COMPAQ

Software Product Description

DESCRIPTION

TeMIP is a set of products for the management of telecommunications and corporate networks, including fixed wire and mobile/cellular voice and data, multivendor, multi-technology networks. TeMIP is built on top of the TeMIP Framework, and fully benefits from the object oriented and truly distributed software architecture.

TeMIP offers a high degree of openness and adherence to standards, supporting the International Standards Organization (ISO) management standards ISO 10164-x and 10165-x, and the TeleManagement Forum (TMF) component, system and ensemble sets. TeMIP and its features are applicable in the context of the International Telephone Union-Telecommunication Standards (ITU-T) X.73x. In addition, TeMIP complies with the Telecommunication Management Network (TMN) M.3010, M3100 Recommendations.

TeMIP integrates multiple management domains to provide complete network and service management facilities that include traffic monitoring, performance, transmission, SS7 and mobile management in infrastructures such as Switching, Data, IP and Broadband networks.

TeMIP gives network operators a global view of their networks, and enables them to activate management functions and operations from single or multiple workstations.

As part of the current product set, TeMIP is now delivering comprehensive off-the-shelf fault management client applications running in the Windows NT environment. These applications provide Map Viewing, Real-Time Alarm Handling, Alarm History and Trouble Ticketing functions that can aid the prediction, identification and resolution of failures in a telecommunications network before they impact services. These client applications run in an integrated environment known as the TeMIP Desktop, refer to the section "TeMIP Desktop" for further details.

The TeMIP MapViewer for Windows NT is an application that uses technology allowing a remote PC client Graphical User Interface (GUI) to access TeMIP services through a distributed Client-Server system, running under the Windows NT Operating System. The TeMIP MapViewer provides presentation capabilities with the familiar look and feel of Windows applications.

A MapEditor is available that enables you to create and edit Maps, add entities as Map Items, create an entity hierarchy, add geographical maps or other backdrops and so on… Map Items can consist of symbols (created using the SymbolEditor), entity icons, connectors, text, or other items for display in a Map. The MapEditor can also be used for color customization of lines and texts.

A SymbolEditor is also available that provides users with the ability to create, modify, or delete symbols and add them to a palette (a saved library) for retrieval and re-use later. The SymbolEditor provides standard graphical objects such as polylines, rectangles, circles and so on, and color capability is included. The SymbolEditor can also be used to define and test dynamic properties associated with a symbol that govern its behavior.

TeMIP Desktop

The TeMIP Desktop is an application container that allows you to create and display Maps, Real-time Alarm Handling, Alarm History and Trouble Ticketing Views in the same working area.

For details of TeMIP Alarm Handling/History for Windows NT, refer to the Software Product Description (SPD 70.64.xx) and for details of Clarify Liaison Trouble Ticketing refer to the Software Product Description (SPD 70.86.xx).

The TeMIP Desktop provides common services to the client applications such as a message console, an external launch facility, pull-down menus providing management functions and customization possibilities.

When the TeMIP Desktop has been optimized for a particular task or way of working, the configuration that has been created can be saved so that the same configuration can be applied at some other time, or in another session. The options saved are known as the user TeMIP Desktop. Only one saved user TeMIP Desktop can be active at any one time, but several TeMIP Client processes can operate concurrently, each displaying a different user TeMIP Desktop.

Specific customizations that can be carried out in the TeMIP Desktop are:

- Integrated applications can be added to or removed from the TeMIP Desktop environment.

- The user can set the colors that reflect the different levels of alarm severity. The color can apply to some fields or to the entire row in an alarm list and to Map Item decoration.

- Any view in the TeMIP Desktop can be moved inside or outside of the main window (for example, by docking toolbars or frames).

- Sound can be enabled or disabled.

- Help can be displayed on a default external browser.

- An exit box can be displayed when exiting an application.

Management Views

Management Views run in the TeMIP Desktop and enable users to select, perform, and view the results of management operations on a selected entity or entities. Management Views can be used, for example, to display or set entity attributes or to create entities with the relevant arguments for display in a Map. Management Views form an integral part of the overall management system, enabling the operator to intervene and take action when necessary. As with Maps, several different Management Views can be displayed simultaneously and the following customizations can be carried out:

- Enable an automatic Show command.

- Hide success and failure messages sent to the console.

- Automatically hide the input area if there is no argument.

- Automatically hide the output area. If the operation is unsuccessful, a message is displayed in the console.

- Make selected attribute fields visible or invisible in the window.

- Change the order in which the attribute fields are displayed in the window.

Message Console

Some of the activities performed in the TeMIP Desktop generate messages. These are displayed in the Message Console. When a message is posted to the Console for display it is prefixed with an icon identifying the severity and content of the message, and the date and time when the message was created.

Maps

A Map is a representation of the network topology, defined using an entity model. A Map represents a particular portion of a managed network and occupies a specific place in the overall hierarchy. A Map normally consists of Map Items that represent your network elements and a Backdrop that could be for example, the Map of a given country or the Map of a building.

Maps display the network structure based on criteria defined by the user when the entity model is created. This could be based on, for example, a building, equipment type or geography. Maps contain Map Items such as TeMIP entities, both global and child, or pure graphical objects. Maps can be organized into a hierarchical tree that represents the entity hierarchy for a given set of Maps.

Multiple window support allows Maps to be displayed in several different windows at the same time, each with a different Map of the overall management environment.

Maps provide a detailed picture of the alarms received for any entity, provided that the Alarm Handling module is loaded. The alarm information is conveyed by means of dynamic properties that can, for example, change an object's color, cause it to blink or display an information box. Any icon or graphical object that represents an entity can have dynamic attributes, which can represent its own severity occurrences, its child severity occurrences or its Sub Map severity occurrences. A change in severity of a given Map Item produces a color change, with the color representing the highest severity of the alarm(s) received. The user can customize color values.

A Map can, therefore, reflect the state of the alarms maintained in a loaded Real Time Alarm Handling View. Map alarm notification is enabled on demand using the "Enable Map Notification" function. Note that the result of the map notification is independent of an active filter in the real time view.

Maps can contain other Maps, Map Items and **Short Cuts**. A Map contained within another Map can be a **Top Map**, a **Sub Map**, a **Transient Map** or a **Default Map**. A Sub Map or Transient Map could be used, for example, to display a rack or shelf.

- Short Cuts provide a means to navigate quickly between two Maps. Short Cuts are not displayed in the tree view hierarchy.

- Top Maps and Sub Maps are displayed in the tree view hierarchy.

- A Transient Map is not displayed in the tree view since it does not form part of the hierarchy. A Transient Map is an "on demand" view that can be opened or closed when the Operator requires it. A Transient Map is useful for performance reasons, especially in the case of large hierarchies, since it is only loaded when required. A Map Item that has a Transient Map associated with it does not receive Sub Map severity change notifications (only Own and Child notifications).

- A Default Map is a specific sort of Transient Map that displays the child entities of a selected entity, if a Sub Map does not exist. A Default Map is created dynamically.

Maps also consist of layers and can have filters applied to them that determine which Map Items are displayed when a given filter is applied, see "Map Layers" and "Map Filters" for further details.

Maps can be created using the MapEditor and SymbolEditor components of the TeMIP Client V4.1, see the sections "TeMIP MAP EDITOR" and "TeMIP SYMBOL EDITOR" for further details.

Map Items

Map Items are the objects displayed in a Map and can be created using the Map Editor, other editors, or by migration of existing Maps using conversion utilities.

There are three types of Map Item:

- Nodes (normally symbol instances created by the SymbolEditor)

- Basic Graphics (polylines, circles, lines, rectangles…) for compatibility with the UNIX version of TeMIP

- Connectors (graphical links between two or more Map Items).

Map Items are normally graphical objects associated with TeMIP data, although not necessarily representing TeMIP entities. Map Items that do not represent TeMIP entities can be Short Cuts, URLs or simple graphical objects. In addition, Map Items that are not TeMIP entities can be added to a Map to depict planned changes to the network as it expands. An entity association can be made later when the new equipment is added to the network.

Map Items reflect changes in the network based on incoming alarm information. If, for example, the network topology is geographically based, a Map can help the operator to find the geographical location of a problem and then descend the hierarchy to find the faulty equipment itself. In this way an operator can monitor changes in the network as they happen and take action to remedy faults as soon as they occur.

Map Items reflect these changes through their associated dynamic properties, which can be set using the Map Editor. Once created, external applications can pilot the Map Item's properties and states. The dynamic properties are variables used in a script that define the behavior of the Map Item according to the value of the variables. A value change for a given variable drives the display of its associated graphical representation (for example, it could start blinking).

One of the principle uses of the dynamic properties is to drive alarm severity changes in the Map Viewer. Alarm information is conveyed by means of object color, display of an information box or by blinking that draws the operator's attention and helps to identify the source of a problem. For example, new alarms on child entities could produce a blinking, shaded area around the parent entity symbol. The color of the shading shows the highest severity of the alarm(s). Color changes, blinking or display of information boxes are also used to differentiate between new and pending alarms and are controlled by the dynamic properties of a given Map Item.

If an operator double clicks on a Map Item in a Map, the Map hierarchy is revealed as follows:

- If the Map Item is associated with a Sub Map, the Sub Map is loaded. The Map Item can reflect its own, child and Sub Map severity changes.

- If the Map Item is associated with a Transient Map, the Transient Map is loaded. The Map Item can reflect only its own and child severity changes.

- If the Map Item is a Short Cut to a Map in the current hierarchy, the Map is loaded. If the Map Item is a Short Cut to a Map in another hierarchy, the Map is loaded in a new Map Window. Map Items corresponding with a Short Cut cannot reflect

severity changes of Map Items in the associated Map.

- If the Map Item has no associated Map and no Short Cut and the Map Item represents a TeMIP entity, the Default Map is loaded, otherwise a message is displayed. The Map Item can reflect its own and child severity changes.

Map Layers

Map Layers consist of individual slices through a Map. Layers provide a method of cutting a single Map into several slices each containing specific Map Items. Layers are stacked one on top of another and provide a view through the whole Map at various levels of detail. The user can set the stacking order of the layers and one or more layers can be displayed at any time, in any combination.

Layers can be set up in such a way that more and more details are revealed each time a **zoom in** is carried out. For example, the top layer of a given Map could display the cells of a mobile network covering the Paris region. By zooming in on a given cell, a second layer could be revealed displaying a street map of the part of Paris covered by this cell. A third layer could display the street and building where the antenna allocated to this area is housed. Note that the three layers in this example belong to the same Map; you do not descend the hierarchy using this feature.

Map Layers can be represented by:

- Backdrop Layers

    or

- Map Item Layers

Backdrop Layers are normally vector drawings or bitmaps. A Backdrop Layer can contain other graphical objects such as lines, circles, rectangles, arrows, text, polylines, bitmaps… Note, however, that Backdrop Layers do not exhibit behavioral changes and can never be combined with Map Item Layers: they are static objects.

Map Item Layers contain dynamic Map Items that can appear in one or more layers, and can therefore, appear or disappear according to the layer displayed. The position of the Map Items in a layer can be set using the co-ordinate boxes of the Map Item Properties window.

The Map Items contained in a Map Item Layer can exhibit behavioral changes controlled by dynamic properties defined when the symbol representing the Map Item is created. They are dynamic objects created

by the Symbol Editor and built into a Map as Map Item instances using the Map Editor.

Map Filters

Filters applied to Map Items provide another way to refine a Map display. Filters can be applied to selected Map Items so that only those items are displayed when the filter is activated. Filters work across layers and display only those Map Items defined in the filter.

For example, if a Map contains a number of SNMP entities, a layer to represent each type of SNMP entity could be created along with a set of filters containing the SNMP entities allocated to each geographical area. By correct usage of the layers and filters, only the selected SNMP entities in selected geographical areas could be displayed.

TeMIP MAPVIEWER

The TeMIP MapViewer is a GUI running on Windows NT that allows the display and visualization of Maps. The TeMIP MapViewer is integrated into the TeMIP Desktop and adds specific presentation capabilities as well as language localization. The MapViewer can be run in the TeMIP Desktop alone or together with other integrated applications such as Alarm Handling/History and Clarify Liaison Trouble Ticketing.

The MapViewer provides consistent views and interactions with the management system, regardless of the network elements managed or the protocol used to manage them.

The MapViewer GUI provides a high quality display on which the TeMIP Fault Management operations can be performed quickly and easily through multiple windows, Map representations of the network, pull-down menu commands, menu-driven selections, and a comprehensive set of user commands. Pushbuttons are used for the more common operations and other operations are accessible using pop-up menu commands.

The MapViewer assists Operators in the day-to-day administration of the network, and in the speedy location and identification of faulty network elements.

Figure 1 shows a Map with its associated Tree View, Message Console and Layers, Filters and Properties window.

Figure 1 TeMIP Desktop Displaying a Map
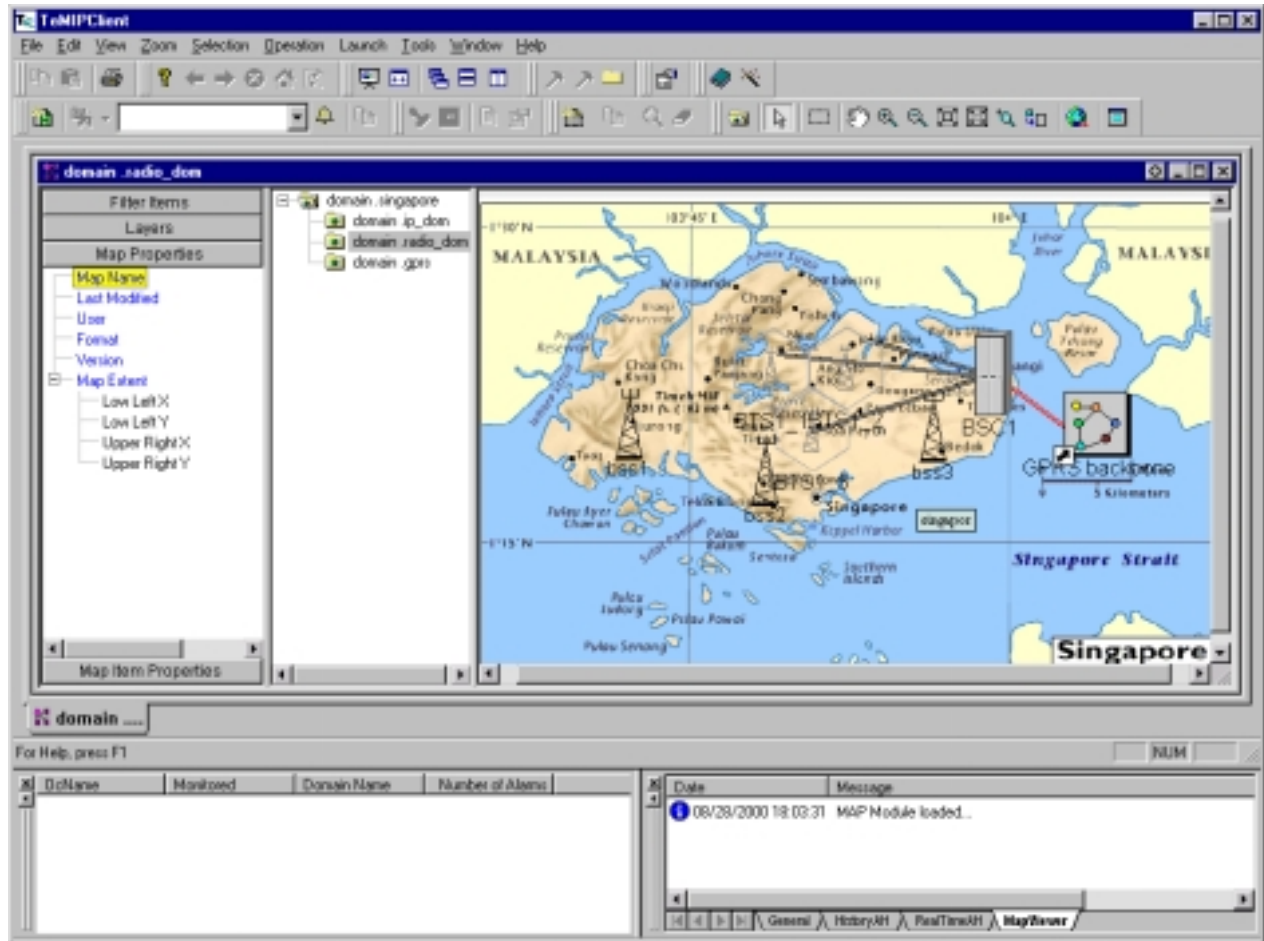
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MapViewer Features

The MapViewer provides presentation features that include:

- Maps that display the contents of a managed environment using symbols to represent entities as Map Items, along with their subordinate or child objects. Users can select the Map Items that represent the managed objects (both entities and sub-entities) and initiate management operations from a Map. Maps are opened using the "Open Map" menu entry, which displays a dialog box. In this box, Top or Sub Maps can be selected for display. First, the tree view is displayed and then the Map is loaded.

- A Map Layer feature that allows individual Maps to be subdivided into layers that can, for example, cause Map Items to appear or disappear when a **zoom in/zoom out** operation is carried out. More details about layers are given in the section "Map Layers".

- A Map Filter feature that enables users to define and save filters that can be recalled at any time. Filters can be applied to Maps to display only those Map Items that match a given filter. Filters are defined using the MapEditor and apply only to the Map in which they were defined. Note that filters apply across layers. More details about filters are given in the section "Map Filters".

- Map and Map Item properties that can be displayed in the right-hand side of the Map window and which provide details concerning the Map displayed or a Map Item within a view.

- TeMIP entities can be displayed as TeMIP Synonyms. This feature provides a facility offering a platform wide instance naming alternative, including user friendly names, support of alternate identifiers and naming issues for SNMP, OSI and CORBA. The synonym service allows a TeMIP application to associate a synonym of a given type with an Entity Specification.

- Navigation within a Map and through its hierarchy that can be carried out in several ways:

  − Using a Navigation box and ViewPort window that enable users to view an entire network configuration map at one time. With the ViewPort feature, users can navigate to, zoom in, and select a particular portion of the total network environment to display in detail in the Map window.

  − Using a "Grabber Tool" to pan the complete Map by clicking on the Map and dragging it to a new position.

  − Using the Zoom In/Zoom Out feature to reveal/hide the Map Layers.

  − Using the scroll bars.

  − Using Short Cuts that provide navigational accelerators (links) between Maps.

  − Using the double-click on a Map Item to display the associated Map, Transient Map or Default Map.

  − Using the Tree View in the Map window.

  − Using the Forward/Back buttons to move to the preceding or following Map without opening a new window.

  − Using the tabs to switch between different open Maps.

- A Default Map that can display all the possible child entities of a selected entity. This view can be displayed by holding down the *Ctrl* button and double-clicking on a TeMIP entity. In turn, by double-clicking on one of the child entities displayed, all the individual instances of it can be displayed.

- Display of Associated Alarms in the real-time Alarm Handling View by selecting an entity in the Map and then selecting the "Display Associated Alarms" option.

- Launching of external applications through a pull-down menu in the Map window.

- An external CORBA interface providing TeMIP Desktop, MapViewer and Management View services by means of a customer-defined application. Functions such as, Get Severity Colors, Open Map, Get Selected Entities, Open Management View… are available.

- A "Find Entity" option that searches through the complete hierarchy to find and display all instances of a given entity. This feature is available directly from the MapViewer or by means of a customer-defined application using the external CORBA services.

- Map printing capabilities using a standard print dialog box. The complete Map can be printed out or printed to file using standard NT print options.

- Drag and Drop - You can drag entities from Maps and drop them into the following destinations:

  − Filter Pattern Tree - drag and drop an entity from a Map into the Alarm Handling Filter Pattern Tree to create or modify a filter definition.

  − Management View - drag and drop one or more entities into one or more Management Views.

  − Text editor - drag and drop an entity into a text editor. This dumps entity information in text format that can be printed out or forwarded to someone else.

- Display Options - The user can change the display options of the different windows. These options can be set by a mouse click on the required option in a way that is similar to any other NT application. The following are examples of settable options:

  − Selection of Advanced mode to display an information box containing text next to a Map Item instead of making it blink.

  − Automatic reload of a Map, if edited by somebody else.

  − Display or not of the Tree and Navigation Views.

  − Limit the navigation history to a specific number of Maps.

  − Change the "double-click" behavior to open a Map in the current window or a new window.

  − Enable or disable New/Pending alarm visibility.

- Other features such as:

  - Graphical object tooltips that identify the function of an icon by displaying a text box when the pointer is placed over it.

  - Copy/Paste of entities into Management Views

  - Multi-entity selection using the *Ctrl* button plus a click on more than one entity

  - Rubber banding (or rectangular) selection of entities allowing multi-entity selection in one operation

  - Support of multiline text objects

  - A TeMIP to Web Browser interface, which provides online context-sensitive help in HTML format

  - Full screen TeMIP Desktop View using a toggle button.

TeMIP MAP EDITOR

The TeMIP MapEditor is a Graphics Editor running on Windows NT that allows you to create, edit and display Maps, define Map Item behavior and collaborate with server side applications. The TeMIP MapEditor can be used to create new Maps or modify and save existing ones and then display them in the TeMIP Desktop.

The MapEditor enables you to build a hierarchy of Maps representing your network topology and create Map Layers and Map Filters to display the Map Items in the way you want. A Map consists of a number of Map Layers and each Map Layer contains Map Items. Filters can be applied to any Map Item in any Layer.

Figure 2 illustrates an example of the MapEditor Window showing a Map under construction. The layer structure is shown in the window to the right and the palette of predefined symbols is displayed below.

Figure 2 MapEditor Main Window
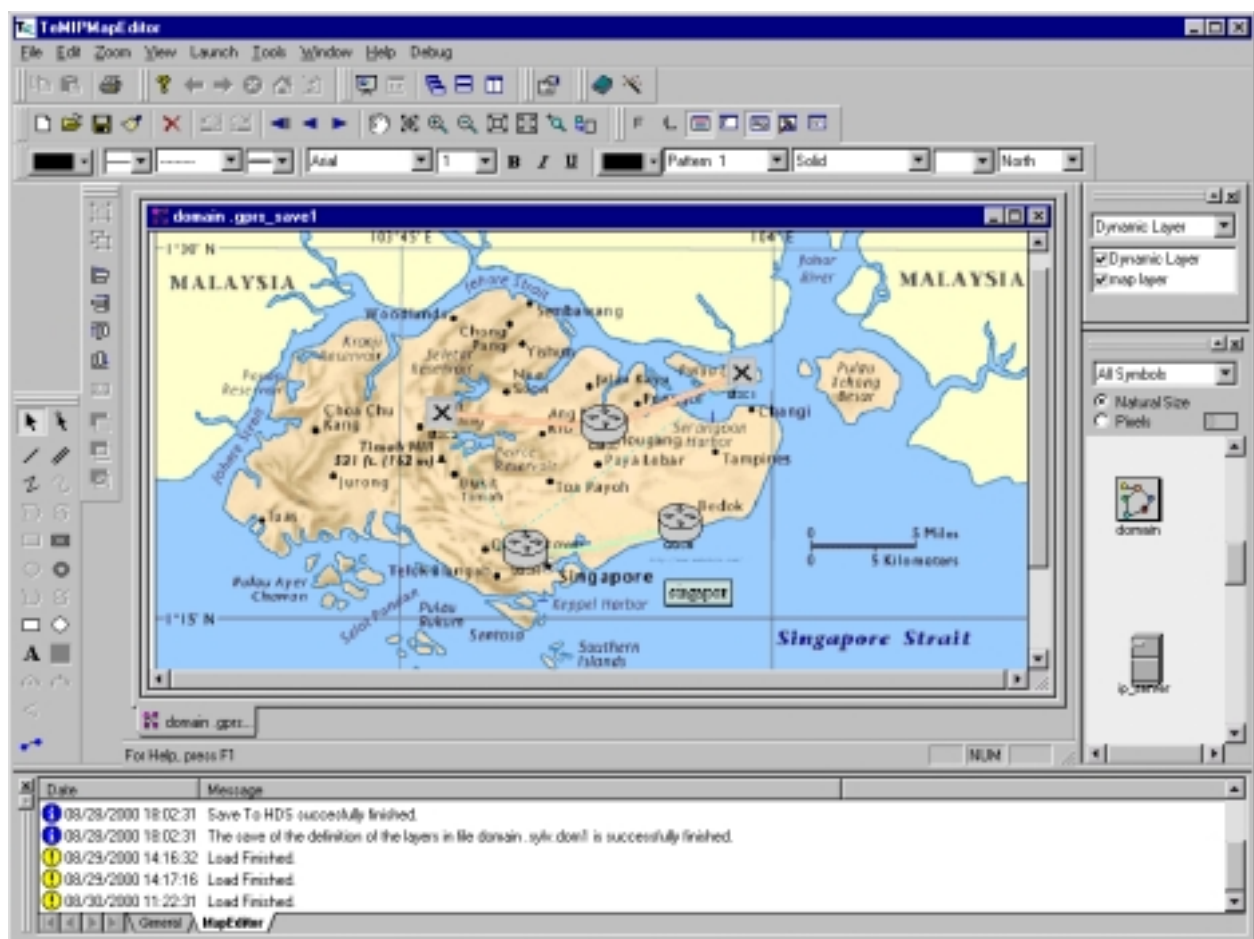
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MapEditor Features

The MapEditor provides features that include:

- Creation of a Map hierarchy.

- Creation of Map Items, Map Layers and Map Filters.

- Definition of TeMIP entity properties.

- Editing/Saving of new or existing Maps.

- Changing the properties of graphics.

- A drawing toolbar that provides standard graphics such as Circles, Polylines. Rectangles…

- Extended graphics (dynamic layers only) to enhance drawing capabilities, and connectors to connect two objects.

- Importation of external .BMP files for use as backdrops. (Standard tools are available in the public domain to convert .GIF, .JPG and existing X/Motif Maps to .BMP).

- Display of a grid as a design aid.

- Standard "handles" displayed when an object is selected, enabling resizing/moving of the object.

- Navigation within a Map under construction that can be carried out in several ways:

  - Using a "Grabber Tool" to pan the complete Map by clicking on the Map and dragging it to a new position.

  - Using the Zoom In/Zoom Out feature to reveal/hide the Map layers.

  - Using the scroll bars.

  - Using Short Cuts that provide navigational accelerators (links) between Maps.

  - Using the double-click on a Map Item to display the associated Map, Transient Map or Default Map.

- Map printing capabilities using a standard print dialog box. The complete Map can be printed out or printed to file using standard NT print options.

- Drag and Drop - You can drag and drop entities from other windows into the MapEditor. Entities can also be dragged from Maps under construction and dropped into the following destinations:

  - Management View - drag and drop one or more entities into one or more Management Views.

  - Text editor - drag and drop an entity into a text editor. This dumps entity information in text format that can be printed out or forwarded to someone else.

- Customization - The user can set a number of options that control the way in which the MapEditor functions. These options can be set using the *Options…* dialog box and include:

  - General - blinking selection handles, undo/redo stack size…

  - Grid - size, divisions, color…

  - Snap and Point Mode - two different ways to pick points when building objects.

  - Zoom - set zoom limit, set pan percent, set zoom percent…

  - Crop Mode - crops the map (or not) when resizing the window, depending on the setting.

  - Cancel - undoes the current settings and returns the MapEditor to its initial appearance.

  - OK - makes the current settings the default for the rest of this session and closes the dialog box.

- Other features such as:

  - Graphical object tooltips that identify the function of an icon by displaying a text box when the pointer is placed over it.

  - Standard editing functions, such as Cut/ Copy/Paste/Duplicate/Group/Undo/Stacking Order…

  - Multi-entity selection using the *Select All* option or the *Ctrl* button plus a click on more than one entity.

  - Rubber banding (or rectangular) selection of entities allowing multi-entity selection.

  - Support of multiline text objects.

  - A TeMIP to Web Browser interface, which provides online context-sensitive help in HTML format.

  - Full screen view using a toggle button.

TeMIP SYMBOL EDITOR

The TeMIP SymbolEditor is a tool that has been developed to create symbols for display in the MapViewer running in the TeMIP Desktop environment of a TeMIP client. The created symbols can represent static or dynamic objects.

The SymbolEditor is a Graphics Editor running on Windows NT that allows Network Administrators to create, edit, test and display symbols and submodels, define their dynamic properties, and collaborate with server side applications. The SymbolEditor can be used to create new symbols or modify and save existing ones onto a "palette" for use later by the MapEditor. A set of default symbols and some submodels are provided.

The SymbolEditor provides a high degree of freedom, so that symbols can be defined in any way you want. Any combination of dynamic properties can be attributed to symbols built from scratch, which can then be saved together with the symbol.

The symbols created can be used to represent Map Items that suit specific network requirements, and in the case of dynamic objects, drive the representation of the displayed symbols. The dynamic properties specify a change in the appearance of an object in response to a change in its dynamic property values. Changing the dynamic properties changes the way the object is displayed, for example, it could change color, blink, display an information box containing text…

The dynamic properties can be changed by the MapViewer at runtime or by a change in the values allocated to a given symbol when it is created or modified.

To simplify the creation of new symbols, default symbols are provided as a set of palettes and some submodels are also available. Palettes provide a storage mechanism for symbols by theme. Palettes are used mainly by the MapEditor to populate a Map with Map Items, but can also be used by the SymbolEditor to create new symbols from old ones. Symbols can be dragged from a palette and dropped into the SymbolEditor.

A default script is associated with each submodel or TeMIP symbol in a palette. This script defines the symbol's behavior, and any changes to the script are taken into account when a new instance of the symbol is created.

Symbol Behavior Examples

Two examples of symbol behavior are provided by default:

- **Classic**, similar to TeMIP V4.0

- **Advanced**, compliant with TeleManagement Forum (TMF) 046 Recommendation

Classic mode drives the normal severity changes for TeMIP Parent, Child and SubMap entities and makes the distinction between new and pending alarms by use of the blink. This corresponds with the current behavior of TeMIP V3.2 and V4.0 on Compaq Tru64 UNIX.

Advanced mode substitutes the blink behavior by an information box that contains textual information such as "1M+", indicating, for example, that one additional alarm of severity *Major* has been received. The information box only appears when a new alarm is received. In addition, a similar form of textual information can also be displayed for the parent entity.

Note that in Advanced mode, the information box is normally hidden and only displayed when there is data to display.

Figure 3 illustrates an example of the SymbolEditor window in Advanced mode showing a dynamic symbol under construction.

SymbolEditor Features

The SymbolEditor provides features that include:

- Creation/Saving of new or existing static and dynamic symbols and backdrops.

- A creation toolbar that provides standard graphics such as Circles, Polylines. Rectangles…

- Manipulation of symbols using Merge/Import/ Move/ Export/Mirror/Align/Scale/ Visibility…

- Editing of symbols using Cut/Copy/Paste/Undo/ Redo/Group/Ungroup/Stacking Order/Point Mode/ Reset…

- Definition/modification of symbol dynamics and properties.

- Testing of dynamic symbol behavior.

- Creation of palettes to store symbols.

- Display of a grid as a design aid.

- Standard "handles" displayed when an object is selected, enabling resizing/moving of the object.

- Navigation within the SymbolEditor window that can be carried out in several ways:

  - Using a "Grabber Tool" to pan the complete symbol view by clicking on the view and dragging it to a new position.

  - Using the Zoom In/Zoom Out feature to increase or decrease the symbol view size.

  - Using the scroll bars.

- Symbol printing capability, using a standard print dialog box. The symbol can be printed out or printed to file using standard NT print options.

Figure 3 SymbolEditor Main Window
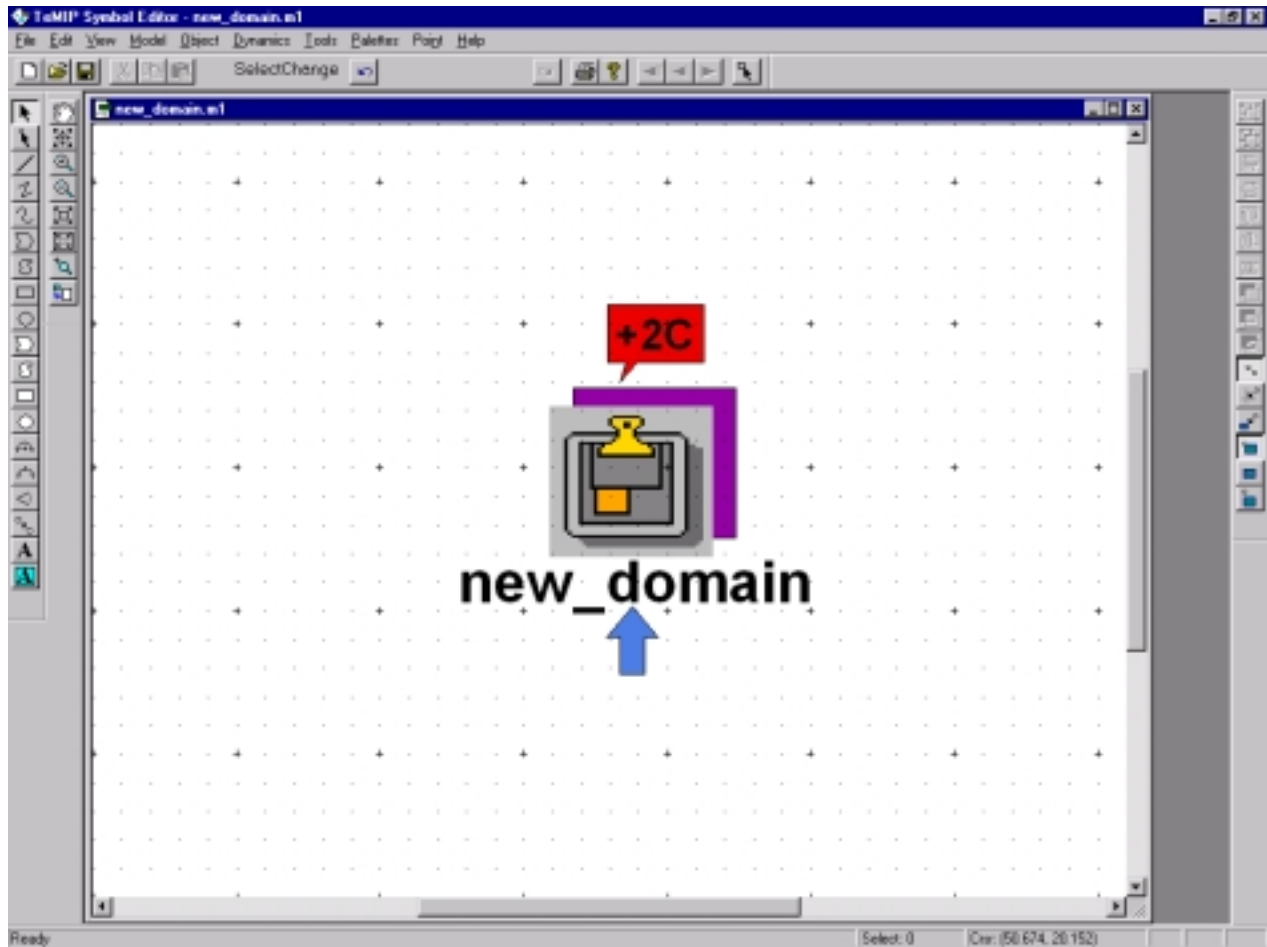
- Drag and Drop - Drag and drop a symbol from a palette or from a submodel into the current window.

- Customization - The user can set a number of options that control the way in which the SymbolEditor functions. These options can be set using the *Dynamics…*, *Properties…*, *Grid Options…, View Options…* and *Preferences…* dialog boxes. Options that can be customized include:

  − Object Coordinates - set position of object(s) in window

  − Zoom - set zoom limit, set zoom percent, set pan percent…

  − Properties - set dynamics, userdata, userword, flags…

- Grid - set on/off, solid line, line color…

  − Snap and Point Mode - two different ways to pick points when building objects.

- Other features such as:

  − Graphical object tooltips that identify the function of an icon by displaying a text box when the pointer is placed over it.

  − Reset - undoes the current settings and returns the SymbolEditor to its initial appearance.

  − Multi-symbol selection using the *Select All* option or the *Shift* button plus a click on more than one symbol.

  − Symbol selection by name or properties.

  − Rubber banding (or rectangular) selection of symbols allowing multi-symbol selection.

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