click **DBConnect**.
. The nodes are listed with the required values as shown in the following figure:

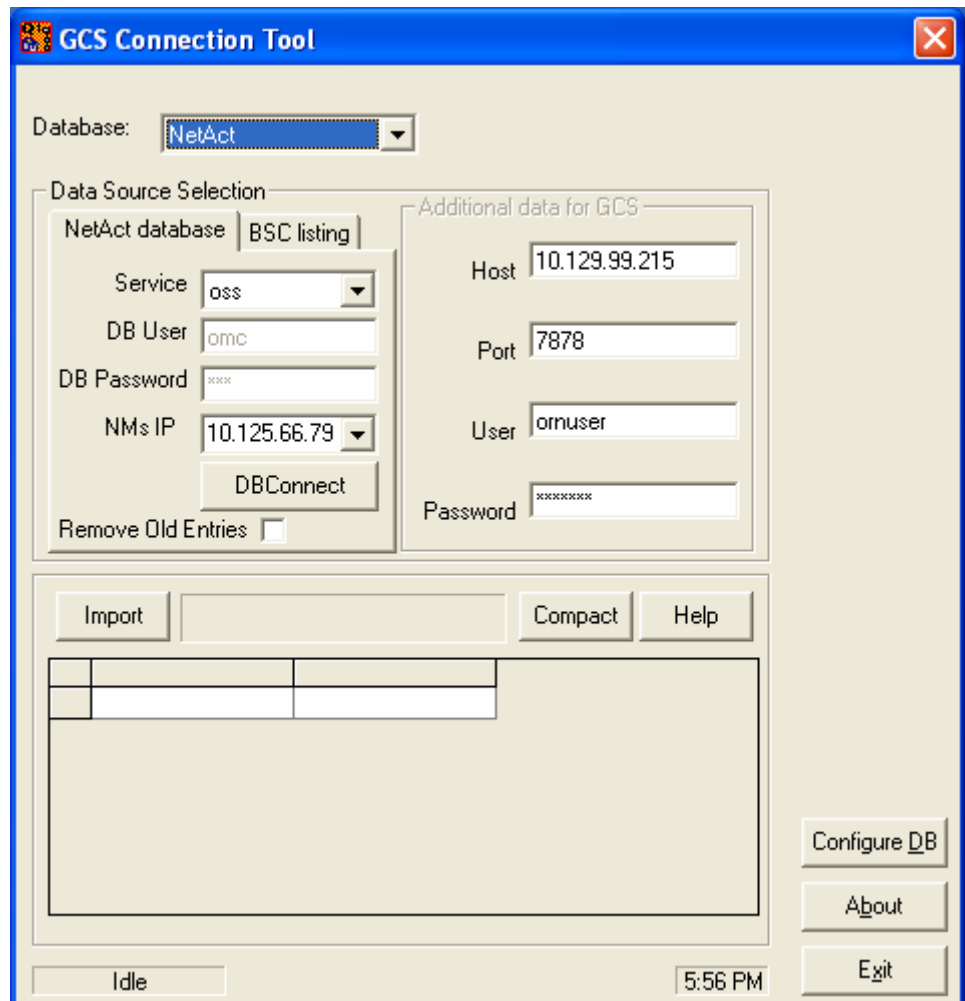


Figure 33 Importing nodes from GCS Connection Tool

8. Click **Import**. The connection and node details are added to the GCS MS Access database.



If “Enable User Management functionality” is selected in GCS Connection Tool, then the nodes under BSC/BTS polling in NetAct database will be imported to GCS database with User access restrictions. For more details, refer [Chapter , GCS User Management Functionality](#).

5.4 Automating the import using GCS Connection Tool

You can automate the import functionality of GCS using GCS Connection Tool. The GCS Connection Tool reads the command line for arguments and performs the import reading the values from the user registry. Scheduled Tasks application in Windows shall be used for automating the import functionality of GCS Connection Tool.

Prerequisites

- GCS version R6.3 is installed.
- Password have been saved. (In the GCS Connection Tool type in the password, check **save password** in BSC listing tab, and close the GCS Connection Tool).



If “Enable User Management functionality” is selected in GCS Connection Tool, then the nodes under BSC/BTS polling in NetAct database will be imported to GCS database with User access restrictions. For more information, refer [Chapter , GCS User Management Functionality](#).

To automate the import by using the Scheduled Tasks application

1. Log in the Node Manager Server as an administrator (or with equivalent rights).
2. In the Node Manager Server select **Start → Programs → Accessories → System Tools → Scheduled Tasks**. The **Scheduled Tasks** application opens.
3. Double click **Add Scheduled Tasks**. The Scheduled Task Wizard opens. Click **Next**
4. In the Scheduled Task Wizard click **Browse**. Find and select the location where you have installed `Q1DBTool.exe`. The default installation path is: `C:\Program Files\Nokia\GCS\Q1DBTool.exe`. Click **Next**.
5. Fill in the name for the import: for example, Scheduled Q1DBTool. Set the frequency: Daily, for example. Click **Next**.
6. Select the values for the time when this task should be executed. Click **Next**.
7. Fill in the administrator user name and password. Click **Next**.
8. Check the Open Advanced properties for... marker. Click **Finish**. The dialog opens for the created ‘Scheduled Q1DBTool’ task.
9. In the Scheduled Q1DBTool dialog modify the Run field to have the correct options. The following command line options are available:
 - `.. /import`
Performs the import with the saved values.
 - `.. /compact`
Compacts the database after the import.
 - `.. /logfile <file>`
Log statistics and errors into a file.
 - `.. /show`
Performs the import with the saved values.
 - `.. <filename>`
Imports the BSC listing file. (If the filename contains spaces, enclose it in double quotation marks.)

If no filename is provided, the NetAct topology database is imported. The NetAct topology database is imported according to the values last entered in the GCS Connection Tool. Example for importing a BSC listing file: `C:\Program Files\Nokia\GCS> Q1DBTool /import C:\imports.zqwl.log` where the BSC listing file `imports.zqwl.log` is imported.

Example for importing the NetAct topology database: `C:\Program Files\Nokia\ GCS\Q1DBTool.exe /import` where the NetAct topology database is imported.

Example for capturing import statistics/errors into a log file:

- `C:\Program Files\Nokia\GCS>Q1DBTool.exe /import /logfile D:\GCSLogs\Import.log` where the NetAct topology database is imported.
- `C:\Program Files\Nokia\GCS>Q1DBTool.exe /import /logfile D:\GCSLogs\Import.log C:\imports.zqwl.log` where the BSC listing file `imports.zqwl.log` is imported.



‘NetAct User Management functionality’ will not function in GCS for the nodes under BSC/BTS polling when imported from BSC listing file (`*.zqwl.log`). For more

information on User access restriction in GCS, refer [Chapter , GCS User Management Functionality](#).

10. Once you have specified the needed information in the Run field, click **OK**. The **Set Account Information** dialog opens
11. In the **Set Account Information** dialog retype the administrator password. Click **OK**. The scheduled task appears in the Scheduled Tasks window.

The GCS database is automatically updated as specified. Each time the GCS database is recreated; the previous one is backed up and named `dbs.mbd.001`.

6 GCS database

This chapter contains the following sections:

- Section 6.1, [Introduction to the GCS database](#)
- Section 6.2, [Maintenance](#)

6.1 Introduction to the GCS database

The GCS database is a central location for saving connection and node information used by other applications such as node and alarm managers and some agents. The database name is `dbb.mdb`.

The database is by default located in the following directory:

`C:\NokiaMgr\System\Database`

or

`C:\Documents And Settings\All Users\Application Data\Nokia\GCS`
(in Windows XP and 2003 Server).

`C:\ProgramData\Nokia\GCS` (in Windows Vista, Windows Server 2008 and Windows 7 OS)



The performance of GCS database may slow down if it contains several thousand network elements.



Frequent updates of the GCS database will degrade its performance over a period of time. To keep the performance optimal, refer to section 6.2.1, [Compacting the GCS database](#).



GCS uses Microsoft(r) Access for its database functionality. The maximum GCS database size is 1 GB. With Microsoft(r) Access 2000, the maximum size is 2 GB. Normally the database size should not present any problems, since the GCS database is seldom larger than few megabytes.

6.2 Maintenance

The GCS database uses Microsoft Access as underlying database technology. Microsoft Access does not manage unused space in its databases. Therefore regular database maintenance is required to keep the GCS database size and performance on the best possible level.

6.2.1 Compacting the GCS database



The GCS database must not be in use when compaction is done.

If the GCS database is updated daily, it should be compacted regularly. For example, NetAct and NMS/10 can cause heavy database load. When they are used, the database should be compacted regularly.

You can compact the GCS database either automatically or manually.

Compacting the GCS database automatically

Set `GCSCompactDb.exe` in the GCS installation directory to run at regular intervals:

Control Panel → Scheduled Tasks.

Compacting the GCS database manually (normal case)

To compact the GCS database manually

1. Stop all running applications that use GCS.
2. Open the Start menu and select **Settings → Control Panel**. Open **Data Sources (ODBC)**. For 64 bit operating system, open `C:\Windows\SysWOW64\odbcad32`.
In Windows 2000 the location is under **Control Panel** and then under **Administrative Tools**.
3. From **System DSN** tab, select **DBS32**.
4. Click the **Configure** button to configure DBS32.
5. In Microsoft Access Setup dialog box, click **Compact...** to compact the database.
6. Use the same database file name for the compacted database and confirm the replacement of the database.

Compacting the GCS database manually (the GCS Remote Database Update denied)

Steps 2 - 4 and 10 - 12 are required only if some NMS system tries to update the GCS database while it is being compacted and it must be prevented.

To compact the GCS database manually

1. Stop all running applications that use GCS
2. Open the **Start** menu and select **Settings → Control Panel**. Open **Services**.
3. Select **GCS Sync** from the Service list.
4. Click **Stop** to stop the service, and confirm it by clicking **Yes**.
5. Open the **Start** menu and select **Settings → Control Panel**. Open **Data Sources (ODBC)**. For 64 bit operating system, open `C:\Windows\SysWOW64\odbcad32`.
In Windows 2000 the location is under **Control Panel** and then under **Administrative Tools**.
6. From **System DSN** tab, select **DBS32**.
7. Click the **Configure** button to configure DBS32.
8. In Microsoft Access Setup dialog box, click **Compact...** to compact the database.
9. Use the same database file name for the compacted database and confirm the replacement of the database.
10. Restart **GCS Sync** by opening the **Start** menu and selecting **Settings → Control Panel**. Open **Services**.

11. Select **GCS Sync** from the Service list.
12. Click **Start** to restart the service.

6.2.2 Backing up and restoring the GCS database

It is recommended that you back up the GCS database so that it can be restored, if necessary.

To back up the GCS database

1. Ensure that there are no applications using the GCS database.
2. Locate the GCS database file `dbcs.mdb`. Refer to Section 6 [GCS database](#) to find out where the GCS database is installed.
3. Copy the GCS database file to desired location.

To restore the GCS database

1. Ensure that there are no applications using the GCS database.
2. Locate the GCS database file.
3. Copy the GCS database file to desired location.
4. Copy the previously saved GCS database file `dbcs.mdb` over the current one. The GCS database contains information about connection and nodes. This information can be used across several workstations if they are connected to same management network.

Alternate method for Database backup

1. Ensure that there are no applications using the GCS database.
2. `GCSdbBackup.bat` file has to be run at the command prompt either by specifying the destination path or without the destination path.

Example: `C:\GCSdbBackup "D:\GCS\backup"`

or

Example: `C:\GCSdbBackup`

The later option would take the backup in the path "`C:\Documents and Settings\All Users\Application Data\Nokia\GCS\backup`", where '`C:\`' is assumed to be the installation drive for GCS.

Alternate method for Database restore

1. Stop all running applications that use GCS.
2. To restore the database run the `GCSdbRestore.bat` file at the command prompt either by specifying the source path or without the source path. Example: `C:\GCSdbRestore "D:\GCS\backup"`

or

Example: `C:\GCSdbRestore`

The later option would restore the database from the default source path "`C:\Documents and Settings\All Users\Application Data\Nokia\GCS\backup`", where '`C:\`' is assumed to be the installation drive for GCS.



All GCS Services will be stopped and started while running the backup and restore commands.

7 GCS Remote Database Update

This chapter contains the following sections:

- Section 7.1, [Introduction to GCS Remote Database Update](#)
- Section 7.2, [Installing GCS Remote Database Update](#)
- Section 7.3, [Configuring GCS Remote Database Update](#)

7.1 Introduction to GCS Remote Database Update



GCS Remote Database Update was previously called Interface Synchronization.

GCS Remote Database Update allows the other Nokia Siemens Networks NMS to add network element information into the GCS database via a socket connection as the node and connection information have to be in database (Access/NetAct) to launch the node managers.

7.2 Installing GCS Remote Database Update

GCS Remote Database Update is installed by GCS Setup. After the installation, GCS Remote Database Update starts automatically.

7.3 Configuring GCS Remote Database Update

GCS Remote Database Update allows other Network Management Systems (from now on called clients) to add network element information (name and address) into the GCS database using a socket connection.

Configuration

The client must know the host name or IP address of the workstation where GCS Remote Database Update is running and the socket port number where to connect. The port number can be configured using Windows Registry Editor as explained later in this chapter. The TimeOut parameter is currently not used.

Restricting use of GCS Remote Database Update

By default all clients can use GCS Remote Database Update for updating the GCS database. If desired, GCS Remote Database Update can be configured so that only clients from a specific IP address are allowed to use GCS Remote Database Update.

To restrict use of GCS Remote Database Update so that only certain computers are allowed to use it, follow the instructions later in this chapter.



Modifying the Windows registry database with the Registry Editor (`REGEDIT.EXE`) may damage your system. You must possess proper skills and the Administrator rights to use the Registry Editor.

To set up a list of allowed clients:

1. Open the **Start** menu and select **Run....**
2. Type `Regedit` in the **Open** field and click the **OK** button.
3. Navigate in **Registry Editor** to the following location (see [Figure 34](#)):
For 32 bit operating system, the following location will be used:

My Computer → **HKEY_LOCAL_MACHINE** → **SOFTWARE** → **Nokia** → **GCS Communication Service** → **GCSServices** → **GCSSYNC**

For 64 bit operating system, the following location will be used:

My Computer → **HKEY_LOCAL_MACHINE** → **SOFTWARE** → **Wow6432Node** → **Nokia** → **GCS Communication Service** → **GCSServices** → **GCSSYNC**

4. Add a new key under **GCSSYNC** and name it **Allowed Clients**.
5. For each allowed client, add a new key under **Allowed Clients** and give it a name that is the IP address of the computer which is allowed to use GCS Remote Database Update. Only IP addresses in numeric format are allowed, for example, 172.21.172.174.
6. After all clients have been added, close Registry Editor selecting **Registry** → **Exit** in the menu.

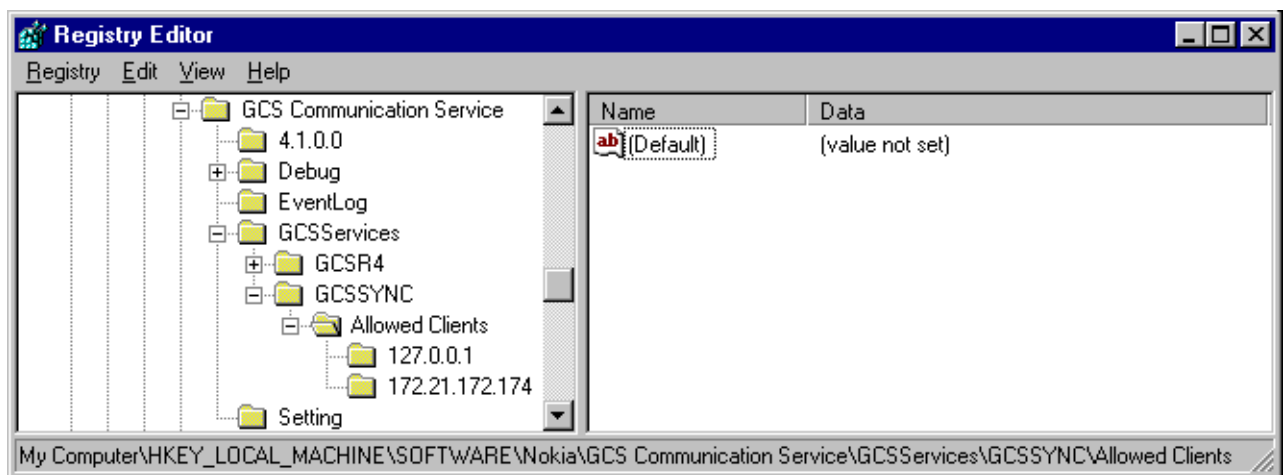


Figure 34 Example of GCS Remote Database Update Allowed Clients key

GCS Remote Database Update must be restarted for the changes to take effect.



If you want to allow the same computer where GCS Remote Database Update is installed to use GCS Remote Database Update, add IP address 127.0.0.1 under **Allowed Clients**. You cannot use the computer's real IP address but this address representing the local host computer.

To modify GCS Remote Database Update settings:

1. Open the **Start** menu and select **Run...**
2. Type `Regedit` in the **Open** field and click the **OK** button.
3. Navigate in **Registry Editor** to the following location (see Figure 35):

For 32 bit operating system, the following location will be used:

My Computer → **HKEY_LOCAL_MACHINE** → **SOFTWARE** → **Nokia** → **GCS Communication Service** → **GCSServices** → **GCSSYNC**

For 64 bit operating system, the following location will be used:

My Computer → **HKEY_LOCAL_MACHINE** → **SOFTWARE** → **Wow6432Node** → **Nokia** → **GCS Communication Service** → **GCSServices** → **GCSSYNC**

4. You can modify the values of **Port No** and **TimeOut**.

5. Close Registry Editor selecting **Registry** → **Exit** in the menu.

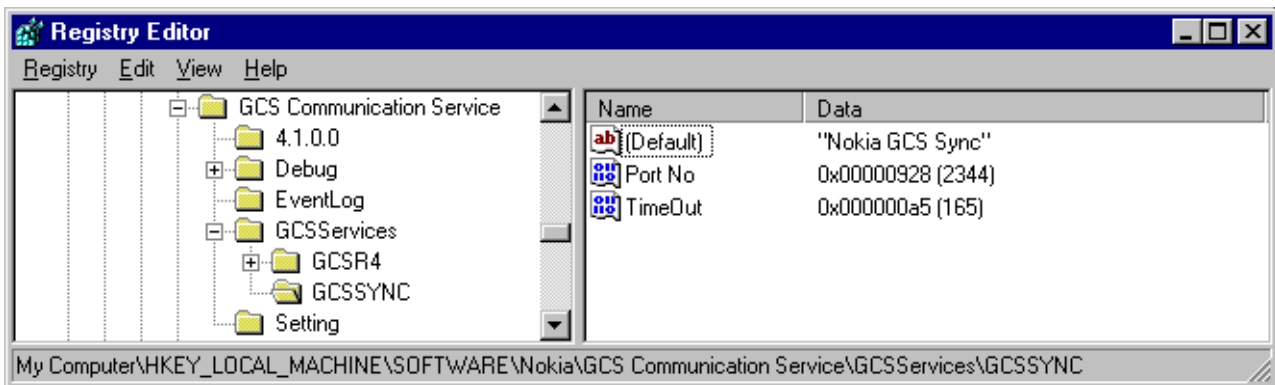


Figure 35 Modifying GCS Remote Database Update settings

GCS Remote Database Update must be restarted for the changes to take effect.

To manually restart GCS Remote Database Update:

1. Open the **Start** menu and select **Settings** → **Control Panel**.
2. Double-click the **Services** icon to open it.
3. Select **GCS Sync** from the **Service** list.
4. Click **Stop** to stop the service, and confirm it by clicking **Yes**.
5. Click **Start** to restart the service.

8 GCS User Management Functionality

This chapter contains the following sections:

- Section 8.1, [Introduction to GCS User Management Functionality](#)
- Section 8.2, [Permission Management Application \(PEM\) Configurations](#)
- Section 8.3, [User and Access Matrix](#)
- Section 8.4, [Enabling GCS User Management Functionality](#)

8.1 Introduction to GCS User Management Functionality

User Management feature in GCS provides restricted access to the Q1 managed Network elements under BSC/BTS polling and managed by NetAct. GCS when launched, users will be able to view only the connections and nodes where he has access. User can import only nodes from NetAct Database to GCS Database for the nodes user has access.

By default, this Functionality is disabled. Once GCS User Management is enabled for the first time, user must import NetAct DB; otherwise user will not be able to see the connections and nodes in GCS DB.

8.1.1 Prerequisites

Prerequisites for using GCS User Management functionality:

1. GCS should be configured to use NetAct Database, refer to Chapter [1.3](#).
2. As a Local Administrator user of Node Manager Server/GUIS, user should enable **Enable User Management Functionality** in GCS as per the below figure. By default, this functionality is disabled in GCS.

GCS DB Configuration Tool

DB Parameters

Service Name: oss

User ID: omc

Password: xxx

Connection Type: BSC / BTS Connection

OSSPKG/CORE IP Address: 10 125 106 28

Port: 7878

User: ornuser

Password: xxxxxxx

Add Modify Delete

☒ Enable Log for all configured DB instances

☒ Enable User Management Functionality

LDAP Credentials

Username: cn=Directory Manager

Password: xxxxx

OK Cancel Help

Figure 36 GCS DB Configuration Tool

3. All Nodes (Q1 Managed Elements) under NetAct Management should be associated to one of the NetAct Maintenance Regions.
4. Windows (Node Manager Server/GUIS) user who launch GCS or Node Manager Applications using GCS should also belong to NetAct LDAP/RUIM User Management. Details of how groups, users, roles and associated permissions to be configured/mapped in Permission Management Application (PEM) is given in [Section 8.2 Permission Management Application \(PEM\) Configurations](#).

5. Create **NMS10 Operator** group in GUI or Node Manager Server, for more information refer to Section 4.2 [Security](#).
6. All non sysop group users of NetAct should be added to **NMS10 Operator** group in Node Manager Server/GUI so that these users will not be able to Add and Remove connections and nodes from GCS database or Save new Connections and nodes in GCS database.
7. Users belonging to power user group **sysop** will have complete access to all NE's, for more details on User and Access Matrix, refer to Section 8.3 [User and Access Matrix](#).

8.2 Permission Management Application (PEM) Configurations

NetAct Permission Manager, PEM, is an application for providing centralized authorization management. The NetAct Permission Manager application is used for managing groups, roles, and permissions in the NetAct system and network elements. In PEM, the scope definition is based on the 'group' and 'role'. The user can have the related permissions and NetAct Maintenance Regions associated to them only when he is added into a group.

The following is the procedure to map NetAct Maintenance Regions to users

- Create Group or select a group from existing group list
- Add users to the group
- Attach roles to the group
- Give the permissions to the roles
- Edit the scope by adding the NetAct Maintenance Regions to the role

Example:

- Go to NetAct Start Page
- Go to Administration. NetAct Permission Manager should be published in NetAct Start Page
- Open NetAct Permission Manager

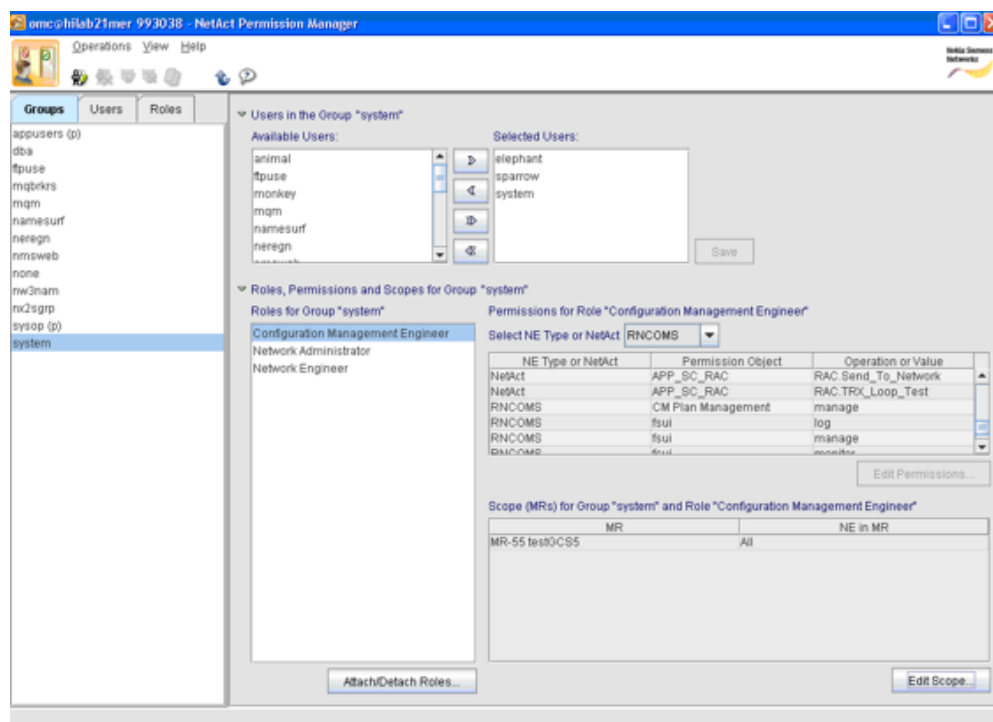


Figure 37 NetAct Permission Manager

8.2.1 Create Group

Perform the below steps for creating the Groups:

- Click the **Groups** tab.
- In the toolbar, click the **New Group** icon. The New Group dialog opens.

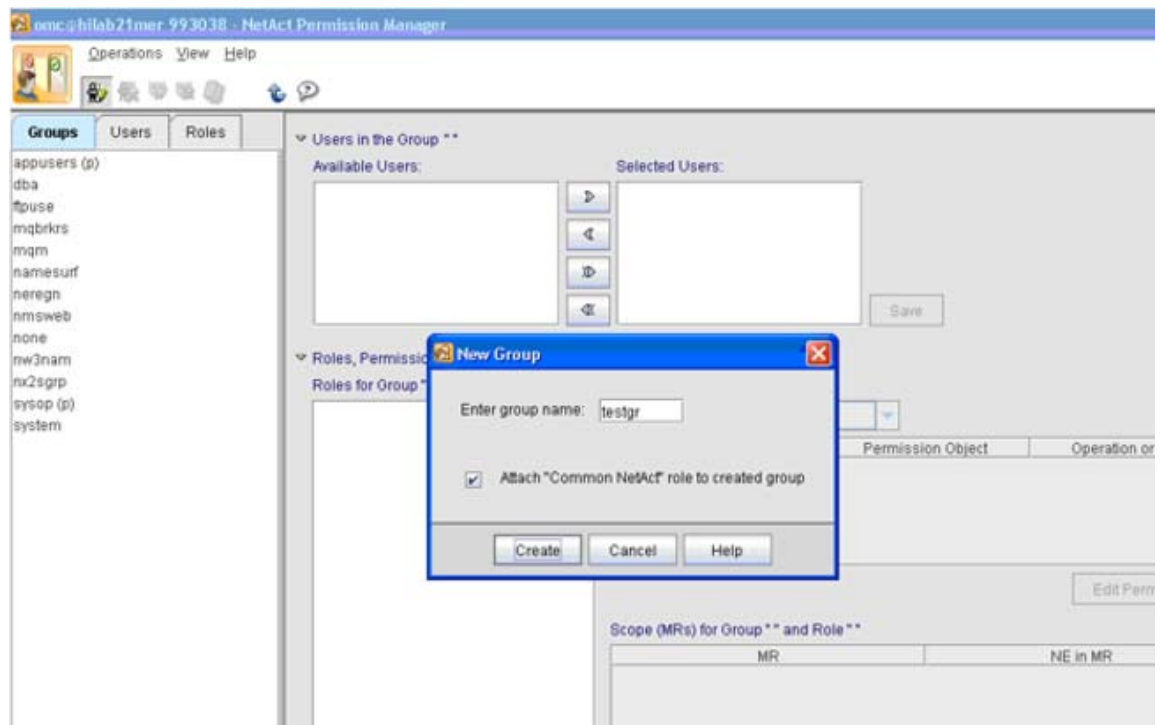


Figure 38 Creating Group Name in NetAct Permission Manager

- In the **New Group** dialog, enter the name of the group. For example: **testgr**.
- If you do not want to attach the Common NetAct role to the group to be created, unselect the **Attach Common NetAct role to created group** check box.
- Click **Create**.
- The new group is now visible in the list under the Groups tab.

8.2.2 Add Users to Group

Perform the below steps for Adding the Users to Group:

- Click the Groups tab. The Groups list is displayed.
- Select the group to which you want to add the user. For example: **testgr**
- Click the Users in the Group view if it is not already active.

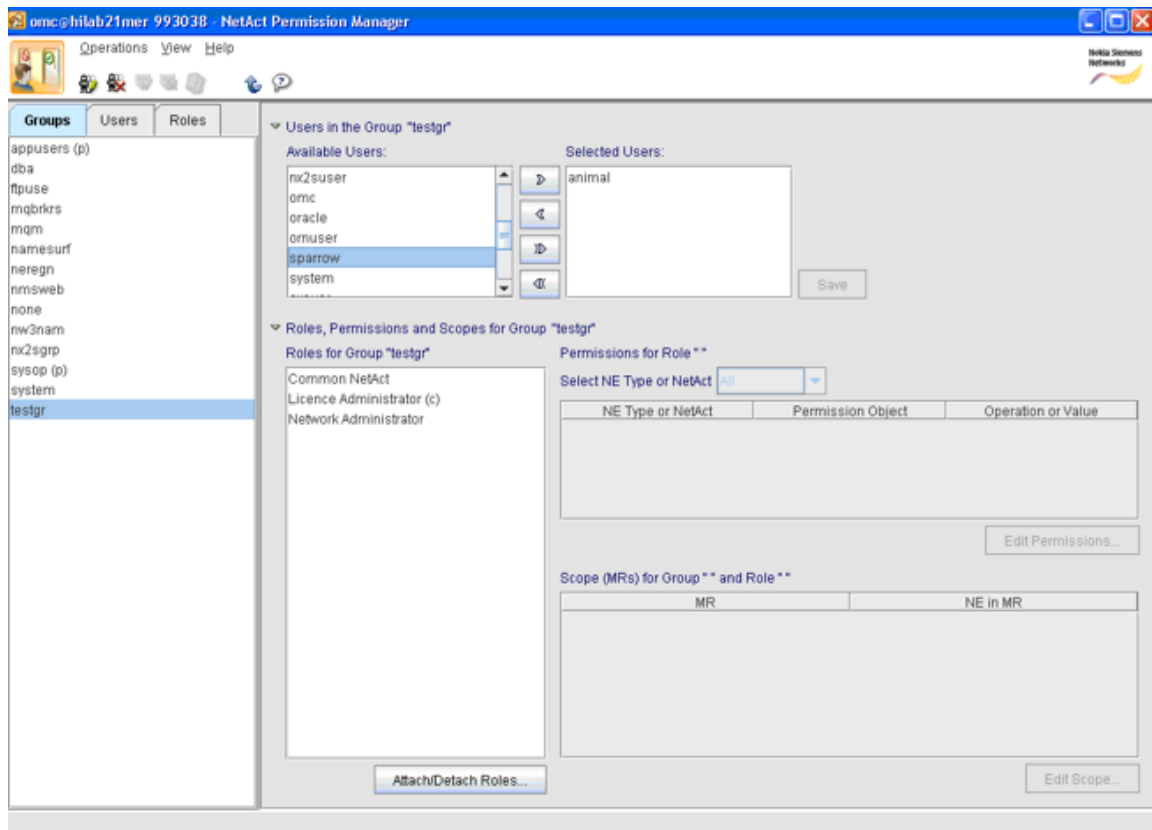


Figure 39 Adding Users to Group in NetAct Permission Manager

- In the **Available Users** list box, select the user you want to add to the group. For example: **sparrow**.
- To move the selected user to the Selected Users list box, click > icon. To move all the users to the Selected Users list box, click >> icon.
- Click **Save**.

8.2.3 Attach Groups to Roles

Perform the below steps to Attach Groups to Roles:

- Click the **Roles** tab.
- In the toolbar, click the **New Role** icon. The New Role dialog opens.
- Enter the name of the role.
- Click **Create** button. The new role is now visible in the list under the Roles tab.
- Select the group that you want to attach to a role or to several roles. For example: **testgr**.
- In the Roles, Permissions and Scopes view, click **Attach/Detach Roles....** The Attach/Detach Group to Role dialog opens.

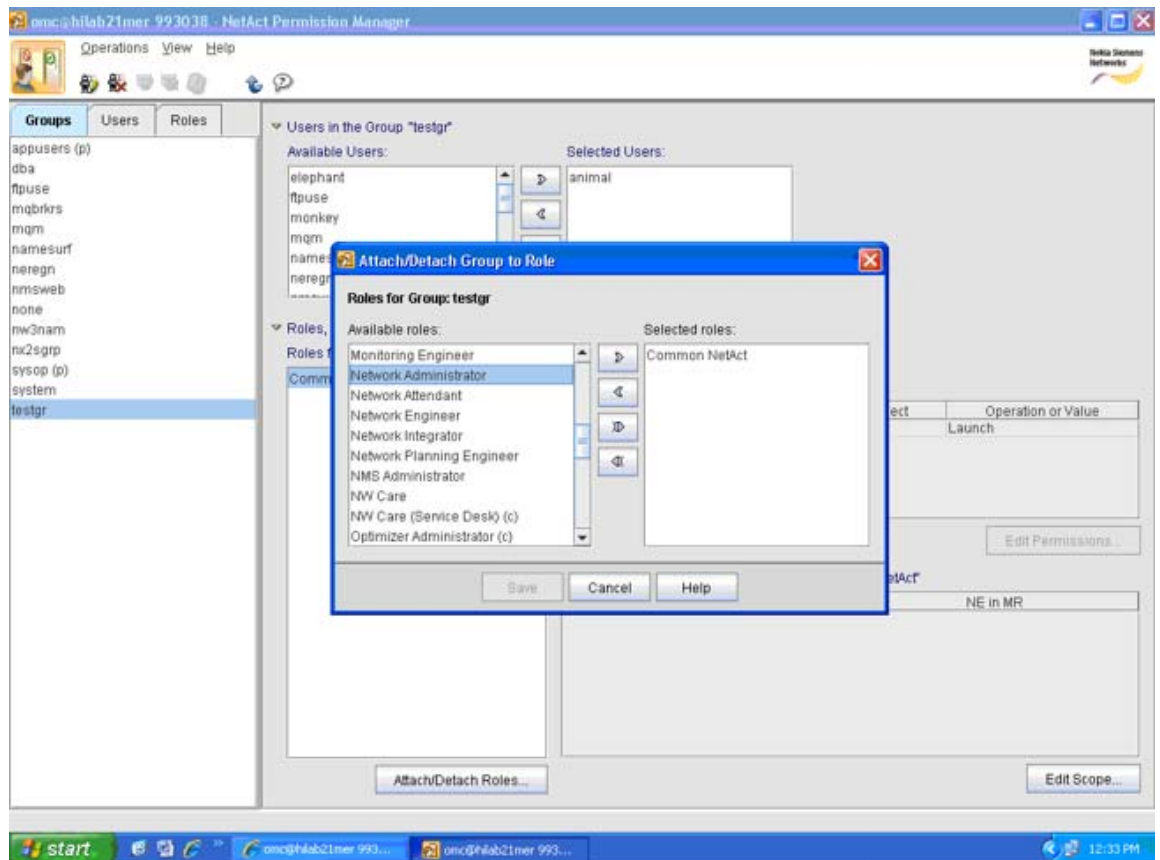


Figure 40 Attaching Group to Roles in NetAct Permission Manager

- In the Available roles list box, select the role you want to attach to the selected group. For example: select **testRole1**.
- To move the selected role to the Selected roles list box, click the right-arrow icon. To move all the roles to the Selected roles list box, click >> icon.
- Click **Save**.
- The new role or roles is now listed in the Roles for Group list box and the application returns to the Roles, Permissions and Scopes view.

8.2.4 Adding NetAct Maintenance Regions to Group-role combination

Perform the below steps for Adding NetAct Maintenance Regions to Group-role combination:

- Select the desired role in the Roles for Group list box. For example **Network Administrator**. In the Scope (MRs) for Group and Role list box, all the scopes are displayed for the selected group-role combination.
- Click **Edit Scope....** The Select Permission Scope for Group-Role Combination dialog opens.

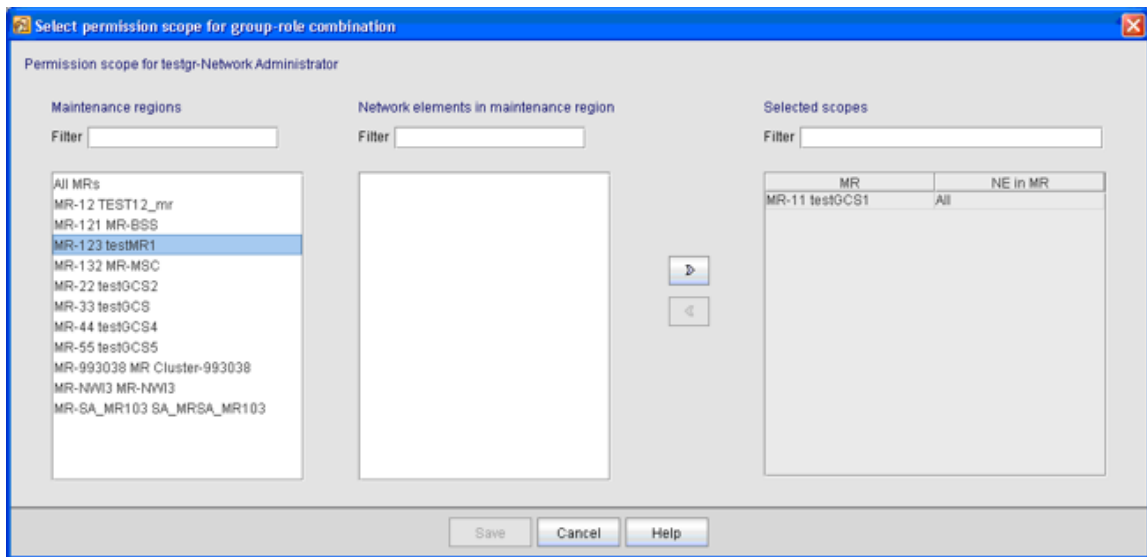


Figure 41 Adding Maintenance Regions to Groups in NetAct Permission Manager

- Select the appropriate scope (Maintenance Regions) in the relevant list box. For example: select **MR-123 testMR1**.
- Click > icon to add the selected scope to the **Selected scopes** list box.
- Click **Save**. The added scope is listed in the Scope (Maintenance Regions) for Group and Role list box.

8.3 User and Access Matrix

The below is the user and access matrix:

User Group	Can Enable/Disable GCS NetAct User Management Feature?	Full NetAct DB Import of connection and Nodes to GCS DB	Restricted User Import as configured in PEM Application
Local Admin	YES	YES	NA
Local Admin and NetAct sysop Power User group	YES	YES	NA
Local Admin and NetAct Non sysop User group	YES	YES	NA
Local User	NO	NO	NA
Local User and NetAct sysop User group	NO	YES	NA
Local User and NetAct Non sysop User group	NO	NO	YES

Table 10 User and Access Matrix

1. Local Admin Users or Local Users are the user of Node Manager Server or GUI.
2. NetAct sysop user group or NetAct non sysop user group are the NetAct UNIX users groups.

3. This matrix gives the exact idea about the restrictions imposed on various user groups once the user management feature is enabled.

8.4 Enabling/Disabling GCS User Management Functionality

GCS User Management Functionality is disabled by default. Only users with Admin privileges can enable/disable this functionality. This functionality can be enabled or disabled by using the below dialog.



The image shows a Windows-style dialog box titled "GCS DB Configuration Tool". It contains several sections for configuring database parameters. The "DB Parameters" section includes fields for "Service Name" (set to "oss"), "User ID" (set to "omc"), and "Password" (masked with "XXXX"). Below this is the "Connection Type" dropdown, set to "BSC / BTS Connection". The "OSSPKG/CORE IP Address" section has four input fields with values "10", "125", "104", and "221". Below these are fields for "Port" (set to "7878"), "User" (set to "ornuser"), and "Password" (masked with "XXXXXXXX"). There are three buttons: "Add", "Modify", and "Delete". At the bottom, there are two checked checkboxes: "Enable Log for all configured DB instances" and "Enable User Management Functionality". Below these is the "LDAP Credentials" section, which includes a "Username" field (set to "cn=Directory Manager") and a "Password" field (masked with "XXXXXX"). At the very bottom are "OK", "Cancel", and "Help" buttons.

Figure 42 Enable LDAP credentials

User Management Functionality can be enabled/ disabled by checking/unchecking the Enable User Management Functionality checkbox. LDAP Credentials parameters are used to connect to LDAP.



LDAP Credentials are enabled only when the User Management Functionality is enabled.

9 Troubleshooting

This chapter contains the following sections, which describe the known problems and give instructions on solving them:

- Section 9.1, [Operating GCS](#)
- Section 9.2, [Known problems](#)

9.1 Operating GCS

Troubleshooting while launching the node manager using NetAct database

If you have problems in launching the node manager when sobriquet is not in local database (MS Access), follow the steps given below:

To troubleshoot the problems occurred while launching the node manager using NetAct database:

1. Open the **Control Panel** → **Administrative tools** → **Data Sources (ODBC)** and select the Microsoft ODBC for oracle entry in the Drivers tab.
2. If the valid entry is not found (for example: version, company name, file and date is missing), install the latest version of MDHiAC (Microsoft Data Access Component) from the Microsoft downloads.
3. Check the validity of the connection using test connection from the Oracle net manager for the configured service.

Stopping and restarting the GCS service

If you have problems in connecting to nodes, you may need to stop and restart the GCS service.

To stop and restart the service:

1. Double-click the **Services** icon in the **Control Panel**.
2. Select the **GCS service** in the **Service** list in the **Services** dialog box.
3. Click **Stop**, and click **Yes** to the confirmation message.
4. The Status column of GCS becomes empty.
5. Select the **GCS service** in the **Service** list in the **Services** dialog box.
6. Click **Start**, and click **Yes** to the confirmation message.
7. In the Status column of GCS appears the text `Started`.



If you stop the GCS service when you have open connections, an error message may be issued. You can ignore this message.

If stopping and restarting the GCS service does not help, restart the computer.

9.2 Known problems

Lost TCP/IP connection

If the TCP/IP connection is lost, most applications (node managers) cannot recover from it. You must close the connection (for example, **Manage** → **Disconnect**) and open it again to recover it (**Manage** → **Connect**).

Problems with Macro STE C4.0

Macro STE C4.0, versions A and B cause long communication delays if the Flash Led menu option is on. You must change **Green Led** → **Led Off** in the menu bar to be able to communicate normally with Macro STE C4.0.

BSC connection with TP4 protocol

BSC connection with TP4 protocol does not work with default values. When you define a BSC connection that uses TP4 protocol, set the `PROTOCOL` parameter in the BSC parameters to 0 (zero) manually.

ODBC problems in the GCS database

Most GCS database problems are related to ODBC settings or Windows security settings. If the System Data Source, DBS32 is not properly defined, you can set it up manually.

To manually setup the ODBC settings of the GCS database

1. Check first that Windows Security permissions allow change access to the `C:\Documents And Settings\All Users\Application Data\Nokia\GCS` (if OS is Windows XP and Windows 2003) or `C:\ProgramData\Nokia\GCS` (if OS is Windows Vista, Windows 2008 and Windows 7 OS) directory and all files under it. If there are access problems, fix them manually or reinstall GCS to fix them.
2. Open the **Start** menu and select **Settings**. Open **Control Panel** and select **Data Sources (ODBC)**.
3. Click the **Add...** button to add a new system data source in the **System DSN** tab. The Create New Data Source dialog box is displayed with a list of drivers.
4. Choose the driver of MS Access Driver (* .mdb) and click **Finish**.
A driver-specific setup dialog box is displayed.
5. Type `DBS32` into the **Name** field.
6. Click **Select** to select a database file (for example,
`C:\Documents And Settings\All Users\Application Data\Nokia\GCS\dbs.mdb`)
and click **OK**.
The System Data Source, DBS32 is defined.



If the problems persist, remove the GCS database ODBC settings and reinstall GCS.

Microsoft ODBC Message While Connecting to the Node

"THE ORACLE(TM) CLIENT AND NETWORKING COMPONENTS WERE NOT FOUND. THESE COMPONENTS ARE SUPPLIED BY ORACLE CORPORATION AND ARE PART OF ORACLE VERSION 7.3 (OR GREATER) CLIENT SOFTWARE

INSTALLATION” message appears while connecting to the node in NMS/10 SF6.1 or NetAct TLUI and updating Node Manager Sever using the Q1 Agent. This dialog appears only when the NetAct DB Integration feature is installed and NetAct DB configuration parameters are wrong. Check the DB configured parameters and change them if they are incorrect.

10 Appendix A: Connection Parameters

The accepted values and default values for the supported connection types are listed in tables below.

The connection types listed in this section are:

- Section 1 [A.1 Serial Port Connection](#)
- Section 2 [A.2 Modem Connection](#)
- Section 3 [A.3 Network Connection](#)
- Section 4 [A.4 Telnet Connection](#)
- Section 5 [A.5 Q1 Pipe Connection](#)
- Section 6 [A.6 BSC Connection](#)
- Section 7 [A.7 BTS Connection](#)

Name	Values	Default	Description
Data Protocol	Q1DT Q1DL Q1AD Q1UD	Q1DT	Q1 data transfer or Q1 data link protocol. Q1 specific "sub-protocol" (Data Transfer, Data Link, App Data or User-Defined) can be selected.
Character Coding	ASIS UNICODE UNIHEX	ASIS	-no conversion -UNICODE to ASCII conversion -UNICODE hex to ASCII binary
Verify Connection	YES NO	NO	Determines if the existence of the Q1 network element is verified

10.1 A.1 Serial Port Connection

Serial Port Connection			
Name	Values	Default	Description
Serial Port	1...65535	no default	Mandatory parameter Serial communication port number in the PC

Serial Port Connection			
Name	Values	Default	Description
Baud Rate	110 300 600 1200 2400 4800 9600 14400 19200 38400 56000 57600 115200 128000 256000	9600	Serial communication port speed
Data Bits	7, 8	8	Number of data bits
Parity	EVEN ODD NONE	EVEN	Parity
Stop Bits	1, 1.5, 2	1	Stop bits for port driver
Flow Control	DTR/DSR XON/XOFF NONE	NONE	Flow control
Time out	0...300000	2000	Timeout for communication (ms)
Retry count	0...1000	3	Communication retry counter

10.2 A.2 Modem Connection

Modem Connection			
Name	Values	Default	Description
Phone Number	Max. 32 characters	no default	Mandatory parameter Phone number
Time out	0...300000	2000	Timeout for communication (ms)
Retry count	0...1000	3	Communication retry counter

10.3 A.3 Network Connection

Network Connection			
Name	Values	Default	Description
Host Name	Max. 40 characters	no default	Mandatory parameter TCP/IP address; either numerical or host name
Port	1...65535	no default	Mandatory parameter Port number for TCP/IP node
Data Protocol	TCP TP4	TCP	The data protocol of the connection.
Connection Reuse	YES NO	YES	Other clients/users can share the connection, or a new connection is created for them to the same destination.
TSELECTOR	Max. 12 characters	no default	Mandatory in OSI addresses, not used in IP addresses
Time out	0...300000	10000	Timeout for communication (ms)
Retry count	0...1000	0	Communication retry counter

10.4 A.4 Telnet Connection

Network Connection			
Name	Values	Default	Description
Host Name	Max. 40 characters	no default	Mandatory parameter TCP/IP address; either numerical or host name
Port	1...65535	no default	Mandatory parameter Port number for TCP/IP node
Data Protocol	TCP TP4	TCP	The data protocol of the connection.
Connection Reuse	YES NO	YES	Other clients/users can share the connection, or a new connection is created for them to the same destination.
TSELECTOR	Max. 12 characters	no default	Mandatory in OSI addresses, not used in IP addresses
Time out	0...300000	10000	Timeout for communication (ms)
Retry count	0...1000	0	Communication retry counter

Terminal Password			
Name	Values	Default	Description
Port Password	Max. 32 characters	no default	Password for RS-232 line access
Time out	0...300000	10000	Timeout for communication (ms)
Retry count	0...1000	0	Communication retry counter

10.5 A.5 Q1 Pipe Connection

Network Connection			
Name	Values	Default	Description
Host Name	Max. 40 characters	no default	Mandatory parameter TCP/IP address; either numerical or host name
Port	1...65535	no default	Mandatory parameter Port number for TCP/IP node
Data Protocol	TCP TP4	TCP	The data protocol of the connection.
Connection Reuse	YES NO	YES	Other clients/users can share the connection, or a new connection is created for them to the same destination.
TSELECTOR	Max. 12 characters	no default	Mandatory in OSI addresses, not used in IP addresses
Time out	0...300000	10000	Timeout for communication (ms)
Retry count	0...1000	0	Communication retry counter

User Identification			
Name	Values	Default	Description
Username	Max. 32 characters	no default	Mandatory parameter Username for NMS/10 MF C2.0
Password	Max. 32 characters	no default	Mandatory parameter Password for NMS/10 MF C2.0

MF C2.0 Parameters			
Name	Values	Default	Description
Equipment ID	0...255	0	ID number defined in NMS/10 MF C2.0

Bus Number			
Name	Values	Default	Description
Bus Number	0...255	no default	Mandatory parameter Bus number in NMF
Time out	0...300000	10000	Timeout for communication (ms). The value must be larger than the maximum time it takes to execute a Q1 command on the Q1 bus.
Retry count	0...1000	0	Communication retry counter. The value must be set to 0. Any other value will result in protocol errors.

AXC/DCN Adapter/Q1 Agent Connection parameters				
Parameter	AXC	DCN Adapter C2.0	DCN Adapter C3.0	Q1 Agent
User	PAM	PAM	PAM	PAM
Password	PAM	<the super user password>	PAM	PAM
BSC C-number	0	0	0	0
Bus	0	0	0-2	0-65534

10.6 A.6 BSC Connection

BSC Connection via NetAct

Network Connection			
Name	Values	Default	Description
Host Name	Max. 40 characters	no default	Mandatory parameter TCP/IP address; either numerical or host name
Port	1...65535	no default	Mandatory parameter Port number for TCP/IP node
Data Protocol	TCP TP4	TCP	The data protocol of the connection.
Connection Reuse	YES NO	YES	Other clients/users can share the connection, or a new connection is created for them to the same destination.
Time out	0...300000	10000	Timeout for communication (ms)
Retry count	0...1000	0	Communication retry counter

BSC Parameters			
Name	Values	Default	Description
Username	Max. 32 characters	no default	Mandatory parameter Username for NetAct connection
Password	Max. 32 characters	no default	Mandatory parameter Password for NetAct connection
Protocol Number	0...255	1	Protocol number for NetAct communication
BSC ID	0...999999	no default	Mandatory parameter ID of the BSC
Bus ID (mandatory)	0...255	0	Number of the Q1 bus for the managed node
Time out	0...300000	30000	Timeout for communication (ms)
Retry count	0...1000	0	Communication retry counter

BSC Connection without NetAct

Network Connection			
Name	Values	Default	Description
Host Name	Max. 40 characters	no default	Mandatory parameter OSI address (NSAP in hexadecimal format)
Data Protocol	TCP TP4	TCP	The data protocol of the connection. In BSC connection without NetAct the data protocol must be TP4
Connection Reuse	YES NO	YES	Other clients/users can share the connection, or a new connection is created for them to the same destination.
TSELECTOR	Max. 12 characters	no default	Mandatory in OSI addresses, not used in IP addresses
Time out	0...300000	10000	Timeout for communication (ms)
Retry count	0...1000	0	Communication retry counter

BSC Parameters			
Name	Values	Default	Description
Username	Max. 32 characters	no default	Mandatory parameter Username for NetAct
Password	Max. 32 characters	no default	Mandatory parameter Password for NetAct
Protocol Number	0...255	1	Protocol number for NetAct communication
BSC ID	0...999999	no default	Mandatory parameter ID of the BSC
Bus ID	0...255	0	Number of the Q1 bus for the managed node
Time out	0...300000	30000	Timeout for communication (ms)
Retry count	0...1000	0	Communication retry counter

10.7 A.7 BTS Connection**BTS Connection via NetAct**

Network Connection			
Name	Values	Default	Description
Host Name	Max. 40 characters	no default	Mandatory parameter TCP/IP address; either numerical or host name
Port	1...65535	no default	Mandatory parameter Port number for TCP/IP node

Network Connection			
Name	Values	Default	Description
Data Protocol	TCP TP4	TCP	The data protocol of the connection.
Connection Reuse	YES NO	YES	Other clients/users can share the connection, or a new connection is created for them to the same destination.
Time out	0...300000	10000	Timeout for communication (ms)
Retry count	0...1000	0	Communication retry counter

BSC Parameters			
Name	Values	Default	Description
Username	Max. 32 characters	no default	Mandatory parameter Username for NetAct connection
Password	Max. 32 characters	no default	Mandatory parameter Password for NetAct connection
Protocol Number	0...255	1	Protocol number for NetAct communication
BSC ID	0...999999	no default	Mandatory parameter ID of the BSC
Bus ID (optional)	0...255	0	Number of the Q1 bus for the managed node
Time out	0...300000	30000	Timeout for communication (ms)
Retry count	0...1000	0	Communication retry counter

BTS Parameters			
Name	Values	Default	Description
BCF ID	0...32767	no default	Mandatory parameter ID of the BCF
TRX ID	0...255	1	TRX ID
Time out	0...300000	30000	Timeout for communication (ms)
Retry count	0...1000	0	Communication retry counter

BTS Connection without NetAct

Network Connection			
Name	Values	Default	Description
Host Name	Max. 40 characters	no default	Mandatory parameter OSI address (NSAP in hexadecimal format)

Network Connection			
Name	Values	Default	Description
Data Protocol	TCP TP4	TCP	The data protocol of the connection. In direct BTS connection without NetAct the data protocol must be TP4
Connection Reuse	YES NO	YES	Other clients/users can share the connection, or a new connection is created for them to the same destination.
TSELECTOR	Max. 12 characters	no default	Mandatory in OSI addresses, not used in IP addresses
Time out	0...300000	10000	Timeout for communication (ms)
Retry count	0...1000	0	Communication retry counter

BSC Parameters			
Name	Values	Default	Description
Username	Max. 32 characters	no default	Mandatory parameter Username for NetAct
Password	Max. 32 characters	no default	Mandatory parameter Password for NetAct
Protocol Number	0...255	1	Protocol number for NetAct communication
BSC ID	0...999999	no default	Mandatory parameter ID of the BSC
Bus ID (optional)	0...255	0	Number of the Q1 bus for the managed node
Time out	0...300000	30000	Timeout for communication (ms)
Retry count	0...1000	0	Communication retry counter

BTS Parameters			
Name	Values	Default	Description
BCF ID	0...32767	no default	Mandatory parameter ID of the BCF
TRX ID	0...255	1	TRX ID
Time out	0...300000	30000	Timeout for communication (ms)
Retry count	0...1000	0	Communication retry counter

11 Appendix B: Node Parameters

Node parameters are listed in the following sections:

- Section 1 [B.1 Q1 node](#)
- Section 2 [B.2 FE Parameters](#)
- Section 3 [B.3 MML node](#)
- Section 4 [B.4 SNMP node](#)

11.1 B.1 Q1 node

Name	Values	Default	Description
Q1 Address	0...4096	no default	Mandatory parameter Q1 address of a network element
Time out	0...300000	2000	Timeout for communication (ms)
Retry count	0...1000	3	Communication retry counter

Q1 addresses

The Q1 address range is 0...4095. Some of the addresses can be reserved for special purposes, for example, 4095 is a common broadcast address. It can be used in local management if the node address is not known and there is only one node connected to the Q1 bus.

11.2 B.2 FE Parameters

Name	Values		Default	Description
FE Number	0...255		no default	Mandatory parameter Functional entity number
FE Channel	0...15		0	Logical channel number
Packet Size	Max packet length 18 bytes 32 bytes 64 bytes 128 bytes 256 bytes 512 bytes 768 bytes 1020 bytes 1032 bytes	For channels Ch 0 Ch 1-2 Ch 3-4 Ch 5-6 Ch 7-8 Ch 9-10 Ch 11-12 Ch 13-14 Ch 15	18	The packet length (bytes).
Inter Packet Delay	0...500		(50)*	The delay between two packets sent to same direction
Empty Packet Delay	0...500		(10)*	The delay between two empty packets sent to same direction

Name	Values		Default	Description
Empty Packet Limit	0...1000		(100)*	Maximum number of empty packets before transaction is aborted
Time out	0...300000		2000	Timeout for communication (ms)
Retry count	0...1000		3	Communication retry counter

* = the default value can be configured via registry

11.3 B.3 MML node

Name	Values	Default	Description
Username	Max. 32 characters	no default	Mandatory parameter Username for MML nodes
Password	Max. 32 characters	no default	Mandatory parameter Password for MML node
MML Path	Max. 64 characters	no default	Path to MML node
Time out	0...300000	2000	Timeout for communication (ms)
Retry count	0...10	1	Communication retry counter

11.4 B.4 SNMP node

Network Connection			
Name	Values	Default	Description
Host Name	Max. 40 characters	no default	Mandatory parameter TCP/IP address; either numerical or host name
Port Number	0...65535	161	Port number for TCP/IP node
Community Name	Max. 1024 characters	no default	Mandatory parameter Community string
Section Number	1...254	no default	For proprietary use
Station Number	1...128	no default	For proprietary use

12 Appendix C: Keyboard support for GCS Connection Tool

This appendix describes the keyboard shortcuts while working with GCS Connection Tool. It contains the following sections:

- Section 1 [C.1 Connection tree](#)
- Section 2 [C.2 Connection Properties dialog box](#)
- Section 3 [C.3 Node tree](#)
- Section 4 [C.4 Node Properties dialog box](#)

12.1 C.1 Connection tree

The following keyboard shortcuts are provided when the connection tree is displayed (the **Connections** option is selected):

ENTER:

Display connection parameters or nodes (same as double-click).

SHIFT + ENTER:

Display the Connection Properties dialog box.

PAGE UP:

Move one page up.

PAGE DOWN:

Move one page down.

END:

Display the last connection.

HOME:

Display the first connection.

LEFT ARROW:

Move up one level in the tree, or collapse a branch if the branch below is expanded.

UP ARROW:

Move up one step in the tree.

RIGHT ARROW:

Move down one level in the tree, or expand a branch if the below branch is collapsed.

DOWN ARROW:

Move one step down in the tree.

DEL:

Delete the selected connection and all its nodes.

12.2 C.2 Connection Properties dialog box

The following keyboard shortcuts are provided when viewing and modifying parameters of connections in the Properties dialog box.

ENTER:

Close the dialog box, or activate a cell for editing (when no cell is being edited).

SHIFT + ENTER:

Toggle the cell mode between opened for editing and closed from editing.

END:

Set the focus to the last cell on the current row in the grid when no cell is selected for editing.

If a cell is opened for editing and it contains a combo box for displaying its items, the END key selects the last value in the combo box. Otherwise, the END key moves the cursor to the end of the text field describing the cell value.

HOME:

Set focus to the first cell on the current row in the grid when no cell is selected for editing.

If a cell is opened for editing and it contains a combo box for displaying its items, the HOME key selects the first value in the combo box. Otherwise, the HOME key moves the cursor to the beginning of text field describing the cell value.

LEFT ARROW:

Set focus to one column to the left in the parameter grid when no cell is selected for editing.

If a cell is opened for editing and it contains a combo box for displaying its items, the LEFT ARROW key selects the previous item in the combo box. Otherwise, the LEFT ARROW key moves the cursor one character to the left in the text field describing the cell value.

RIGHT ARROW:

Set focus to one column to the right in the parameter grid when no cell is selected for editing.

If a cell is opened for editing and it contains a combo box for displaying its items, the RIGHT ARROW key selects the next item in the combo box. Otherwise, the RIGHT ARROW key moves the cursor one character to the right in the text field describing the cell value.

UP ARROW:

Set focus to one row up in the parameter grid when no cell is selected for editing.

If a cell is opened for editing and it contains a combo box or spin control for displaying its items, the UP ARROW key selects the allowed items.

SHIFT + UP ARROW:

Set focus to one row up in the parameter grid when a cell is selected for editing, and it contains either a combo box or spin control for entering the allowed values.

DOWN ARROW:

Set focus to one row down in the parameter grid when no cell is selected for editing.

If a cell is opened for editing and it contains a combo box or spin control for displaying its items, the DOWN ARROW key selects the allowed items.

SHIFT + DOWN ARROW:

Set focus to one row down in the parameter grid when a cell is selected for editing and it contains either a combo box or spin control for entering the allowed values.

12.3 C.3 Node tree

The following keyboard shortcuts are provided when the node tree is displayed (the **Nodes** option is selected):

ENTER:

Display the Node Properties dialog box.

PAGE UP:

Move one page up.

PAGE DOWN:

Move one page down.

END:

Display the last node.

HOME:

Display the first node.

LEFT ARROW:

Move up one level in the tree.

UP ARROW:

Move up one step in the tree.

RIGHT ARROW:

Move down one level in the tree.

DOWN ARROW:

Move down one step in the tree.

DEL:

Delete the selected node.

12.4 C.4 Node Properties dialog box

The following keyboard shortcuts are provided when viewing and modifying parameters of a node in the Node Properties dialog box.

ENTER:

Close the dialog box, or activate a cell for editing (when no cell is being edited).

SHIFT + ENTER:

Toggle cell mode between opened for editing and closed from editing.

END:

Set focus to the last cell on the current row in the grid when no cell is selected for editing.

If a cell is opened for editing and it contains a combo box for displaying its items, the END key selects the last value in the combo box. Otherwise, the END key moves the cursor to the end of text field describing the cell value.

HOME:

Set focus to the first cell on the current row in the grid when no cell is selected for editing.

If a cell is opened for editing and it contains a combo box for displaying its items, the HOME key selects the first value in the combo box. Otherwise, the HOME key moves the cursor to the beginning of text field describing the cell value.

LEFT ARROW:

Set focus to one column to the left in the parameter grid when no cell is selected for editing.

If a cell is opened for editing and it contains a combo box for displaying its items, the LEFT ARROW key selects the previous item in the combo box. Otherwise, the LEFT ARROW key moves the cursor one character to the left in the text field describing the cell value.

RIGHT ARROW:

Set focus to one column to the right in the parameter grid when no cell is selected for editing.

If a cell is opened for editing and it contains a combo box for displaying its items, the RIGHT ARROW key selects the next item in the combo box. Otherwise, the RIGHT ARROW key moves the cursor one character to the right in the text field describing the cell value.

UP ARROW:

Set focus to one row up in the parameter grid when no cell is selected for editing.

If a cell is opened for editing and it contains a combo box or spin control for displaying its items, the UP ARROW key selects the allowed items.

SHIFT + UP ARROW:

Set focus to one row up in the parameter grid when a cell is selected for editing, and it contains either a combo box or spin control for entering the allowed values.

DOWN ARROW:

Set focus to one row down in the parameter grid when no cell is selected for editing.

If a cell is opened for editing and it contains a combo box or spin control for displaying its items, the DOWN ARROW key selects the allowed items.

SHIFT + DOWN ARROW:

Set focus to one row down in the parameter grid when a cell is selected for editing and it contains either combo box or spin control for entering the allowed values.

13 Appendix D: Administration

This appendix is intended for administrative users who want to know more about GCS. The sections below provide tips and information about GCS administration.

13.1 D.1 Installing GCS

This section provides tips and information about installing GCS.

13.1.1 D.1.1 Installation tips



Installing some node managers can overwrite part of the GCS installation by installing older versions of shared components. To avoid this reinstall GCS after all node managers have been installed.



Some older node managers that were designed to work with Q1CS R3.x may not install properly or they refuse to install if GCS R6.3 has been installed on a clean machine. To overcome this you must install Q1CS R3.1 first and then reinstall GCS R6.3.

13.1.2 D.1.2 Installing GCS on Windows Vista, Windows Server 2008 and Windows 7

GCS R6.3 is installed according to the Microsoft requirements for Windows Vista/Server 2008. In such a case the following items are different as compared to GCS R5.0:

- GCS R6.3 is by default installed to `C:\Program Files\Nokia\GCS`.
- The GCS R6.3 database is located in the folder: The former database location was `C:\Documents And Settings\All Users\Application Data\Nokia\GCS` (For Windows XP and Windows 2003).
`C:\ProgramData\Nokia\GCS` (For Windows Vista, Windows 2008 and Windows 7 OS). It is not possible to change this location during setup.
- GCS R6.3 uses Microsoft Windows Installer.

13.2 D.2 Configuring GCS

This section provides tips and information about configuring GCS.

13.2.1 D.2.1 GCS configuration cases

Use with NetAct

GCS is needed when Q1 node managers are launched from NetAct Top-Level User Interface. In OSS3.1 ED2 (and earlier releases) configuring the NetAct and GCS databases for GSM and Edge networks, for example, require manual work. In order to automatize these operations some tools are being implemented.

Local connections through a serial port



Most node managers have a menu choice for **Connect Locally**. Selecting this allows node manager to try to use the PC serial port to connect to a node. For connecting, the node manager will try different serial speeds and probably uses a broadcast address. If

so, note that a broadcast address cannot be used on a Q1 bus, since all the devices would answer simultaneously, if the Q1 bus goes to one device only.

Selecting **Connect Locally** does not require configuration of GCS, since the node will not be in the GCS database.



Serial connection to a node would fail in systems where a USB-COM converter is used to connect to COM-port devices. To avoid this you need to add the registry key and setting as given below:

Key: [HKEY_LOCAL_MACHINE\SOFTWARE\Nokia\GCS Communication Service\EventLog (for **32 bit operating system**) OR HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Nokia\GCS Communication Service\EventLog (for **64 bit operating system**)]

Value: "NonOverlappedIO"=dword:00000001"

GCS database population with Q1 Agent



Q1 Agent can insert the details needed for connecting node managers to nodes in the GCS database by using GCS Service on the Node Manager Server.

First you must:

- add Q1 nodes to Q1 Agent (for more information, see the Q1 Agent user documentation)
- add a Manager to Q1 Agent (Node Manager Server information)

Then start "Update Node Manager Server" from Q1 Agent.

Note: If Q1 Agent is used with NetAct, then the topology upload must be performed from NetAct in order to be able to start the node managers from NetAct Top-Level User Interface.

GCS database population with NMS/10 MF



GCS database can be populated with NMS/10 MF in the following cases:

- GCS database population with NMS/10 MF and NMS/10 (The NMS/10 System Frame passes the parameters so there is actually no need to populate the database).
- GCS database population with NMS/10 MF and NetAct for Tetra. This is a manual operation.

13.2.2 D.2.2 Firewall settings

Q1 Agent

The following table presents the GCS-related IP protocols in a Q1 Agent network. Set up your firewall configuration so as to allow the needed traffic.

For more information, see the Q1 Agent documentation.

Source	Destination	Service	Protocol / port
Node Manager Server	Q1 Agent	Nokia Siemens Networks Q1 Management Pipe	TCP/IP / 27500
Q1 Agent	Node Manager Server	GCS Sync (remote node manager synchronisation)	TCP/IP / 2344 (or any other port configured)

Table 11 Firewall security policy used with Q1 Agent and GCS

13.2.3 D.2.3 GCS Sync

By default GCS Sync is enabled after the installation of GCS. This is needed for Q1 Agent and NMS/10 SF to update the GCS database remotely. However, in other environments you may want to switch it off.

If GCS Sync is enabled, this means that other systems are able to modify or destroy the GCS database. The database is *not* in a read-only state. There is no authentication besides a check for the connecting host IP address. By default all hosts are allowed to modify the database. Hence it can be a security risk to leave the database in the default configuration state.

Thus you may want to disable GCS Sync. Disabling GCS Sync has no other effects than preventing remote changes to GCS database.

To disable GCS Sync, select **Start → Settings → Control Panel → Services**. Locate **GCS Sync** and open its properties. Change the **Startup** type to **Disabled**.

To limit the hosts that can connect, you need to start `regedit` or `regedt32` and add a key:

```
HKLM\Software\Nokia\GCS Communication Service\GCSServices\
GCSSync\Allowed Clients
```

Under this key you need to add the IP addresses of the hosts that are allowed to connect.

You can test the registry changes by running the command:

```
telnet localhost 2344
```

If this does not report immediately that the connection was lost, then the setting does not work. You also need to try from the IP address you added. If it is Q1 Agent, you can simply do the GCS database update. If it is NMS/10 SF, you can try starting a node manager.

13.3 D.3 Maintaining GCS

This section provides information about maintaining GCS.

GCS maintenance tasks are all related to taking care of the GCS MS-Access database (the `dbs.mdb` file).

Backing up and restoring the GCS database

You should make regular backups of the GCS database. During the roll-out phase the database should be backed up on a daily basis, and thereafter whenever new sites are added.

To back up the GCS database

1. Ensure that there are no applications using the GCS database.
2. Locate the GCS database file `dbs.mdb`.

The database is by default located in the following directory:

(Window 2000 and XP)

```
C:\Documents And Settings\All Users\Application Data\Nokia\GCS
```

(Window Vista, Windows Server 2008 and Windows 7 OS):

```
C:\ProgramData\Nokia\GCS
```

3. Copy the GCS database file to desired location.

To restore the GCS database

1. Ensure that there are no applications using the GCS database.
2. Locate the GCS database file.
3. Copy the GCS database file to desired location.
4. Copy the previously saved GCS database file `dbs.mdb` over the current one.

The GCS database contains information about connections and nodes. This information can be used across several workstations if they are connected to the same management network.

Preventing the GCS database from growing too much

The GCS database uses Microsoft Access as the underlying database technology. Microsoft Access does not manage unused space in its databases. Therefore regular database maintenance is required to keep the GCS database size and performance on the best possible level.

You can prevent the GCS database from growing too much by:

- manually compacting the database
- automatically compacting the database
- converting the GCS database format.

Manually compacting the GCS database

If the GCS database is updated daily, it should be compacted regularly. Compacting the GCS database reduces the database size by removing unused space. For example, NMS/10 and NetAct can cause heavy database load, requiring regular database maintenance.

To manually compact the GCS database

1. Stop all running applications that use GCS.
2. Select **Start** → **Settings** → **Control Panel** → **Services**.
3. Select **GCS Sync** from the Service list.

4. Click **Stop** to stop the service, and confirm by clicking **Yes**.
5. Open the Start menu and select **Start → Settings → Control Panel → Data Sources (ODBC)**. In Windows 2000 the location is under **Control Panel** and then under **Administrative Tools**. For 64 bit operating system, open `C:\Windows\SysWOW64\odbcad32`.
6. From the **System DSN** tab, select **DBS32**.
7. Click the **Configure** button to configure DBS32.
8. In **Microsoft Access Setup** dialog box, click the **Compact...** button to compact the database.
9. Use the same database file name for the compacted database and confirm the replacement of the database.
10. Restart GCS Sync:
 - Select **Start → Settings → Control Panel → Services**.
 - Select **GCS Sync** from the Service list.
 - Click **Start** to restart the service.

Automatically compacting the GCS database

At GCS installation the `GCSCompactDb.exe` utility is installed by default. This utility can be scheduled to run in appropriate time. The utility compacts and backs up the database regularly.

The default option is set to run every night at 3:00. (This is set by running `scheduling.bat` without parameters).

To change the default compaction values, the following parameters can be given to `GCSCompactDb.exe`:

- `size <size Kb>`
When the database size is greater than `<size Kb>`, the database will be compacted.
- `days <num days>`
When more than `<num days>` have elapsed since the last compaction, the database will be compacted.
- `copies <num>`
`<num>` determines how many generations of backup copies will be saved when the database is compacted.

For example:

```
GCSCompactDb.exe -size 500 -days 5 -copies 3
```

As a result, the GCS database will be compacted, if its size is larger than 500 Kb, or if more than 5 days have elapsed since the last compaction. For safety reasons 3 generations of backup copies are kept.

Converting the GCS database file format

In case the GCS database file is growing continuously, this may also be caused by the fact that the MDAC version and the MS-Access file format are incompatible. Converting the GCS database file format from Access 97 to Access 2000 resolves this problem.

To convert the GCS database file format

1. Close the GCS Connection tool, if it is opened. As GCS Connection tool has a multi-user support, make sure that no one else has it open.
2. Make a backup copy of the `dbcs.mdb` file.
3. Start the Microsoft Access 2000 application.
4. Select **Tools** → **Database Utilities** → **Convert Database** and click **To Access 2000 File Format**.
5. In the Database To Convert From dialog box, select the `dbcs.mdb` database and click **Convert**.
6. In the Convert Database Into dialog box, do the following:
Select a different location for the new file.
Type a name for the new file as `dbcs.mdb`.
7. Click **Save**.
8. Microsoft Access displays information message box. Ignore it by clicking **OK**.
9. Replace the old `dbcs.mdb` file with the new `dbcs.mdb` file.

13.4 D.4 Troubleshooting tips

This section provides tips and troubleshooting solutions for possible GCS problems.

1. GCS installation problems

In case there are problems after the GCS has been installed, you can try the following solutions.

To overcome problems at GCS installation

1. Reinstall GCS after all node manages has been installed.
2. Reinstall Windows Service Pack.
3. Check the file permission for the DB folder and files.
4. In rare cases when an old Q1CS 3.x is upgraded, GCS node connections do not work. This is because the old settings are not converted correctly. In such a case uninstall the old Q1CS. Remove manually all remaining (common) Q1CS files and directories. Remove all registry entries. After that reboot the PC and install new GCS. If node connections do not work even after upgrading Q1CS, contact Nokia Siemens Networks Technical Care for further instructions.

2. Node connection problems

In case you have problems with connecting to nodes, you can try the following solutions.

To overcome node connection problems

1. Check mediator device (NMS/10 MF, DCN Adapter, etc.) timeout settings and verify the node is accessible from the mediator device.
2. Check the GCS connection parameters.
3. Examine the trace log for failing connection sessions.

- Check the Q1 stack (Q1CS or GCS) version. Start GCS Connection Tool and click the **About** button. If the GCS version is 4.1 or newer, activate tracing in the PC having a node manager installed.
- Trace the GCSServer data to the file `GCSLOG.TXT`:



All commands must be given from the Command Prompt window. This can be opened from **Start → Programs → Accessories**.

- Execute the following commands:
`GCSServer -stop`
`GCSServer -debug -all > GCSLOG.TXT`
 Now traffic goes to the log file.
- Do operations that fail. Repeat the failing procedures step by step. Observe whether you get any error messages at this phase.
- Stop GCS tracing. In the GCS trace console press **Ctrl-C** and start GCS:
`gcserver -start`
- Trace the GCSSync data to the file `GCSSYNCLLOG.TXT`:
 - Execute the following commands:
`GCSSync -stop`
`GCSSync -debug -all > GCSSYNCLLOG.TXT`
 Now traffic goes to the log file.
 - Do operations that fail. Repeat the failing procedures step by step. Observe whether you get any error messages at this phase.
 - Stop GCS tracing. In the GCS trace console press **Ctrl-C** and start GCS:
`GCSSync -start`

3. Node manager problems with NetAct Windows Application Server (WAS)



In case you have installed GCS R6.3 and node managers in the NetAct Windows Application Server (WAS), you may get an error message "Request failed because 'GCS' service did not respond" when you try to launch a node manager. If this problem occurs, make sure the user belongs to the Administrator user group, and try again.

4. Maximum number of simultaneous connections



The maximum number of simultaneous connections that could be opened in GCS was restricted (hard coded) to 10 till GCS R4.2 SP3 release. Flexibility in having a greater number of simultaneous connections has been provided with GCS R6.3 release. But the increase in simultaneous connections might have an impact on the performance of the system and you are advised to refrain from using high values.

A registry key `rpcMaxCalls` under `HKEY_LOCAL_MACHINE\SOFTWARE\Nokia\GCS Communication Service\GCSServices\GCSR4\Setting` (for **32 bit operating system**) **OR** `HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Nokia\GCS Communication Service\GCSServices\GCSR4\Setting` (for **64 bit operating system**) would be maintained along with other RPC settings of GCS. This will be created when GCS is installed to provide the user to set the max RPC's of GCS Server to serve. The official release of GCS R6.3, by default, will be set to 10 for this key to service a maximum of 10 simultaneous RPC task by GCS Server. GCS server has to be restarted after changing. Before restarting the service all GCS related applications should be closed.

5. Reconnect to the node after some idle time



GCS fails to reconnect to a node after leaving the node manager connected to a real node for some idle time (for example: 5-10 minutes).

To overcome this problem, set the registry key `SocketReconnect` under `HKEY_LOCAL_MACHINE\SOFTWARE\Nokia\GCS Communication Service\GCSServices\GCSR4\Setting` (for **32 bit operating system**) OR `HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Nokia\GCS Communication Service\GCSServices\GCSR4\Setting` (for **64 bit operating system**) to value '1' to enable reconnect to a node after some idle time. This will be created when GCS is installed to provide the user to enable or disable the auto reconnection to a node. Setting the registry key `SocketReconnect` to value '0' will not attend to reconnect to a node after some idle time.

6. Upgrading GCS R4.x/5.x to GCS 6.3

It is recommended to install GCS 4.x/5.x using `setup.exe` instead of `_setup.exe`. But, In case if the user has installed GCS 4.x/5.x using the `_setup.exe` perform the below workaround:

1. Backup the `C:\Program Files\Nokia\SYSTEM\DATABASE\dbs.mdb` file.
2. Uninstall GCS 4.x/5.x manually.
3. Install GCS R6.3 and replace the `dbs.mdb` file in the path "`C:\Documents and Settings\All Users\Application Data\Nokia\GCS`" with the backup file taken in step 1.

However, if the GCS 5.x is installed using the `setup.exe` then the above workaround is not needed. This workaround is only applicable when GCS is installed using `_setup.exe`.

13.5 D.5 Errors

This section describes GCS error codes and connection errors in node managers.

13.5.1 D.5.1 GCS error codes

This section describes GCS error codes as shown by the GCS Connection Tool.

An example error text:

GCSR4: 2016: Request failed because could not login to host. Host responds: Unclassified error (16) (Major code = 10, Minor code = 2016) .

Major codes

Code	Error	Explanation
10	OPEN_CONNECTION_FAILED	Open connection failed
20	CLOSE_CONNECTION_FAILED	Close connection failed
40	READ_DATA_FAILED	Read data failed
50	SEND_DATA_FAILED	Send data failed

Table 12 Major codes

Code	Error	Explanation
60	REQUEST_FAILED	Request failed
70	GCS_CONFIGURATION_ERROR	Configuration error. This may be in the GCS inter-process communication configuration or there may be installation errors.

Table 12 Major codes (Cont.)

Minor codes

Code	Error	Explanation
1000	TRGERR_INCOMPLETE_WP	Waypoint description is too short
1001	TRGERR_OPTION_IN_WP	Waypoint description contains an option
1002	TRGERR_OPTION_TOO_MANY	Too many options in target
1003	TRGERR_KEYWORD_NOT_FOUND	Keyword not found in the keyword value pair
1004	TRGERR_VALUE_NOT_FOUND	Value not found in the keyword value pair
1005	TRGERR_VALUE_TOO_LONG	Value as a string has too many characters
1006	TRGERR_KEYWORD_NOT_EXISTS	Keyword is unknown
1007	TRGERR_UNEXPECTED_ERROR	General unexpected error. This should never happen.
1008	TRGERR_MISSING_WP_KEYWORD	Keyword WP is expected but it is not found
1009	TRGERR_WP_PARAMETERS_TOO_MANY	Too many parameters in waypoint
1010	TRGERR_INVALID_WP_NAME	Waypoint name (type) unknown (possibly misspelling)
1011	TRGERR_WP_NO_PARAMETERS	No parameters in a waypoint
1012	TRGERR_WP_LIST_EMPTY	No waypoints in target
1013	TRGERR_WP_SEQUENCE	All waypoints in a sequence cannot be found
1014	TRGERR_VALUE_RANGE	Value is out of range
1015	TRGERR_OPTION_POSITION	Option is not the first waypoint in the waypoint list
1016	TRGERR_ILLEGAL_WP_TYPE	Illegal waypoint type is given (legal values are in enum WPTYPE)
1017	TRGERR_ARRAY_SIZE	Array size is too small
1018	TRGERR_EMPTY_WP_PARAMETER	Empty waypoint parameter
1019	TRGERR_ILLEGAL_PARAMETER	Illegal or impossible parameter value in parser resource file
1020	TRGERR_UNKNOWN_KEYWORD	Unknown keyword name in waypoint
1021	TRGERR_NOT_FOUND_PROPERTY	Waypoint parameter property not found
1022	TRGERR_ILLEGAL_RANGE_TYPE	Illegal range type
1023	TRGERR_NOT_SUPPORTED_TYPE	Data type not supported
2000	INTERNAL_ERROR_S	Internal error: <error text>

Table 13 Minor codes

Code	Error	Explanation
2001	INTERNAL_ERROR_0	Internal error: <reason not specified>
2002	INTERNAL_TIMEOUT	Internal error: top level time-out while processing request. Restart GCS to recover properly.
2003	INTERNAL_RPC_EXCEPTION	'GCS' service did not respond. Check that (1) 'GCS' service is running, (2) GCS installation is OK, (3) in Windows 2000 the user belongs to the power users group. Reinstalling GCS without uninstalling it first will check the GCS installation.
2004	GCS_SERVICE_CONNECTION_BREAK	Connection to 'GCS' service is broken. Check that (1) 'GCS' service is running and (2) GCS installation is OK.
2005	GCS_SERVICE_NOT_RUNNING	'GCS' service is not running. Start the service from the Control Panel Services applet, close and re-open the connection to recover.
2006	GCS_SERVICE_VERSION_ERROR	'GCS' service internal version check failed. GCS components are not compatible with each other. There is a problem with the current installation.
2007	INTERNAL_COM_ERROR	This can be a bug in GCS or the node manager using it.
2008	INTERNAL_CPP_EXCEPTION	Internal error. Unhandled C++ exception caught. This can be a bug in GCS or the node manager using it.
2009	INTERNAL_ERROR_MEM_ALLOC	Internal error when trying to allocate memory. Windows may be out of swap space or this can be a bug in GCS or the node manager using it.
2010	STARTPOINT_BIND_ERROR	Startpoint bind error
2011	STARTPOINT_UNBIND_ERROR	Startpoint unbind error
2012	ALREADY_CONNECTED	Already connected. This is a node manager bug. It needs to close the connection before trying to open another connection.
2013	NOT_CONNECTED	Not connected. This is a node manager bug. It needs to open the connection before trying to send commands.
2014	TARGET_SPECIFICATION_ERROR	Target specification error. See the error text for explanation. (Waypoint <waypoint name><error explanation>)
2015	SEND_DATA_IS_TOO_LONG	Data to send is too long. Maximum data size is < > bytes.
2016	WAYPOINT_LOGIN_FAILED	Could not login to host <error text>. See Section 5.3 Importing the NetAct topology database using Import functionality of GCS for details.
2017	BUS_IDENTIFICATION_ERROR	Bus identification error. Possibly the requested bus was not found.
2018	NE_IDENTIFICATION_ERROR	Network element identification error. Possibly the requested NE was not found.
2019	TMC_IDENTIFICATION_ERROR	TMC identification error

Table 13 Minor codes (Cont.)

Code	Error	Explanation
2020	POCA_LOGIN_FAIL	Poca login failed
2021	TMCXY_LOGIN_FAIL	TMCXY login failed. The given Username or Password may be invalid.
2022	TMCXY_LOGOUT_FAIL	TMCXY logout failed
2023	BSC_LOGIN_FAIL	BSC login failed. The given Username or Password may be invalid.
2024	NEMML_LOGIN_FAIL	NEMML login failed. The given Username or Password may be invalid.
2025	NEMML_LOGOUT_FAIL	NEMML logout failed
2026	TELNET_LOGIN_FAIL	Telnet login failed
2027	TELNET_OPENING_ERROR	Could not set binary telnet mode on. Possibly the terminal server is not supported by GCS.
2028	OTHER_UNCOMPLETED_CONNECTION	Other uncompleted connection. This may happen in a multi-user environment with terminal server. See Section 5.4 Automating the import using GCS Connection Tool
2029	Q1_DATAINK_NOT_SUPPORTED	Requested Q1 packet (datalink) command is not supported by GCS for applications to use.
2030	Q1_DATAINK_CMD_TOO_LONG	Data length for requested Q1 command is too long. You may need to define the channel or packet sizes for the node in the FE settings. See Q1 Master Databook for maximum data sizes.
2031	PARAMETER_IS_INVALID	Parameter is invalid. See the error text for explanation.
2032	RECV_DATA_IS_TOO_LONG	Received data is too long. Maximum receive data size is < > bytes. You may need to change the packet size for the node in the FE settings.

Table 13 Minor codes (Cont.)

Mapi errors

Code	Error	Explanation
2513	Q1MAPI_FAILED	Q1 Mapi error: Q1 Mapi failed

Table 14 Mapi errors

Communication driver errors

Code	Error	Explanation
3000	OPEN_SERIAL_FAILED	Serial port < > open failed. There can be another process keeping the serial port open (such as Mobile Phone Data Suite, terminal software, etc.).

Table 15 Communication driver errors

Code	Error	Explanation
3001	PURGE_SERIAL_FAILED	Flushing serial port buffers failed. The serial port may be incompatible with GCS.
3002	OPEN_SERIAL_SETUP_COM	Serial port buffer setup failed. The requested size is < >. The serial port may be incompatible with GCS.
3003	OPEN_SERIAL_GET_COM	Serial port state query failed. The serial port may be incompatible with GCS.
3004	OPEN_SERIAL_CONFIGURE_FAILED	Could not configure serial port properly. The serial port may be incompatible with GCS.
3005	ILLEGAL_SERIAL_TIMEOUT	Setting serial port time-out values failed. The serial port may be incompatible with GCS.
3006	ILLEGAL_SERIAL_PARAMETERS	Serial port baud rate or flow control parameter is invalid. The serial port may be incompatible with GCS.
3007	READ_SERIAL_FAILED	Reading from the serial port failed
3008	READ_SERIAL_PARITY_ERROR	Reading from the serial port failed. Data has < > error(s).
3009	READ_SERIAL_OTHER_ERROR	Reading from the serial port failed. Data has < > error(s).
3010	WRITE_SERIAL_FAILED	Writing to a serial port failed
3011	HANDLE_SERIAL_CLOSED	Serial port (handle) has been closed unexpectedly.
3012	HANDLE_ERROR	Internal error
3013	CREATE_SOCKET_FAILED	Creating a new socket connection failed. Possibly out of physical memory.
3014	OPEN_SOCKET_WSASTARTUP	Windows socket library load error. Fix Windows.
3015	OPEN_SOCKET_SOCKET_VERSION_NA	Windows socket library version mismatch. Get an upgrade from Microsoft.
3016	CONNECT_TO_SOCKET_FAILED	Cannot connect to a destination socket
3017	GET_HOST_BY_NAME_FAILED	Cannot resolve hostname to a valid address. Make sure the host is properly in the GCS database. Make sure the name is in DNS. Try using an IP address.
3018	READ_SOCKET_FAILED	Reading from a socket failed. Possibly network problems.
3019	WRITE_SOCKET_FAILED	Writing to a socket failed. Possibly network problems.

Table 15 Communication driver errors (Cont.)

Modem (TAPI) connection errors

Code	Error	Explanation
3500	TAPI_INITIALISE	TAPI (Telephony service) initialisation failed. This may be an installation problem.
3501	TAPI_ERROR	TAPI (Telephony service) request failed
3502	TAPI_NO_SUITABLE_DEVICE	No suitable device for placing outgoing calls was found.
3503	TAPI_TRANSLATE_ERROR	Telephone number < > cannot be translated for dialing. Verify the number in the GCS database.
3504	TAPI_CALL_NOT_PROCEEDING	Cannot dial (the call is not proceeding). Check the modem and cable.
3505	TAPI_CALL_NOT_CONNECTED	Call is not connected to the other party (hand-shaking error). Check the modem settings on both sides.

Table 16 Modem (TAPI) connection errors**Q1 protocol errors**

Code	Error	Explanation
4001	GCSPR_UNDEFINED_ERROR	No reply from slave (undefined error). There may be network problems.
4002	GCSPR_SLAVE_TIMEOUT	No reply from slave (timeout). You have too small timeout in the GCS database connection or in the node. Use the maximum timeout with no retries.
4003	GCSPR_SLAVE_DATA_CORRUPTED	Data from slave is corrupted. Possibly you have a wrong connection type or the TCP port is wrong. Also verify you have the latest GCS version.
4004	GCSPR_FAILED	No reply from slave (undefined error)
4005	GCSPR_2K_PR_ERROR	Q1 Pipe error. See the error text for the error code. Codes 1, 4 or 78 (4E in hexadecimal) most likely mean there is a too short timeout at the poller. This timeout is not the one in the GCS database but the first character timeout configured to BTS, BSC, Q1 Agent, NMS/10 MF or DCNA C2.0.
4006	GCSPR_XY_PR_ERROR	RCM Macro (X/Y) error. See the error text for explanation.
4007	GCSPR_2K_PR_ERROR2	Q1 Pipe error. See the error text for the error code. See also the minor code 4005.

Table 17 Q1 protocol errors

13.5.2 D.5.2 Connection errors in node managers

Node managers display error details differently from GCS. Many node managers do not display GCS error codes, even though the problem may be in the GCS configuration or in the connection definition. The following error messages exemplify this possibility:

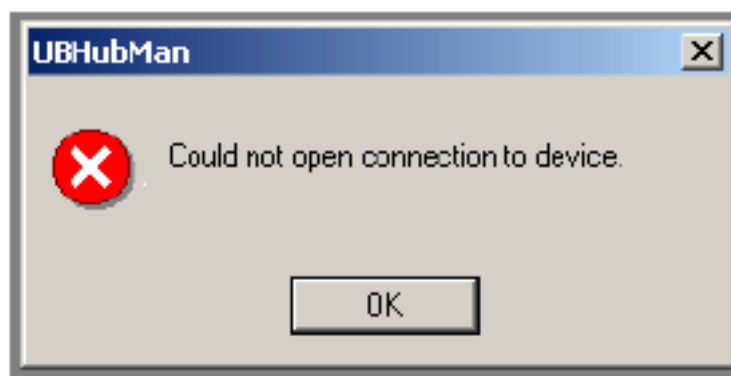


Figure 43 A node manager error message

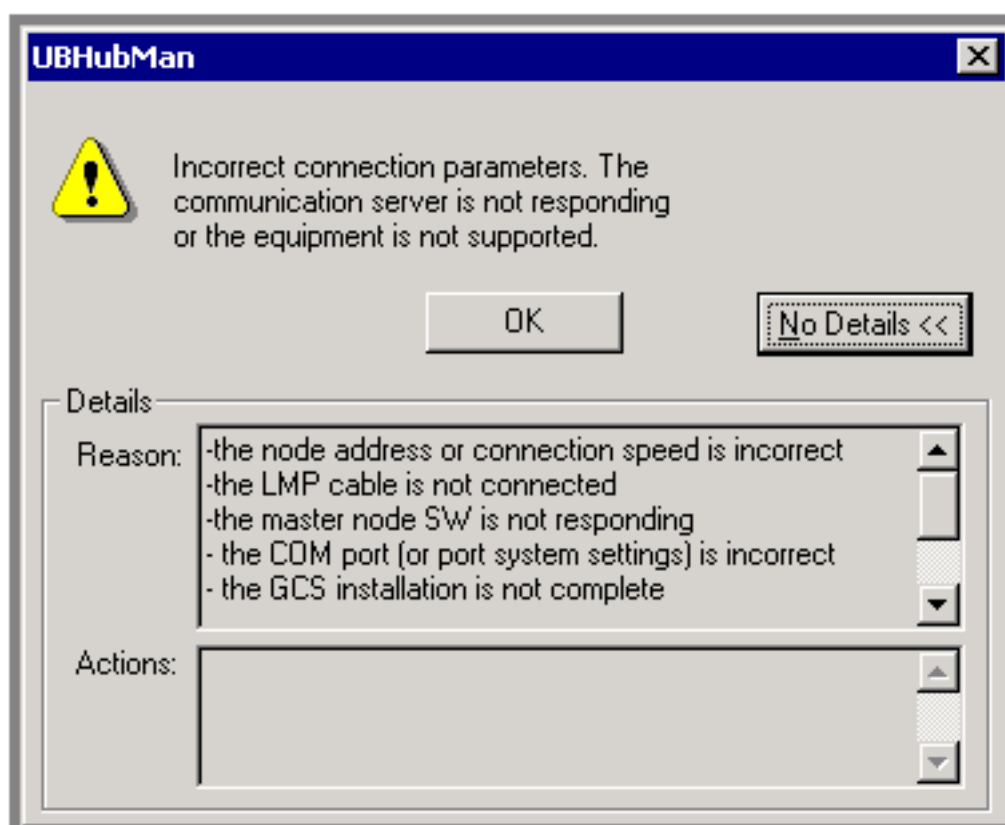


Figure 44 Another node manager error message

A typical node manager error is a failure to connect to a node. If this happens it is possible that the connection is misconfigured in GCS.



If a connection to a node cannot be created, it is recommended that the connection is tested with GCS Connection Tool. If the connection works with that, then the failure is not related to GCS but the reason is somewhere else.

13.5.3 D.5.3 GCS Connection Tool minor code 2016 'Could not login to host'

Possible reasons for the GCS Connection Tool minor error code 2016 'Could not login to host' are listed in the table below. This list applies to BTS, BSC and Q1 Pipe Connection Types. Look in the error text for the major code. This code is received from the remote server which denied the login. The error texts below are from NMS/2000 and NetAct. Q1 Agent, NMS/10 MF and DCNA can give different texts. Some texts show the minor code in hexadecimal. This means that "A" stands for 10, "B" for 11, and so on. "10" stands for 16.

Error message	Explanation
Option not set on OMC (1)	NetAct does not have a node manager support enabled.
Incorrect NMS/2000 username or password given by NMS/10 (2)	/etc/inetd.conf runs ormmgrmx using a wrong user account, or the ornuser username or password is wrong in the GCS database.
PC not in same subnet or DNS domain with NMS/2000	Reverse DNS does not give the host name for the node manager server. The node manager server IP address is not known by NetAct.
Protocol version too high	The protocol version is wrong in the GCS database. The value must be "1".
Protocol error	There is a wrong connection type in GCS. The protocol is not supported.
Incorrect configuration file in NMS/2000	NetAct configuration files contain wrong values. Check the logs on NetAct for details.
Database down in NMS/2000	The database is down in NMS/2000
Incorrect BSC id	There is no such BSC configured into NetAct. Correct the BSC number in GCS or add the BSC into NetAct.
Incorrect BSC version	The NetAct database contains a wrong BSC version. BSC is too old to support the node manager connection.
Incorrect BSC username or password given by ORNMGR	The BSC node manager username or password is wrong. This is the username and password verified by BSC for the OSI connection, not the ornuser password verified by NetAct. Correct the password configured in NetAct.
Option not set on BSC (1)	BSC does not have a node manager support enabled. Enable the BSC NOD service.
Connection busy	Too many node managers running simultaneously
Fatal error in connection	The OSI connection did not succeed
Error in establishing connection	The OSI connection did not succeed
Incorrect object or channel	The BCF or BUS number is wrong in the GCS database

Table 18 Reasons for the minor code 2016 'Could not login to host'

Error message	Explanation
Unclassified error (16)	The use ornuser is not in the sysop group, or the BSC NOD service is not functioning, or the BSC object version in the NetAct database has a wrong format (this must be "Sn" where n is a number), or the OSI transport configuration or the BSC username and password configuration for node manager is not available. Check the logs on NetAct for details.

Table 18 Reasons for the minor code 2016 'Could not login to host' (Cont.)

13.5.4 D.5.4 GCS Connection Tool minor code 2028 'Other uncompleted connection'

The GCS error 2028 'Other uncompleted connection' often occurs in a node manager server environment (using Windows Terminal Server), when many connections are simultaneously being opened and closed. To overcome this problem you must change one GCS registry setting and restart GCS.

To overcome the GCS error 2028 'Other uncompleted connection'

1. Open Windows Registry Editor:
Select **Start** → **Run...** Type **Regedit** in the **Open** field and click **OK**.
2. In Registry Editor navigate to the following location, and add a registry key `SynchOpenClose` with the value 1.
`HKEY_LOCAL_MACHINE\SOFTWARE\Nokia\GCS Communication Service\GCSServices\GCSR4\Setting (for 32 bit operating system) OR`
`HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Nokia\GCS Communication Service\GCSServices\GCSR4\Setting (for 64 bit operating system)`
`"SynchOpenClose"=dword: 1`
3. Close Registry Editor and all Nokia Siemens Networks applications.
4. Open Command Prompt.
5. Stop GCS with the following command: `gcserver -stop`
6. Restart GCS with the following command: `gcserver -start`
7. Close Command Prompt.

Glossary

API	Application Programming Interface
ATM	Asynchronous Transfer Mode
AXC	ATM Cross-Connect
BSC	Base Station Controller
BTS	Base Transceiver Station
DCN-A	DCN Adapter
DSN	ODBS Data Source Name
DTE	Data Terminal Equipment
FE	Functional Entity
GCS	General Communication Service
GCT	GCS Connection Tool
IP	Internet Protocol
LAN	Local Area Network
MDAC	Microsoft Data Access Components
MF	Nokia Siemens Networks Mediation Function
MML	Man-machine Language
NE	Network Element
NetAct	Nokia Siemens Networks NetAct
NIC	Network Interface Card
NMF	Network Mediation Function
NMS	Network Management System
NMS/10	Network Management System/10
NMS/10 SR	NMS/10 System Release
O&M	Operation and Maintenance
ODBC	Open DataBase Connectivity
OSI	Open Systems Interconnection
PC	Personal Computer
PDH	Plesiochronous Digital Hierarchy
POTS	Plain Old Telephone Service
Q1	GCS Proprietary Network Management Protocol

Q1 Agent	Nokia Siemens Networks Q1 Agent
Q1CS	Q1 Communication Stack
RCM	Remote Control Measurement
SNMP	Simple Network Management Protocol
SB	Supervision Block
SP	Service Pack
SXC-T	Service Level Digital Cross-Connect
TAPI	Telephony Application Programming Interface
TCP/IP	Transmission Control Protocol/Internet Protocol
TMC	Transmission Management Computer
TMS4	Transmission Management System, Version 4
TP	Transport Protocol
TP4	OSI Transport Layer Protocol, Transport Class 4
URL	Uniform Resource Locator