



# TAC's web products

Engineering guidelines

0-004-7790-1 (GB), 2000-12-10

**t.a.c.** 

# **Foreword**

Welcome to the manual TAC's web products Engineering guidelines.

If you should discover errors and/or unclear descriptions in this manual, please contact your TAC representative. You may also send e-mail to [helpdesk@tac.se](mailto:helpdesk@tac.se).

Copyright © 2000 TAC AB.

Subject to modification.

This document, as well as the product it refers to, is only intended for licensed users of the product and the document. TAC AB owns the copyright of this document and reserves the right to make changes, additions or deletions. TAC AB assumes no responsibility for possible mistakes or errors that might appear in this document.

Do not use the product for any other purposes than those indicated in this document.

Only licensed users of the product and the document are permitted to use the document or any information therein. Distribution, disclosure, copying, storing or use of the product, the information or the illustrations in the document on the part of non-licensed users, in electronic or mechanical form, as a recording or by other means, including photocopying or information storage and retrieval systems, without the express written permission of TAC AB, will be regarded as a violation of copyright laws and is strictly prohibited.

TAC Vista, TAC Menta and TAC Xenta are registered trademarks of TAC AB in Sweden and other countries. All other brand names are trade marks of their respective owners.

## **Revisions**

| <b>Art no</b>     | <b>Comment</b>  | <b>Editor</b> | <b>Date</b> |
|-------------------|---|---------------|-------------|
| 0-004-7790-1 (GB) | Section 3 and Appendix 1 are updated to cover TAC Xenta 511 v1.0. | CPHA          | 2000-12-10  |

# **TAC's web products Engineering guidelines**

## **Contents**

|   |           |
|---|-----------|
| <b>1. Introduction</b>  | <b>5</b>  |
| <b>2. TAC Vista Webstation</b>                                  | <b>7</b>  |
| 2.1. What is TAC Vista Webstation?.....                         | 7         |
| 2.2. TAC Vista .....  | 8         |
| 2.2.1. Requirements.....  | 8         |
| 2.2.2. Preparations.....  | 8         |
| 2.2.3. Setup.....   | 8         |
| 2.3. Installation of TAC Vista Webstation Server .....          | 9         |
| 2.3.1. Installation.....  | 9         |
| 2.3.2. Configuration .....                                      | 9         |
| 2.4. Programming the website.....                               | 11        |
| 2.4.1. How to work.....   | 12        |
| 2.4.2. Programming in TAC WebTool.....                          | 13        |
| 2.4.3. Adjustments outside the WebTool.....                     | 14        |
| 2.5. The web browser/TAC Vista Webstation Client.....           | 14        |
| 2.5.1. Requirements.....  | 15        |
| 2.5.2. Network configuration (Windows 95/Windows 98).....       | 15        |
| 2.5.3. Configure the Microsoft Internet Explorer .....          | 15        |
| 2.5.4. Load and install the TAC Vista Webstation Client .....   | 16        |
| 2.6. Trouble-shooting .....                                     | 16        |
| <b>3. TAC Xenta 511</b>   | <b>17</b> |
| 3.1. What is TAC Xenta 511? .....                               | 17        |
| 3.1.1. Planning.....  | 17        |
| 3.2. The network and the control units .....                    | 18        |
| 3.2.1. Programming.....   | 18        |
| 3.3. Programming the TAC Xenta 511 database.....                | 19        |
| 3.3.1. How to work when programming the database.....           | 20        |
| 3.3.2. Programming options .....                                | 23        |
| 3.3.3. Updating the LNS database, binding and installation..... | 25        |
| 3.4. Installation of TAC Xenta 511 .....                        | 25        |
| 3.4.1. Installation and configuration .....                     | 25        |
| 3.4.2. User authority levels .....                              | 26        |
| 3.5. The web browser .....                                      | 27        |
| 3.5.1. Requirements.....  | 27        |
| 3.6. Trouble-shooting .....                                     | 28        |

---

|  |           |
|--|-----------|
| <b>Appendix: LonWorks network with TAC Xenta 511</b> | <b>29</b> |
| <b>Index</b>   | <b>31</b> |

This document has 34 pages.

# 1. Introduction

The TAC web products give a simple way of displaying information from a plant in a web browser.

- The TAC Vista Webstation is used to display information from a TAC Vista system.
- The TAC Xenta 511 is used to display information directly from TAC Xenta units and other LonMark units on a LonWorks network.

This manual briefly describes how to install, program and commission these web products. However, the way to work with the products differs in some aspects. Therefore, they are presented in two different sections.

When using this manual you should have the following previous knowledge:

### **TAC Vista Webstation:**

- Basic web knowledge
- Basic Microsoft Windows NT/2000 and NT networks knowledge

### **TAC Xenta 511:**

- Basic web knowledge
- TAC Menta application programming skills
- LonMaker Integration Tool skills

This manual contains references to the information sources where you can read more:

### **TAC Vista Webstation:**

- "*TAC Vista 3, Basic functions*", art. No 0-004-7647
- "*Installation instruction TAC Vista Webstation Server*", art. No 0FL-3991
- The Online documentation for TAC Vista Webstation
- The Online help for TAC WebTool

### **TAC Xenta 511:**

- "*Installation instructions TAC Xenta 511*", art. No 0FL-3971
- "*TAC Xenta and LonMaker for Windows*", art. No 0-004-7775
- The Online help for TAC WebTool

Don't forget that you can get updated information about the products via the TARAI website; <http://www.tac.se/tarai/> !

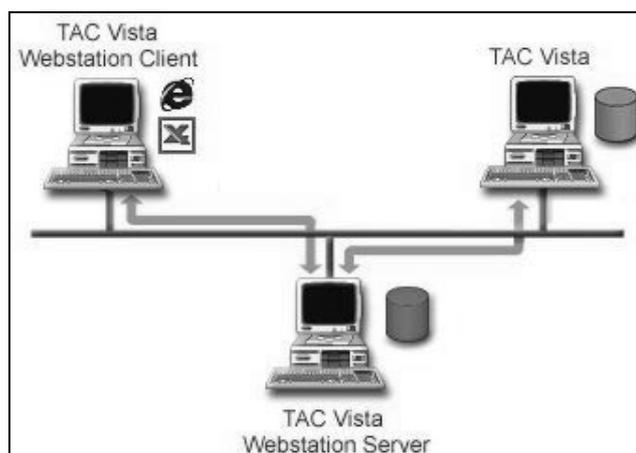


## 2. TAC Vista Webstation

### 2.1. What is TAC Vista Webstation?

TAC Vista Webstation is a simple way of displaying information from a TAC Vista system in a web browser. The user can view/acknowledge alarms, read/write values and display colour graphics, trend logs, event logs and reports/charts/documents in the web browser.

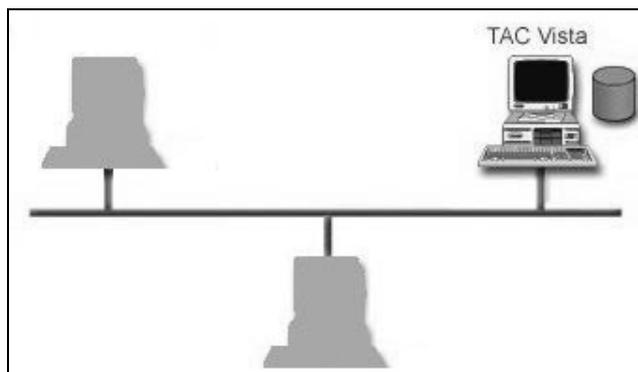
TAC Vista Webstation can only be used in a Microsoft® Windows NT/2000 local network (LAN) which contains a domain server for verification of users when logging in.



The system consists of:

- A **TAC Vista system** consisting of one or several computers gives the basic functionality.
- **TAC Vista Webstation Server**, which is installed as an add-on to a web server. TAC Vista Webstation Server is configured to work with a target TAC Vista system and comes with a website which gives access to the TAC Vista system.
- A web browser. Depending on type and version, the web browser gives either full functionality (**TAC Vista Webstation Client**) or reduced functionality.

## 2.2. TAC Vista



### 2.2.1. Requirements

A TAC Vista system using TAC Vista version 3.3 (or higher), which runs on Microsoft Windows NT/2000 must be installed in the local network.

### 2.2.2. Preparations

Already when creating the TAC Vistas database, you shall prepare it for the TAC Vista Webstation users:

- Place an overall colour graphic with links to other graphics as close to the root (but not in the root) as possible.
- Put interesting objects as close to the root (but not in the root) as possible.

Create and define objects for periodical printout of reports and presentations.

### 2.2.3. Setup

#### • **Define NT users in the TAC Vista database**

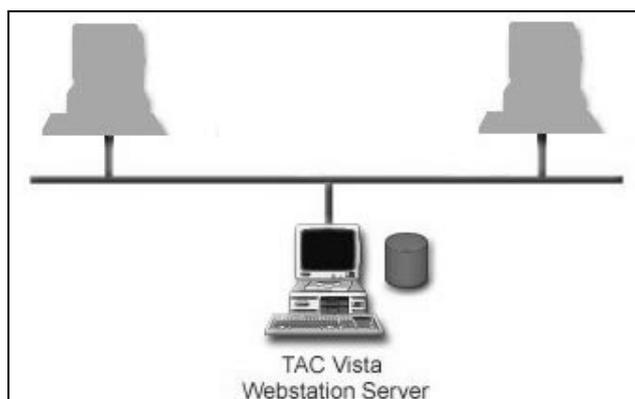
NT users with access to TAC Vista Webstation **must** be defined as users in the TAC Vista database. Define the users (enter Domain\Account) via a "Windows NT account" object in TAC Vista, Cf. the section Logging in and authorities in "*TAC Vista 3, Basic functions*".

**If possible, define the users as groups.** Use the groups/user names already existing in the NT network (or first define suitable groups in the NT network).

#### • **TAC Vista Server configuration in "Setup"**

Start *TAC Vista Setup* and check that the *TAC Vista Security level* is "High (Use NTAccount)".

## 2.3. Installation of TAC Vista Webstation Server



### 2.3.1. Installation

The computer in the LAN which shall be the web server must be a

- Microsoft Windows NT Server 4.0 including Service Pack 6 or
- Microsoft Windows 2000 Server including Service Pack 1.

Install Internet Information Server if this has not been done. Internet service manager shall be included (check box) in the installation.

Install TAC Vista Webstation Server as an add-on to the web server in the **InetPub/wwwroot/VistaWebstation** folder (Cf. "Installation instruction TAC Vista Webstation Server", art. no OFL-3991).

NB. If the computer already contains a web server, and you are going to **re-install**, then you shall stop the web server first.

### 2.3.2. Configuration

The TAC Vista Webstation Server installation program automatically makes some default settings. You can check these setting by means of the Internet Service Manager:

1. The folder **VistaWebstation** shall have property **Authentication Method** "Windows NT/Challenge response", not "Allow Anonymous Access". This means that the web server identifies the web client (i.e. **how** the authentication between the client and the web server is done).
2. Set "execute"-authorities on the script folders:  
The folders **VistaWebstation/Scripts**, **VistaWebstation/ScriptsAdmin** and **VistaWebstation/ScriptsHistlog** shall have **Script properties** "Execute (including script)".

In the following cases you must configure manually, via the Internet Service Manager or the TAC Vista Webstation configuration page:

- If Netscape Navigator is used anywhere in the network, then the folder **VistaWebstation** shall have both **Authentication Method** "Windows NT/Challenge response" and "Basic Authentication".
- If the TAC Vista Server and the web server run on **different** computers, then the folder **VistaWebstation/ScriptsHistlog** must

have property **Authentication Method** "Basic Authentication" (NB – this property only, not "Windows NT/Challenge response" also).

Do the following configuration in the Explorer:

3. Protect the website by setting file properties on the **VistaWebstation** folder:
  - Create **one** group in the NT network for users with access to the website (this group shall also have TAC Vista access).
  - Give this group Read authority, at least "R", for the **VistaWebstation** folder including all sub folders and files.
  - Give this group Execute authority, at least "X", for the **VistaWebstation/ Scripts** and **VistaWebstation/ScriptsHistlog** folders including all sub folders and files.
4. Protect the **Server Configurations** web pages further, so that only a few users can modify the web server configuration:
  - Give **selected** users Execute authority for the **VistaWebstation/ ScriptsAdmin** folder.
5. Share the **VistaWebstation/Reports** folder for reading/writing.

Use the **User Manager**, which you will find in **Programs - Administrative tools** in the **Start menu** of Windows:

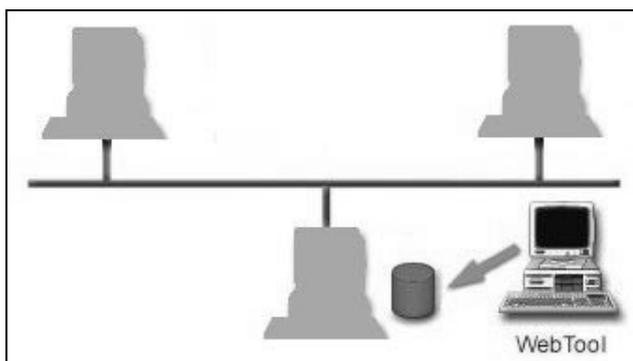
6. To be able to identify a user running the TAC Vista Webstation, this user group (see above) must have authority to log in locally on the web server. To do this, select **User Rights** in the **Policies** menu, and then **Log on locally**. In the list in the lower part of the dialog you will see all groups/users, which have the rights to log in locally. If needed, add or remove users.

### • **Setup of Windows 2000**

If the Web server run on Windows 2000, and the TAC Vista Server is placed on a different computer, then do the following setup:

- Start Microsoft Management Console (MMC), e.g. by entering "MMC" under "Run" in the start menu.
- In the MMC, select the "Console" menu, and the "Add /Remove snap-in" function.
- In the "Add/Remove snap-in" dialog, press the "Add"- button. Select "Component Services" and press "Add".
- In the MMC, brows down the "Component Services" tree to "IIS Out-of-Process Pooled Applications". Click right and select "Properties". Go then to the "Identity" flap.
- Under the "Identity" flap, check the "This user" box and enter a user account, which must be known in the network (a user in the domain). This user must, of course, have access to the TAC Vista Server computer.

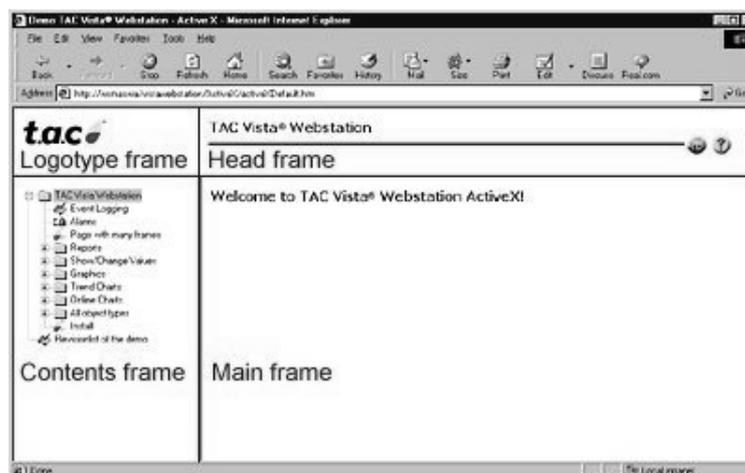
## 2.4. Programming the website



The TAC Vista Webstation website is created by means of the TAC WebTool. WebTool contains a project template which is a copy of the website example, also included in the TAC Vista Webstation server installation. Check the customer requirements regarding the website, and then create the website by modifying the template.

### • The structure of the website

A web page consists of four frames: Logotype, Head, Contents and Main.



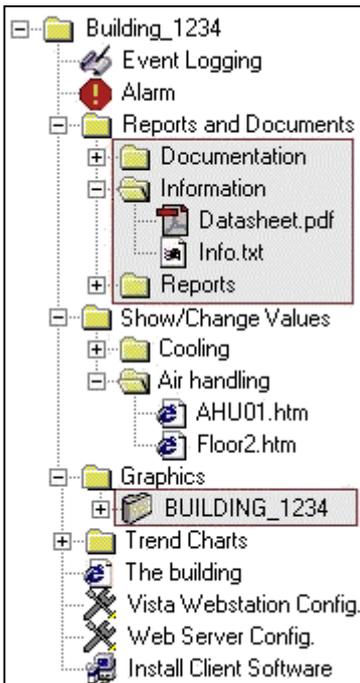
The contents of the Logotype and Head frames are fixed.

The Contents frame is a list of contents, which basic structure is created in the WebTool; it is simply the file structure being displayed in the "WebTool Navigator" to the left. NB: WebTool does not display the full contents of the website (see below).

When the user has selected a web page in the list of contents, the page will be displayed in the Main frame. Depending on type, the page may have a fixed appearance, or can be created in or outside WebTool.

The website can consist of the following web page types:

*Link (from "Contents")      Contents (displayed in "Main")*



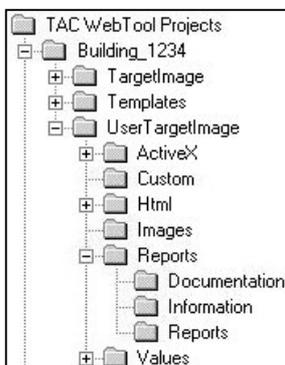
|   |  |
|---|--|
| <b>Event logging</b>  | Fix Event logging page.  |
| <b>Alarm</b>  | Fix page including alarm overview and status   |
| <b>Reports and Documents</b>                                  | Link to a folder, which <b>fully</b> contents e.g. folders, Excel-reports, Word-document automatically are included in the list of contents.   |
| <b>Show/Change Values</b>                                     | Custom created pages. Selected values from TAC Vista, shown in a table.  |
| <b>TAC Vista objects</b> (e.g. "Graphics" and "Trend Charts") | All objects in the selected logical unit and of selected type are fetched from TAC Vista. There are viewers for graphics, trend and online charts; all other objects are shown in a table. |
| <b>HTML pages</b> (e.g. "The building")                       | Link to a selectable intern or extern HTML page. You have to create the page.  |
| <b>Vista Webstation Config</b><br><b>Web Server Config</b>    | Two fix pages for Web server configuration.  |
| <b>Install Client Software</b>                                | Fix page containing installation software.   |

← Shadowed pages = **Not** created/displayed in WebTool

### 2.4.1. How to work

The first time you start WebTool, set (via **Tools – Options**) where to by default place the WebTool projects and the project templates.

1. Create the basic structure of the website, and the web pages (see 2.4.2 Programming in TAC WebTool). The structure and the web pages created in WebTool will be stored in the project folder as a .wtp file. Generate the project, whereas a "target image" of the website is created.
2. If needed, modify (see 2.4.3 Adjustments outside the WebTool) the website by creating/editing documents/web pages in the **User TargetImage** under the project folder. Create the required folders and files (e.g. the **Custom** folder for your HTML pages). Use the same structure and names as on the website. (Example: put **Maintenance.txt** under **Reports/Documentation**). Example:



|   |   |
|---|---|
| <b>Project folder</b> ("Building_1234") | Shall normally be placed under <b>TAC WebTool Projects</b> and contain the project file ("Building_1234.wtp").  |
| <b>TargetImage</b>                      | Here, the website is generated by WebTool. Don't alter the contents of these folders!   |
| <b>Templates</b>                        | Web page templates.   |
| <b>UserTargetImage</b>                  | For adjustments outside the WebTool, e.g.<br><b>Custom:</b> Your HTML pages<br><b>Images:</b> Images used in your HTML pages<br><b>Reports:</b> Documents in .pdf, .txt, .doc, .ppt, .xls, etc. to be displayed on the website. |

3. Repeat the stages above until you are satisfied with the "target image".
4. Create the target website:
  - Connect the PC to the web server, where the TAC Vista Webstation Server is installed.
  - Start WebTool and check that the paths to TAC Vista Server and to the web server in *Project settings* are correct.
  - Select *Project – Send to target*. The contents of the "target image" folder are now copied to the web server in the following order:
    - 1) If *Send to target mode* "Replace web site" is selected under *Tools – Options – Webstation*, the existing contents of the website will first be erased.
    - 2) The contents of the **TargetImage** folder (i.e. web pages generated by WebTool) will be copied to the website.
    - 3) The contents of the **UserTargetImage** folder (adjustments outside the WebTool) will be copied to the website. Note that files with the same name will be over-written.

### 2.4.2. Programming in TAC WebTool

1. Start the WebTool and open a new project with *File – New Project*. Use a project template. Enter the *Project settings* i.e. project name, what project template to use, language and paths to TAC Vista Server and to the web server. The language setup controls what page templates to be used, and the language of the fix TAC Vista Webstation pages.
2. Structure the list of contents by editing the existing file structure, and/or by adding new web pages under the project (click right – *Add – Link to ...*).
3. Edit or create **Show/Change Values** pages. Select, via the browser, the signals from TAC Vista to be displayed in each of the Show/Change Values pages. During this stage you must be logged on to the TAC Vista database. Sort the signals on the page by means of Drag-and-drop.
4. Select the **TAC Vista objects** to be displayed, in addition to those already selected in the template (typically graphics, trend charts and "all objects"). Note that you also can select what logical unit (Logical, Structural or Physical unit) to display.
5. If requested, create links to your own/external **HTML pages**.
6. Save the project on your PC with *File - Save*.
7. Generate the project with *Project – Generate*. A "target image" of the website is now created in the folder specified as *Target image Path* in *Project settings*.

### 2.4.3. Adjustments outside the WebTool

It is possible to do a lot of adjustments and additions to the website outside the WebTool. However, it is not recommended to do too much.

Primarily, the following adjustments are possible (the folders in the description below are situated under the **User TargetImage** folder):

- Put interesting product and plant documentation in the **Reports** folder. The contents can be divided on sub folders e.g. **Documentation** and **Information**.
- If needed, create your own HTML pages and put them in the **Custom** folder. Use **main.htm** (included in the WebTool installation) as template. Put the linked images in the **Images** folder.
- Create a plant specific first page by adding the customer's logotype and/or a plant photo on the first displayed page. Max. recommended image size is 400 \* 400 pixels. NB: because of the alternatives with full or reduced functionality in the web browser, you must create two web pages: **ActiveX/Se/ActiveXMain.htm** and **html/Se/htmlMain.htm**. A template page with a "pre-linked" plant photo (**Main.jpg**) is included in the WebTool installation. Put the linked images in the **Images** folder.

Other adjustments should only be done on a specific customer requirement!

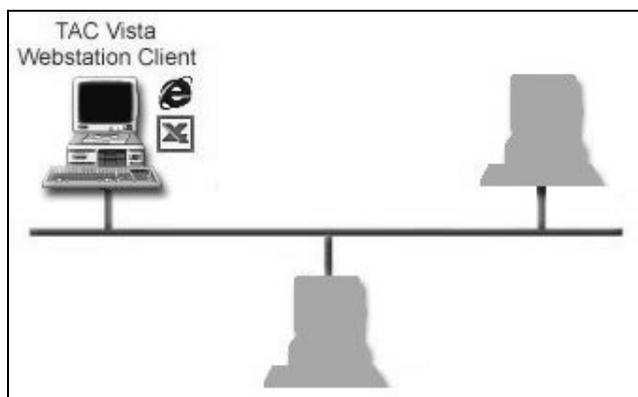
The page templates, e.g. for the **Show/Change Values** pages, in the project folder **Templates** can be customized in a HTML editor.

The TAC logotype in the Logotype frame can be replaced by editing the **ActiveX/Se/ActiveXLogotype.htm** and **html/Se/htmlLogotype.htm** pages.

NB: max. image size 210 \* 75 pixels, and that a link to [www.tac.se](http://www.tac.se) is included.

Font type, size, colours etc. can be changed. NB: the template **css/StyleSheet1.css** is being used.

## 2.5. The web browser/TAC Vista Webstation Client



The web browser is installed by the user (or by the customer's IT department). When commissioning it is important to check:

- The installation and the website works from a random web browser.
- The customer shall get information about network requirements, how to install, etc.

### **2.5.1. Requirements**

- The TAC Vista Webstation can only run on a Microsoft Windows NT network.
- Web browser requirements for **full functionality**:
  - Microsoft® Internet Explorer version 5 or higher.
  - TAC Vista Webstation Client Components must be installed.
- For **reduced functionality** can:
  - Netscape Navigator version 4.7 or higher be used.
- For presentation of reports and diagrams via the website must also Microsoft Excel or Excel Viewer be installed.
- Adobe Acrobat Reader and Microsoft Office might be needed for presentation of stored documents.

### **2.5.2. Network configuration (Windows 95/Windows 98)**

Do the following configuration if you run Windows 95/Windows 98:

- Click right on the Network icon and select *Properties*. Then select *Access Control* in the appearing dialog.
- Set the "user level security". An NT computer (the domain controller) shall be Authenticator.

### **2.5.3. Configure the Microsoft Internet Explorer**

The TAC Vista Webstation can only be accessed if the security setting of the web browser is correct. The default settings of the Microsoft Internet Explorer 5.0 will work. You may change the default settings as long as you keep the following settings:

- Allow to load and run "signed" ActiveX controls
- JavaScript must be allowed to execute
- "Cookies" must be allowed
- Allow "Windows NT Challenge/Response"

For detailed information about the settings, cf. the settings of the Microsoft Internet Explorer online help.

## 2.5.4. Load and install the TAC Vista Webstation Client

To be able to display the website with **full functionality**, TAC Vista Webstation Client Components must be installed.

The client components are available via the TAC Vista Webstation Server website. To install them, they must be downloaded to the user's computer. If the user runs Windows 95, he/she must also install the DCOM component on the computer.

1. Start the web browser and select the address (URL) for the TAC Vista Webstation website.
2. Select **Install Client Software**.
3. Select **TAC Vista Webstation Client** (and then also **DCOM95** if you run Windows 95).

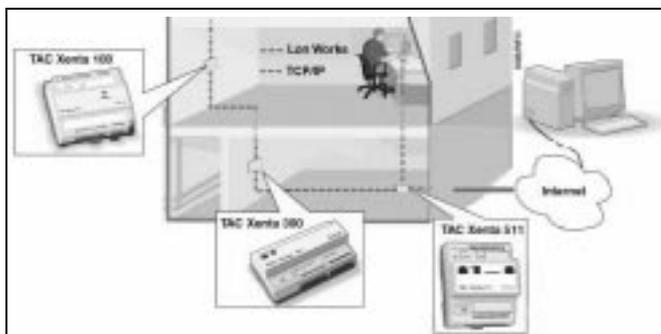
## 2.6. Trouble-shooting

| <i>Error</i>  | <i>Possible reason</i>  |
|---|---|
| A file transfer dialog about download of "ISfile" (no path) is displayed in the web browser                         | You have no "script" execution authority, see 2.3.2 Configuration   |
| Error message:<br>"Failed to connect to TAC Server... Access is denied"   | You are not defined as a NT user in the TAC Vista database, see 2.2.3 Setup<br><i>or</i><br>The property Authentication Method for the VistaWebstation folder is "Allow Anonymous Access" instead of the correct "Windows NT/Challenge response", see 2.3.2 Configuration<br><i>or</i><br>If the Web server run on Windows 2000, and the TAC Vista Server is placed on a different computer, then check the Windows 2000 setup, see 2.3.2 Configuration |
| Error message:<br>"Server execution failed..."  | Faulty DCOM configuration   |
| A login dialog "Enter Network Password" appears in the Microsoft Internet Explorer (No error in Netscape Navigator) | The property Authentication Method for the VistaWebstation folder is not set to "Windows NT/Challenge response", see 2.3.2 Configuration<br><i>or</i><br>Faulty setup of the web browser, see 2.5.2 Configure the Microsoft Internet Explorer   |

## 3. TAC Xenta 511

### 3.1. What is TAC Xenta 511?

TAC Xenta 511 makes it possible to use a web browser to present plant information from a LonWorks network with up to 30 nodes. The users can view/acknowledge alarms, read/write values and display colour graphics, trend logs etc. in the web browser.



The system consists of:

- **TAC Xenta units** and other LonMark units in a LonWorks network give the basic functionality.
- **TAC Xenta 511** is a node in the LonWorks network. TAC Xenta 511 contains central functions such as alarm supervision and trend logging, as well as a website giving access to selected signals of the LonWorks network nodes. TAC Xenta 511 is also connected to the local IP network/the Internet.
- Web browsers connected to the local IP network/the Internet.

#### 3.1.1. Planning

- How is the plant designed: the network; logically?
- What central functions are required? How/where shall they be created, from field equipment, via application, to the TAC Xenta 511 configuration?
- The Website: what shall be viewed for different users? Try to create a **simple** structure.
- Contact the IT department and discuss IP address, subnet mask, default gateway, ports (fire wall) and e-mail account/server for the TAC Xenta 511.

## 3.2. The network and the control units

The TAC Xenta 511 communicates on the LonWorks network via SNVT only. Thus, signals from TAC Xenta 100 and products communicating via SNVTs can easily be connected to TAC Xenta 511. On the other hand, all signals in TAC Xenta 300/401 to be displayed in TAC Xenta 511 must be defined as SNVTs.

### 3.2.1. Programming

1. If present, program the TAC Xenta 300/401 applications by means of TAC Menta. Define all points to be presented as SNVTs. The result will be saved as XIF files, which then will be used by the Network Management software.

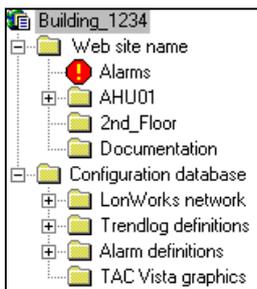
Remember:

- Read only values, e.g. physical inputs: Connect to a new AO/DO block (bind to SNVT), name it for example **nvoT3U**.
  - Read/write values, e.g. setpoints:
    - Alternative 1: Replace the block with a public AI/DI block (bind to SNVT) with the same name. Use this alternative if the setpoint shall **not** be altered from the OP. (But it can be forced via the high/service access level).
    - Alternative 2: Use the macro block *Setpoint.aut* (in the Macro Block Library), then the value can be altered from both the OP and the web. Then bind (in the binding tool), the output SNVT back to the input SNVT, and all setpoint changes will be seen!
  - Time schedules are **not** available! Use the TAC Xenta OP instead. It is also possible to create extended operation in parallel with the time schedule (AI block – **SNVT\_count\_f**), which can be started on a predefined time (AI blocks – **SNVT\_time\_stamp** – member **month/day/hour**).
  - TAC Xenta 511 does **not** use alarms in an existing application. Therefore, create new AO/DO blocks (bind to SNVT) for the binary and analog signals to be supervised.
  - The local trendlogs in TAC Xenta are **not** available. Therefore, create new AO/DO blocks (bind to SNVT) for the signals to be logged.
  - Public constants are **not** available. Use the TAC Xenta OP.
  - Binary signals: Use **SNVT\_switch** or **SNVT\_state**. NB: **SNVT\_state** is a 16 bits integer, where bit 15 corresponds to 1 (LSB), bit 14 corresponds to 2 etc. Use the macro blocks *state\_IN.aut* and *state\_OUT.aut* for the conversion.
2. Create the LonWorks network and all its nodes in the Network Management software, Cf. the appendix and "*TAC Xenta and LonMaker for Windows*". The result is saved in the LNS database, which shall be imported to the TAC Xenta 511 database.

### 3.3. Programming the TAC Xenta 511 database



The TAC Xenta 511 database consists of two main parts:

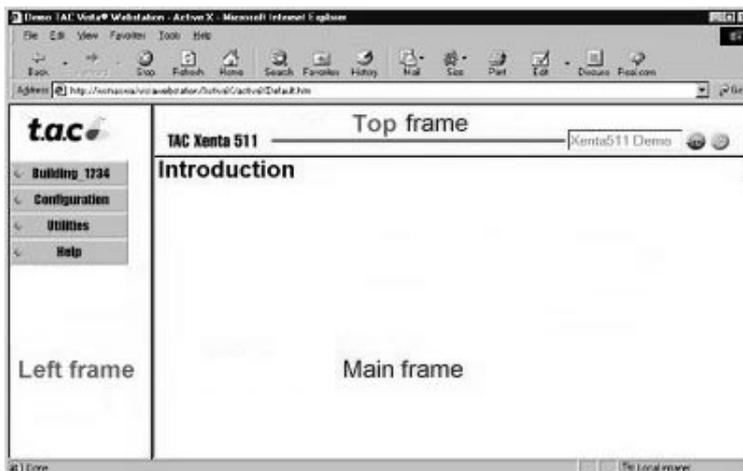


- **The configuration database**, which describes the LonWorks network and its units, and how the TAC Xenta 511 shall work, what signals to alarm supervise and trend log.
- **The website**, with web pages for presentation of data.

Both parts of the database are created with TAC WebTool. In the WebTool, the website can be found under the **Web site name** (the name can be altered) folder, and the configuration database is placed under the **Configuration database** folder.

#### • The structure of the website

The web pages consist of three frames, Top, Left and Main:



The contents of the Top frame are fixed.

The Left frame holds a dynamical list of contents (changes appearance depending on the user authority). The basic structure is created in the WebTool; it is simply the file structure, which is displayed under **Web site name** in the "WebTool Navigator" to the left. However, the WebTool does not display the full contents of the website (see below).

When the user has selected a web page in the list of contents, the page will be displayed in the Main frame. Depending on type, the displayed page may have a fixed appearance, or can be created in or outside WebTool.

The different levels of the list of contents are built via folders in the WebTool. The following web page types are used:

|                  |   |
|------------------|---|
| <b>Trendlogs</b> | Views a trendlog page for predefined signals.       |
| <b>Alarms</b>    | Fix page including alarm overview and status        |
| <b>Values</b>    | Views dynamical plant values in a table.            |
| <b>Graphics</b>  | Views a colour graphic with dynamical plant values. |

Outside the WebTool you can also add:

|                   |   |
|-------------------|---|
| <b>HTML pages</b> | Your own HTML pages can be created and added to the list of contents. |
|-------------------|---|

There are also some fix pages which always is included in the website. These pages are not visible in the WebTool:

|                      |  |
|----------------------|--|
| <b>Configuration</b> | Fix pages for TAC Xenta 511 configuration.           |
| <b>Utilities</b>     | Fix pages with utilities, e.g. for trouble-shooting. |
| <b>Help</b>          | Fix pages, containing the online help.               |

### 3.3.1. How to work when programming the database

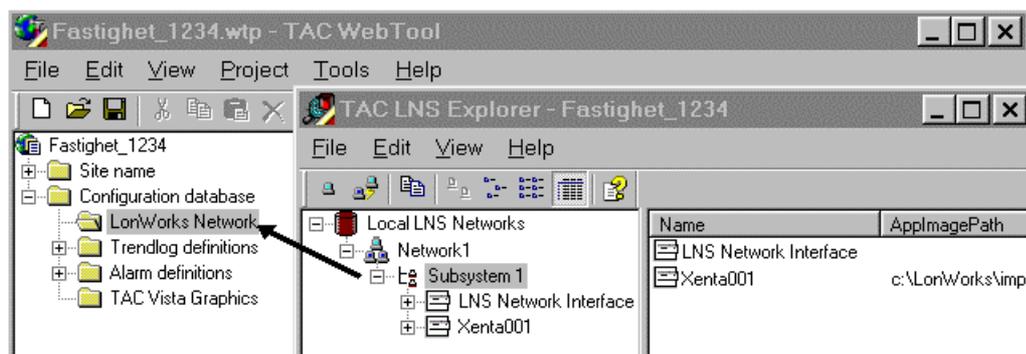
#### • Preparations

The first time you start WebTool, set (via *Tools – Options*) where to by default place the WebTool projects and the project templates.

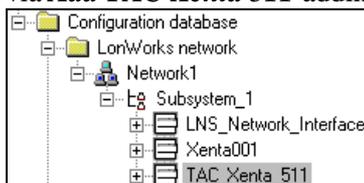
1. Start the WebTool and open a new project with *File – New Project*. Use a project template. Enter the **Project settings** i.e. project name, what project template to use, language etc. The language setup controls what page templates to be used. Note, however, that the fix TAC Xenta 511 pages always are in English. The structure and the web pages created in WebTool will be stored in the project folder as a .wtp file.

#### • The configuration database

2. Define the LonWorks network by importing the LNS database to the **Configuration database/LonWorks network** folder:
  - Select *Tools – Run LNS Explorer* to start the LNS Explorer.
  - In the LNS Explorer, select *File – Open – Local or Remote LNS Network* (depending on where the LNS database is located).
  - In the LNS Explorer, mark the units that the TAC Xenta 511 shall communicate with and drag-and-drop them to the WebTool **LonWorks network** folder.

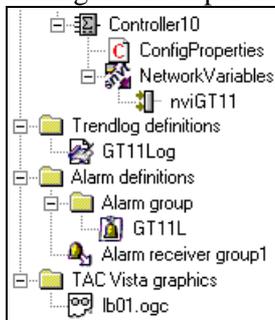


3. Define the TAC Xenta 511 node under **LonWorks network** by via **Add TAC Xenta 511** adding it on its place in the network:



Under the TAC Xenta 511 node, create via **Add - SNVT definition** the signals (including) to be **bound** (see section 3.3.2, “Bind or poll a signal?”). When defining a SNVT:

- Enter **SNVT type** and a **Controller object** of free choice.
  - You can via the **Browse** button copy (although **nvi** becomes **nvo**) one or several signals from a network unit.
  - Choose names that correspond to the signal name of the network unit (**nviT11/nvoT11**); add a unit number (**nvi4T11**) if several units contain signals with the same name.
4. Configure the supervision functions of the TAC Xenta 511:



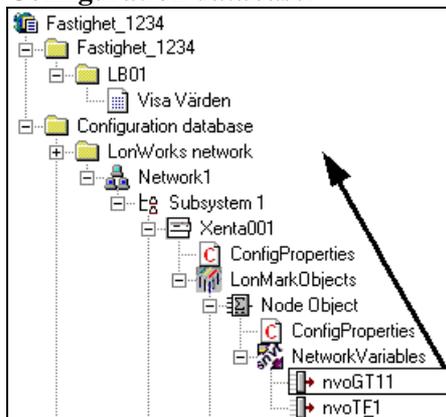
- Add a **Trendlog object** under **Configuration database/Trendlog definitions** for each signal to be trendlogged. Use drag-and-drop from the signals under the **LonWorks network** folder nodes; fetch the signal from the TAC Xenta 511 node if it shall be bound. Define the settings of the trendlog object.
- Add an **Alarm object** under **Configuration database/Alarm definitions/Alarm group** for each signal to be alarm supervised. Use drag-and-drop from the signals under the **LonWorks network** folder nodes; fetch the signal from the TAC Xenta 511 node if it shall be bound. Define the settings of the alarm object. Create at least one **Alarm receiver group**, used to send alarms via E-mail etc., and check that all alarms are linked to a receiver group.
- Add graphics under **Configuration database/TAC Vista graphics** by means of the command **Import Graphic**. First, create the graphics via **Run Colour Graphics Editor**, which will start the TAC Vista graphics editor. Here you can start with either selecting an existing graphic or create a new. Enter the signals to be linked to the dynamical symbols (in its dialog) by drag-and-drop from the signals under the **LonWorks network** folder nodes in **Configuration database**.

• **The website**

5. Create the website and its structure by editing/adding web pages and folders under **Web site name**. Divide the plant in sub systems such as air handling, cooling, floors etc.

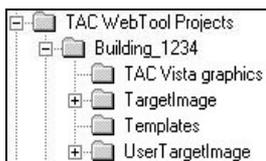
There are four types of web pages:

- **Alarm** page. Fixed appearance. Only one per TAC Xenta 511.
- **Values** page. Select the signals to be presented via drag-and-drop from the signals under the **LonWorks network** folder nodes in **Configuration database**:



- **Trendlog** page. Select the trendlog to be presented via drag-and-drop from **Configuration database/Trendlog definitions**.
- **Graphics** page. Select the graphic to be viewed by drag-and-drop from **Configuration database/TAC Vista graphics**. You can also use a standard graphic for several units (see section 2.3.2, "Standard graphics").

6. Save the project on your PC with **File - Save**.
7. Generate the project with **Project - Generate**. A "target image" of the website is now created in the folder specified as *Target image path* in **Project settings**. Example:



|  |  |
|--|--|
| <b>Project folder</b><br>(“Building_1234”) | Shall normally be placed under <b>TAC WebTool Projects</b> and contain the project file (“Building_1234.wtp”). |
| <b>TAC Vista graphics</b>                  | Colour graphics, file format .ogc  |
| <b>TargetImage</b>                         | Here, the website is generated by WebTool. Don’t alter the contents of these folders!                          |
| <b>Templates</b>                           | Web page templates.  |
| <b>User TargetImage</b>                    | For adjustments outside the WebTool, e.g. your HTML pages incl. images (.gif, .jpg)                            |

8. If needed, modify (see section 3.3.2, “Adjustments outside the WebTool”) the website by creating/editing documents/web pages in **User TargetImage** under the project folder). Store the pages in the places in the website structure were you want them.
9. Repeat the stages above until the website is OK.
10. Install the TAC Xenta 511 and load the website (in accordance with sections 3.3.3 and 3.4). Further editing and download of the website with **Project - Send to target** can of course be done a number of times.

### 3.3.2. Programming options

When programming the database, there are a few cases where you can make a choice. Plan this carefully to suit your plant!

#### • Bind or poll a signal?

There are two ways to, via SNVT, communicate between the TAC Xenta 511 and a LonWorks unit:

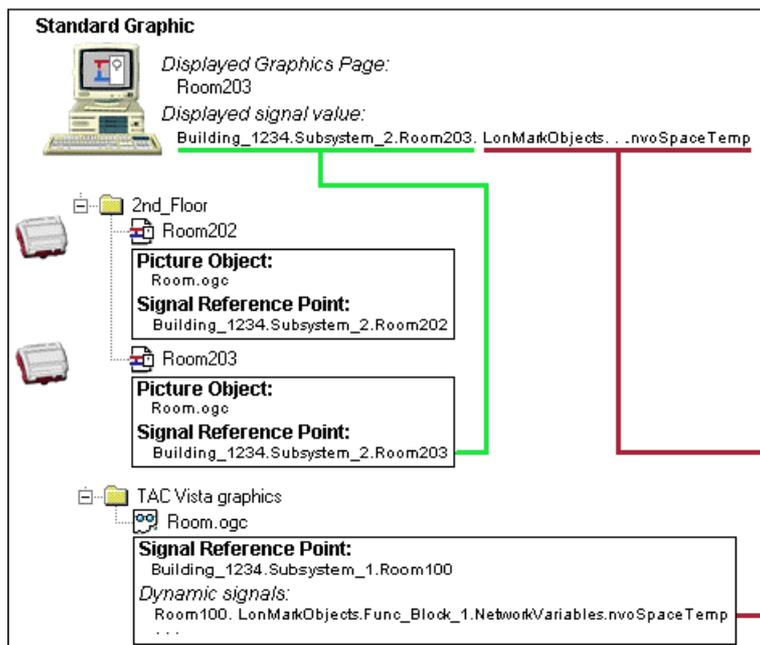
- **Poll**, i.e. the TAC Xenta 511 will ask for the signal value when it is needed.
- **Bind**, i.e. to create a binding between a signal in the LonWorks unit and a signal in the TAC Xenta 511. When binding you also define how often the value shall be sent, if it shall be sent at a status change etc. To be able to bind, you must first create a signal to bind to in the TAC Xenta 511.

Signals that only shall be used for presentation in a Values page or a Graphics page should be polled. There is no need to ask for the value if it is not being displayed.

Alarm and trendlog signals can either be polled or bound. The advantage with binding is that the network traffic can be reduced, since the value is sent only at a status change. The disadvantage is that the programming time will be longer. We recommend that you bind alarm and trendlog signals.

#### • Standard graphics

When a plant consists of several identical apartments, rums or HVAC units, you can use the same standard graphic for several web pages. Signals from different LonWorks units are then linked to the different pages.



Do as follows:

1. Create the graphic. The dynamic presentations shall be linked to existing signals (for example 'Building\_1234.Subsystem\_1.Room100...nvoSpaceTemp') in a **LonWorks network** node in the configuration database. Save the graphic in **TAC Vista graphics**.
2. Use **Edit References** to select the upper part of the signal reference to be replaced when displaying the graphic, e.g. 'Building\_1234.Subsystem\_1.Room100'
3. Create the Graphics pages and link the graphic to all of them. Define via **Select signal reference point** a new upper part of the signal reference, e.g. 'Building\_1234.Subsystem\_2.Room203', for each Graphics page. This will result in a display of the 'Building\_1234.Subsystem\_2.Room203...nvoSpaceTemp' value in one of the Graphics pages, and the 'Building\_1234.Subsystem\_2.Room202...nvoSpaceTemp' value in another.

### • **Adjustments outside the WebTool**

It is possible to do a lot of adjustments and additions to the website outside the WebTool. However, it is not recommended to do too much.

Primarily, the following adjustments are possible:

- If needed, create your own HTML pages and put them in **User TargetImage**. Typical examples are a page with some simple information from TAC or from the system manager, or a page with all external links. Use **intro.html** (included in the WebTool installation) as template.  
NB – To place the HTML page on its place in the list of contents, just put it in the correct folder under **User TargetImage**.
- Create a plant specific first page by adding the customer's logotype and/or a plant photo on the first displayed page, **www/index/intro.html**. Max. recommended image size is 400 \* 400 pixels. A template page with a "pre-linked" plant photo (**main.jpg**) is included (in the **Templates** folder) in the WebTool installation. Put the linked images in the same folder as the HTML page.

Other adjustments should only be done on a specific customer requirement!

The TAC logotype in the Contents frame can be replaced by editing the **www/index/TACMenu.html** page. NB: max. image width 130 pixels is recommended, and that a link to [www.tac.se](http://www.tac.se) is included.

The page templates in the **index** project folder can be customized in a HTML editor.

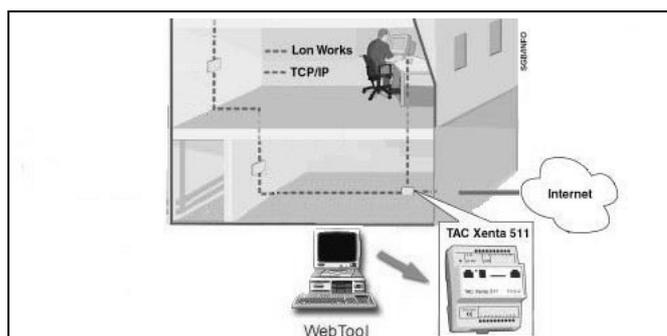
Font type, size, colours etc. can be changed. NB: the template **index/css/tac\_style.css** is being used.

### 3.3.3. Updating the LNS database, binding and installation

1. Enter the Network Management software again, add the TAC Xenta 511 (and its XIF file) on its place in the network (the same name and location as in the TAC Xenta 511 configuration database) and do all bindings, Cf. the appendix and "TAC Xenta and LonMaker for Windows".  
NB: You must from now on update the LNS database whenever the TAC Xenta 511 object (the XIF file) in the configuration database is altered. Then, do **Replace**, select **Load XIF** the updated XIF file and enter a new *Template Name*.
2. Now the LNS database can be sent to the units on the LonWorks network: Install the physical units.

Note that the LNS database only have to be present when altering the configuration database. It is not needed when working with the configuration database without adding or removing signals, e.g. when changing the web pages structure.

## 3.4. Installation of TAC Xenta 511



### 3.4.1. Installation and configuration

1. Check that you have got IP address etc. from the customer!
2. Install the TAC Xenta 511 electrically.
3. Connect the PC to the serial port (RS232B) of TAC Xenta 511 and start the terminal emulator e.g. the Windows Hyperterminal.
4. Log in (**root/root**), enter via **setip** the IP address and the local name of the TAC Xenta 511, change the password and **restart**.
5. Connect the TAC Xenta 511 to the IP network via the 10Base-T port.
6. Connect the PC to the IP network, enter the IP address of TAC Xenta 511 in the web browser and check that you can log in.
7. Send the database to TAC Xenta 511 by starting the WebTool and selecting **Project – Send to target**. You do not have to log in, since the IP address, the user ID and the password are included in the **Project settings**.

NB: You are loading the contents of the "target image" folder in the following order:

- 1) If *Send to target mode* "Replace web site" or "Replace all" is selected under **Tools – Options – TAC Xenta 511**, the existing contents of the website will first be erased.
- 2) The contents of the **TargetImage** folder (i.e. web pages generated by WebTool) will be copied to TAC Xenta 511.
- 3) The contents of the **UserTargetImage** folder (adjustments outside the WebTool) will be copied to TAC Xenta 511. Note that files with the same name will be over-written.

8. Set date and time etc. via the Configuration menu. Use the terminal emulator to enter users (see 3.4.3 User authority levels). *System utilities* can be used for trouble-shooting. NB: To be able to send alarms via e-mail, the TAC Xenta 511 must be connected to a mail server (defined via *Outgoing Mail Server 1* in the **Configuration – Network – SMTP** menu) and have an e-mail account (set up by the customer's IT department).

### 3.4.2. User authority levels

The levels of authority are controlled by some simple rules:

- A user can be given read and/or write authority to one or several folders (including all its sub folders and files) in the TAC Xenta 511 file system. The user with read authority to **/www/info** can thus see all web pages, but the user with read authority to **/www/info/building\_1234/room103** only can see the web pages under room103.
- A user can belong to one or several groups, which also have read and/or write authority to one or several folders.
- The list of contents is dynamic. When the user logs in, the list of contents will only contain the folders, which the user has authority to read.
- There are three pre-defined user profiles in the system. These are:

| <i>User profile</i>              | <i>Description</i>  |
|----------------------------------|---|
| System administrator (root/root) | There can only be one system administrator with full access to the complete system, and he must be named "root". Do not forget to change this password. |
| Operator                         | Has read/write access in parts of the system, but is not allowed to do network configuration or user administration.                                    |
| Web user                         | Does only have access to a small part of the system.  |

- To be able to execute a function (view the list of contents, view the online help, run a viewer etc.), the user must also have authority to the folder where the function is located. The authority can be set manually, but it is easier to copy the pre-defined user profiles.

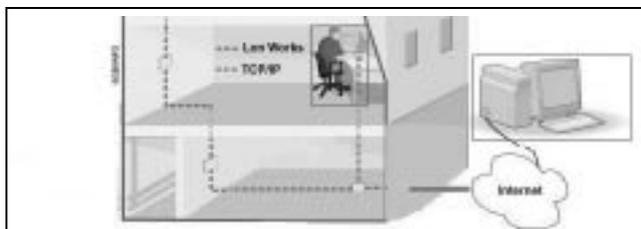
- It is suitable to add a few users with different levels of authority. To set the levels of authority, the following commands shall be used in the terminal emulator:

| <i>Command</i>    | <i>Function</i>   |
|-------------------|---|
| <i>copyuser</i>   | Copy an existing user, enter a new user and password  |
| <i>addgroup</i>   | Create a user group, enter read authority for one folder and write authority for one folder         |
| <i>addtogroup</i> | Add a user to a group   |
| <i>luser</i>      | List all users, including to which groups they belong   |
| <i>lgroup</i>     | List all groups, including which users  |
| <i>adduser</i>    | Create a new user, enter read authority for one folder, write authority for one folder and password |
| <i>renameuser</i> | Alter the user name of an existing user   |
| <i>passwd</i>     | Change password. Each user can change his own password, the system administrator can change all     |

To add a user:

1. Create a user group for each interesting web page folder (**AHU01** for /www/info/building\_1234/AHU01, **Room103** for /www/info/building\_1234/room103 etc.) and one user group for each of the required functions.
2. Create a new user (copy an existing) and define his/hers password.
3. Add the user to all groups for folders he/she shall belong to.

## 3.5. The web browser



The web browser is installed by the user (or by the customer's IT department). When commissioning it is important to check:

- The installation and the website works from any web browser.
- The customer shall get information about network requirements, how to install, etc.

### 3.5.1. Requirements

To display the website, the web browser must to support the following standards;

- HTML 3.2
- Java 1.1
- Java script 1.0
- JVM 3192 or later (Microsoft)

TAC Xenta 511 is optimised for the following web browsers:

- Netscape Navigator version 4.05 or higher.
- Microsoft Internet Explorer version 4.0 or higher.

TAC Xenta 511 does **not** support Sun Java plug-ins.

Minimum hardware requirement is Pentium 133 MHz and 64 MB RAM. The recommendation is Pentium 200 MHz and 96 MB RAM.

### 3.6. Trouble-shooting

| <i>Error</i>  | <i>Possible reason/Action</i>   |
|---|---|
| No contact with TAC Xenta 511 via the intranet/Internet   | Check the following: <ul style="list-style-type: none"> <li>- The Ethernet cable is connected to port <b>10Base-T</b></li> <li>- Power supply</li> <li>- IP address, Subnet mask, Default Gateway (=Router address)</li> <li>- The status indicator (top right in the web browser) that normally displays <b>Logged in/Logged out</b> can display <b>Error</b> or <b>Fail-safe</b> at an error.</li> </ul> Use the terminal emulator to read the System Error log file (in the folder <b>sys/err</b> ). |
| How do I know which TAC Xenta 511 that I am connected to? | Ping the unit (C:\> <i>ping IP address</i> ), which shall answer.   |
| Other errors  | There are several hints in the online help under 'Trouble-shooting' and 'FAQ'.  |

## ***Appendix: LonWorks network with TAC Xenta 511***

This appendix contains a short checklist for how to install a LonWorks network including a TAC Xenta 511, for more details please refer to the manual 'TAC Xenta and LonMaker for Windows'

When working with the LonMaker: Take frequent back-ups of the LNS database and the drawing library!

### **• Check-list: New Network**

1. Use LonMaker to create an LNS network database and LonMaker drawings.
2. Define Network properties, Channels, Routers and Subsystems.
3. Add units to the drawing: TAC Xenta 100 units have complete 'Shapes' and in some cases Plug-ins to help define all properties.
4. TAC Xenta 300/401 and 901 are devices that use generic LonMaker Templates.
5. TAC Xenta 400 I/O modules and TAC Xenta OP have complete Shapes.
6. Enter available Neuron IDs and/or 'Location String' to facilitate the commissioning.
7. Perform bindings between:
  - Virtual Function blocks for the TAC Xenta Group members
  - Function blocks for the Network Variables (SNVT).
8. Start the TAC WebTool and import the LNS database.
9. Define the TAC Xenta 511 properties and create the web site. Use TAC WebTool to generate a XIF file for the TAC Xenta 511 and a 'target image' of the web site. Update ('Send to target') the TAC Xenta 511.
10. Enter the LonMaker again, add the TAC Xenta 511 and its XIF file to its place in the network, and perform the remaining bindings.
11. Attach ('Network Attached') the commissioning PC to a suitable channel.
12. Identify routers and assign Router properties (possibly as 'Repeaters' if not yet available).

13. Identify and commission devices by using the Service Pin, the Neuron ID or the more general 'Discover Devices' method.
14. Take care of any required special actions for the TAC Xenta units, such as Group addresses, XIF-files and program IDs, I/O modules, TAC Xenta OPs and Configured/Unconfigured TAC Xenta 100 units.
15. If applicable, redefine Routers as 'Learning' or 'Configured'.

• ***Check-list: Updating a Network***

1. Use TAC Menta to change and download the TAC Xenta 300/401 application program. Make sure that you only **add** new SNVTs; do not remove or rename any existing SNVTs.
2. Start LonMaker and perform a 'Replace' on the selected TAC Xenta unit. Import the new XIF file, generated by TAC Menta, and give the 'Device Template' a new name. Select Manual enter of the Neuron ID and let it be the same as before.
3. Start the TAC WebTool and drag-and-drop the changed unit to its defined place.
4. Add the new SNVTs to the TAC Xenta 511.
5. Use WebTool to generate a new XIF file for the TAC Xenta 511 and a new 'target image' of the web site. Update ('Send to target') the TAC Xenta 511.
6. Enter the LonMaker again and perform a 'Replace' of the TAC Xenta 511. Import the new XIF file, generated by TAC WebTool, and give the 'Device Template' a new name. Select Manual enter of the Neuron ID and let it be the same as before. Perform the remaining bindings.

# Index

## **B**

Bind a signal 23

## **C**

Checklist;

    LonWorks network with TAC Xenta 511 29

Configuration of Microsoft Internet Explorer 15

Control units 18

Customer adjustments 14, 24

## **H**

How to work 12, 20

## **I**

Installation of TAC Vista Webstation Client 16

Installation of TAC Vista Webstation Server 9

Installation of TAC Xenta 511 25, 29

## **L**

LNS database 20, 25

Load the TAC Vista Webstation Client 16

LonWorks network 18, 29

## **P**

Planning 17

Poll a signal 23

Programming options 23

Programming the application 18

Programming the TAC Xenta 511 database 19

Programming the website 11, 20

## **R**

Requirements 8, 15, 27

## **S**

Setup 8, 9, 15, 24

Standard graphics 23

## **T**

TAC Vista 8

TAC Vista WebStation 7

TAC WebTool 13, 19

TAC Xenta 511 17

Trouble-shooting 16, 28

## **U**

User authorities 26

## **W**

Web browser 14, 27







**Head office**  
Sweden  
(46) 40 38 68 50

Finland  
(358) 9 584 25 00

UK, Ireland  
(44) 1582 81 67 00

Poland  
(48) 58 621 01 06

Singapore  
(65) 748 23 93

For more information, come  
and visit us on the Web at:

**Subsidiaries**  
Denmark  
(45) 44 88 12 12

Germany, Austria,  
Switzerland  
(45) 44 88 12 12

Norway  
(47) 23 24 40 00

Russia  
(7) 095 737 02 26

Sweden  
(46) 8 685 11 00

**www.tac.se**



TAC develops, manufactures and markets system solutions, products and software for the control and supervision of building services systems via open integrated systems, intended for use by customers looking for optimum indoor comfort, safety and operating costs. TAC has about 1000 employees, with subsidiary companies in the Nordic countries, the UK, Germany, Poland and Singapore, complemented by partners in more than 40 other countries.

