COMPAQ

SOFTWARE PRODUCT DESCRIPTION

PRODUCT NAME: COMPAQ TEMIP RESYNCHRONIZATION FM   **80.69.00**

OVERVIEW

The Resynchronization FM is a generic TeMIP function module to be used for resynchronizing TeMIP alarm status to the current status of managed equipment.

Providing a dedicated Resynchronization directive, it implements a remedy to eliminate any alarm status discrepancy, which may have occurred during operation between the alarm status as presented in TeMIP and the real equipment status.

The resynchronization facility is a useful tool for any enterprise, which is dependent on always maintaining reliable alarm status of managed equipment and services. In real life operation, it cannot be avoided that discrepancies occur and accumulate over time, because in the normal alarm flow, managed equipment sends and clears alarms only once.

Typical situations where alarm resynchronization may be necessary are after:

- Equipment failure preventing alarm reporting (e.g. disconnection, power failure, hardware defects)

- Mediation device failure preventing alarm reporting

- Data communication link failure

- Equipment first time registered, but starting with one or more initial alarms

- Disaster recovery using cold standby procedure

- Human errors in operation of equipment or TeMIP

- Any doubt situations where staff needs to confirm that status is up-to-date.

Functional Description

The Resynchronization FM functionality is made available via a directive named Resynchronization. It can be invoked either manually or by suitable automated means available within TeMIP.

The Resynchronization directive will upon invocation, compare the alarm status of a selected Operation Context (OC) with current equipment alarm status and subsequently eliminate any discrepancies. The processing is illustrated in Figure 1. First step is to upload the list of current alarms from the managed equipment (managed objects) and compare it with the current TeMIP alarm status. Next step is to clear any non-matching alarms from the Operation Context and to add any missing alarms to the Operation Context.

Figure 1: Resynchronization FM compares alarm status and realigns the Operation Context.
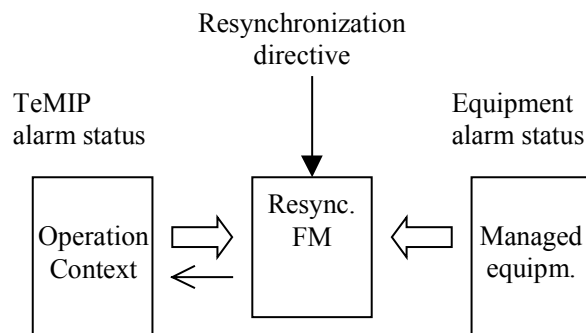
The Resynchronization directive operates on a selected Operation Context towards one or more managed objects. The user may select a specific managed object, a list of managed objects or all managed objects belonging to the Operation Context. In the latter case, the Resynchronization FM traverses the domain associated with the Operation Context and thereby determines the complete list of managed objects to be affected by the operation.

The method for uploading current alarm status is based on reading from the managed equipment a dedicated attribute containing the list of current alarms. Issuing a Show or View operation towards a standardized attribute named currentAlarmList or currentProblemList does this. The specific attribute name, its contents and the access method are configurable via TeMIP Dictionary.

In order to avoid unnecessary load and CPU usage on the communication link to the managed object, the Operation Context Discriminator Construct filter will automatically be checked in order to determine whether the OC is set up to receive alarms from the particular managed object. The relevant managed objects will then sequentially be requested for current alarm status, i.e. by reading the currentAlarmList/currentProblemList attribute from each managed object.

The final updating of the Operation Context alarm status is done by using the TeMIP APIs for emitting alarms and clear-alarms, and optionally terminating alarms. Potential interference with other Operation Contexts can thereby be avoided.

If the Operation Context is configured with the reduction mode set to "Automatic" both the AlarmObjects and SimilarObjects are considered for comparison. Similar alarms are seen as a group of alarms representing a same fault.

FEATURES

- Resynchronization directive:
  - Manual invocation.
  - Automated operation from TeMIP applications or scripts.
- Realigns TeMIP alarm status with current managed object alarm status, i.e. updates a selected Operation Context towards the current status of one or multiple managed objects.
- Easy-to use default operation of Resynchronization directive, i.e. only selecting the Operation Context and otherwise use standard preferences.
- Easy selection of involved managed objects:
  - Manual selection of a particular managed object or a list of managed objects.
  - Automatic selection of all managed objects associated with the selected Operation Context, based on the associated domain and Discriminator Construct filter.
- Original alarms are not regenerated, so alarm status, notification id, time stamps, and user

notes are maintained persistently. This implies that:
  - Alarm tracking is maintained in interaction with operators.
  - Alarm tracking is maintained in interaction with Trouble Ticketing systems.
  - Alarm tracking is maintained in interaction with Expert Systems.
- Standardized Access Module interface for alarm upload:
  - Attribute currentAlarmList extended with full alarm contents (recommended).
  - Attribute currentProblemList based on M.3100 (minimum interface).
- Supports adaptation of the standardized Access Module interface:
  - Definition of an alternative overruling attribute name.
  - Which alarm sub-fields are supported.
  - Accessing the attribute via Show or View.
- Correlates alarms based on best available data:
  - Preferably based on Notification Id.
  - Alternatively matching relevant other alarm sub-fields based on TeMIP Alarm Handling correlation concepts.
- Regenerates lost alarms based on best available data:
  - Preferably recreating the complete alarm, i.e. when currentAlarmList provides all the fields contained in the original alarms.
  - In any case recreating an alarm with the available information, i.e. where only a subset of the original alarm fields are contained in currentAlarmList; minimum prerequisite is managed object id, Probable Cause and Perceived Severity.
- Alarm status realignment covers:
  - Alarm fields.
  - Alarm Cleared state.
  - Alarm Acknowledged state (optional).
  - Alarm Terminated state (optional).
- Tailoring of resynchronization directive processing to specific wishes, including:
  - Which managed objects to resynchronize (if not all belonging to the OC).
  - Which managed objects to ask for current alarm status.
  - Whether terminated alarms shall be regenerated.
  - Whether cleared alarms shall be regenerated.
  - Whether clear-alarms towards terminated alarms shall be suppressed.
  - Whether clear alarm shall convert to clear+terminate or terminate-only.
  - Whether multiple alarms with same Notification Id shall be suppressed (no escalation).
  - Whether alarm acknowledge status shall synchronize to current status from e.g. an element manager.
- Supports upload of current alarm status from a managed object even if it is necessary to ask its parent object or any other managed object to trigger upload of current alarm status for that particular managed object.

Service Interface

RESYNCHRONIZATION is made available as a TeMIP directive. The directive takes one or more parameters: A mandatory Entity value and a number of optional Request Arguments.

The Entity value specifies the Operation Context.

The optional Request Arguments may be used to tailor the Resynchronization processing to user specific wishes. Refer the feature list above.

Management Interface

The self-management interface for Resynchronization FM is available on the "MCC 0 RESYNCHRONIZATION_FM" child class.

It contains two groups of attributes:

- Component identification and component version.
- Configuration of alternative names used for currentAlarmList attributes of the managed objects.

Dependencies

Resynchronization towards a managed object relies on the ability of the managed object to respond with its current alarm status on request. The Resynchronization FM requests this information by reading a dedicated attribute, which typically is named currentAlarmList or currentProblemList.

In certain implementations of access modules and GDMO agents, alarm upload features may not necessarily be linked to a particular managed object, rather to e.g. a parent object or even a dedicated alarm upload object. The Resynchronization FM supports such cases by making it possible in each invocation of the Resynchronization directive to specify one managed object to be affected by the realignment, and another managed object to be queried for the alarm list.

Integration Interfaces

The managed object must provide an attribute from where the current alarm list can be read. The standardized name of this attribute is currentAlarmList or currentProblemList, but any name can be used. An alternative attribute name can if necessary be configured via the self-management interface. Attribute access method (Show or View) and which alarm fields are included are determined via TeMIP Dictionary.

New developed access modules and GDMO-based agents should implement the currentAlarmList attribute, and it is recommended that each alarm contain exactly the same alarm fields as the original alarm.

Existing access modules and GDMO-based agents may in certain cases not provide such an attribute. The solution may then be to implement a dedicated mapper module on top of the access module, and thereby enhance the managed object information model with the required attribute.

Compatibility

TeMIP V4.0.

M.3100 currentProblemList. Preferably extended to a more general currentAlarmList interface.

Complementary Package

The M.3100 GAT extension package can be obtained through the TeMIP Support channel. It is added to GAT V4.0 for implementing the currentAlarmList / currentProblemList interface for alarm uploading from GAT-based access modules.

Limitations and Constraints

The solution is targeted for resynchronizing the status of Alarm Handling, and the concept is based on resynchronizing one Operation Context at a time. Operation Contexts must be used in a non-overlapping configuration; i.e. their filters should never allow any alarm to enter more than one Operation Context.

Any other application subscribing to emitted alarms, e.g. Alarm Rules will be affected by the regenerated alarms and clear-alarms.

HARDWARE REQUIREMENTS

Supported Alpha AXP Processors:

DIGITAL Personal Workstation (standard)
DIGITAL Ultimate Workstation
AlphaStation 600
AlphaServer 800, 1000A, 1200
Compaq AlphaServer DS10, DS20
AlphaServer 2000, 2100, 4000, 4100
Compaq AlphaServer ES40
AlphaServer 8200, 8400
Compaq AlphaServer GS60, GS140

Disk Space Requirements:

Disk space required for installation:
      Subset copy: 6 Mbytes
      Installation: /usr 20 Mbytes

Disk Space Required for Use (Permanent):
      No specific requirement

Memory Requirements:

The minimum memory supported, due to a TeMIP Framework prerequisite, is 128 Mbytes.

However, the use of this software in conjunction with increased memory capability improves performance.

SOFTWARE REQUIREMENTS

- Compaq Tru64 UNIX® Operating System V4.0F
- TeMIP Framework V4.0

OPTIONAL SOFTWARE

None

GROWTH CONSIDERATIONS

The minimum hardware/software requirements for any future version of this product may be different from the current version requirements.

YEAR 2000 READY

This product is Year 2000 Ready.

"Year 2000 Ready" products are defined by Compaq as products capable of accurately processing, providing, and/or receiving date data from, into and between the twentieth and the twenty-first centuries, and the years 1999 and 2000, including leap year calculations, when used in accordance with the associated Compaq product documentation and provided that all hardware, firmware and software used in combination with such Compaq products properly exchange accurate date data with the Compaq products.

For additional information visit Compaq's Year 2000 Product Readiness web site located at http://www.compaq.com/year2000

To ensure that this product is Year 2000 Ready, code assessment and system tests to verify the transition between December 31st 1999 and January 1st 2000 were utilized.

To ensure that this product interoperates properly with other hardware and software, the system tests involving Compaq's TeMIP V4.0 are applicable, as this product was verified as being Year 2000 Ready.

DISTRIBUTION MEDIA

This software is available by electronic means, distributed directly by Compaq TeMIP Engineering Team in Sophia Antipolis, France, who can be contacted through your local Compaq office, which sends an internal e-mail to vbetemipsupp@compaq.com (containing customer identification and proof of license purchase).

ORDERING INFORMATION

Compaq TeMIP Resynchronization FM

Software License: QM-6KHAA-AA

Software Media: QA-6KHAA-H8

Software Product Services: QT-6KHA*-T* or QR-SP6KH-**

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