



Reflex 80:20 Smart Plug-In for hp OpenView



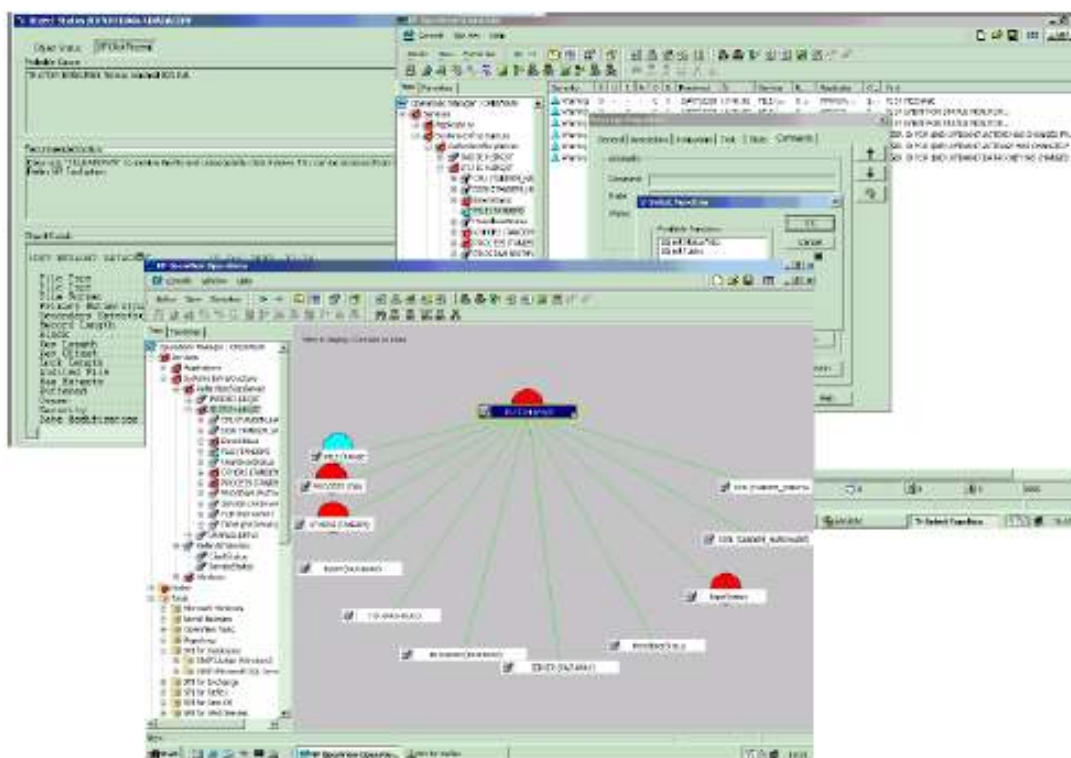
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Product Brief

The Reflex Smart Plug-In (SPI) for hp OpenView (now HP Operations Center) is hp certified and provides a powerful inclusion within hp OpenView Operations (OVO) for managing hp NonStop servers. The Reflex SPI is an out-of-the-box solution that links seamlessly with the hp OVO Management Console using hp approved techniques for integration. The hp OVO Smart Plug-In technology demands a greater level of sophistication for central enterprise control and goes beyond basic event alerting. The Reflex SPI offers a comprehensive view of your entire hp NonStop network (being a combination of one or all of K-series, S-series, Integrity, or Blade platforms) from the hp OVO Management Console.

Before the introduction of the hp Smart Plug-In technology, the extent and depth of monitoring and interaction provided could only be realistically achieved using more proprietary, platform specific products beyond enterprise management solutions. The Reflex SPI naturally extends hp OVO with the required tools, operator initiated commands and service tree views for complete hp NonStop platform management.

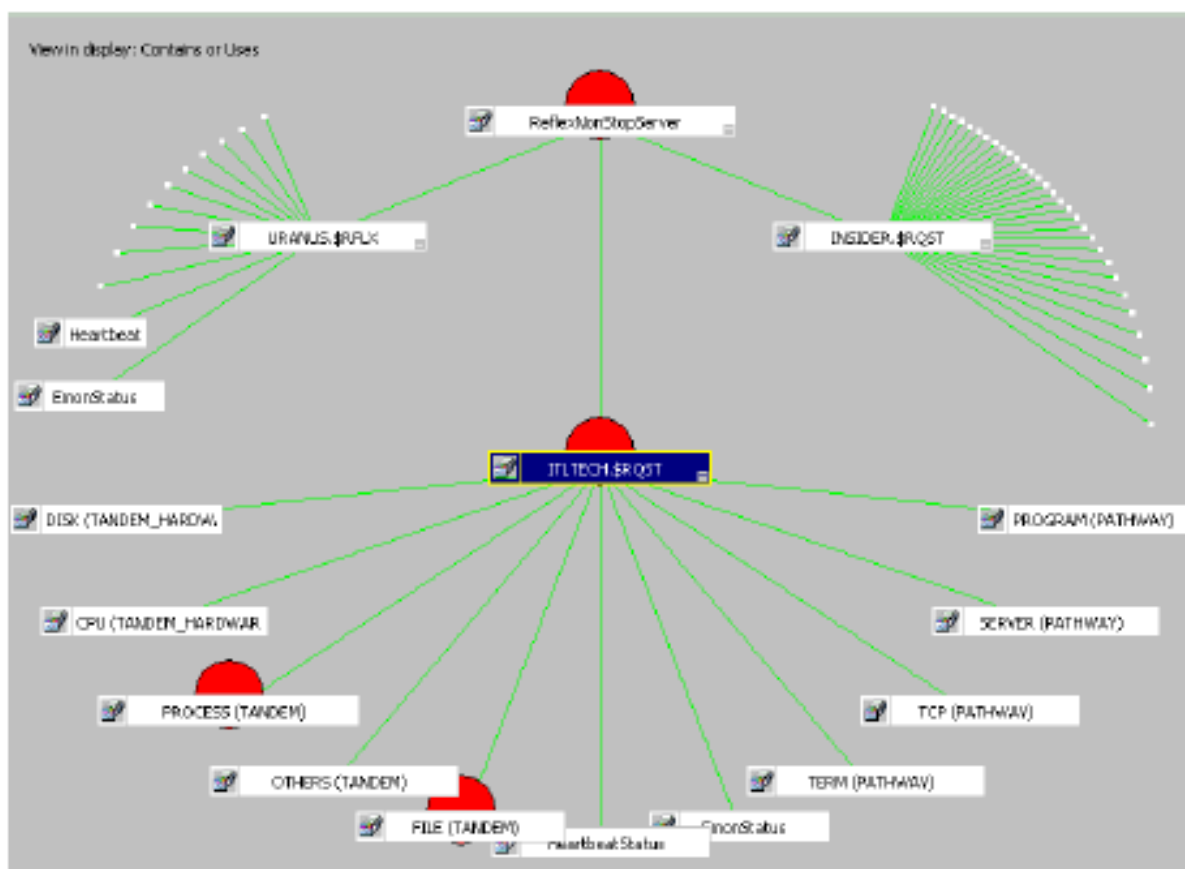


Maintaining the enterprise management layer and ensuring it is in-step with updates to the hp NonStop network for hardware, middleware and your live applications is simplified by design, using an advised software strategy. The Reflex SPI compliments the hp OVO Management Console by delivering tools that allow for easy, single-click administration of new hp NonStop policies, alerts and service tree updates.

The NSK based Reflex Smart Plug-In agents are engineered to provide very low utilisation of NonStop resources in relaying alerts to hp OVO. A 'listen rather than interrogate' design principle allows the Reflex SPI to perform real-time notification of NonStop issues without jeopardising any of your live application performance, or response times. The hp OVO alert relay mechanisms on the NonStop platform are further optimised by incorporating pre-filtering rules. This approach strips out unwanted events allowing selective and sensible filtering of critical NonStop server and application alerts for major subsystems, which includes TCP/IP, MQ Series, XPNET™ and BASE24™. This

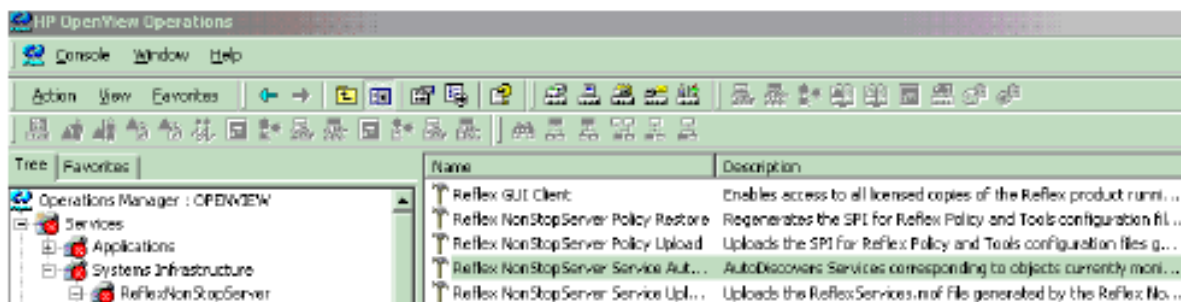
unique feature provides hp OVO end users with the confidence that all events displayed in the hp OVO 'Active Message' Management Console views, are real NonStop issues.

The Reflex SPI takes full advantage of the hp OVO Service Views approach by quickly alerting on potential problem areas for your NonStop network. Users of hp OVO can represent NonStop subsystems, by node and by their own chosen alias names for key system areas or business functions, e.g. ATM network stations, live application files, suspect looping processes and switch interchanges. The service view display offered by the Reflex SPI will quickly isolate any deficiencies in your ability to meet agreed SLAs by underlining key failing critical path components, subsystems and application processes. This approach allows for the service provision of your NonStop network to be proactively maintained rather than being compromised when a number of key NSK components have failed.



The Reflex SPI provides the hp OVO Management Console with all the traditional troubleshooting capabilities associated with the Guardian Event Management Service (EMS), including Probable Cause and Recommended Action, and all mandatory EMS tokens and the user applied hp OVO severity settings. Also available through the hp OVO Console are secure Task Automation (both manual and system initiated), detailed NSK component information, configuration, statistics and user requested real-time object status.

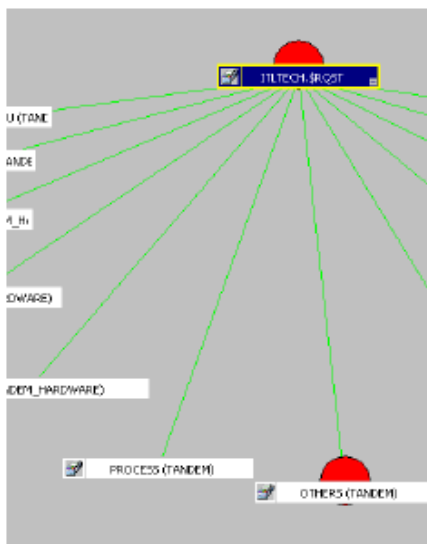
HP OVO tools are provided for service tree topology detection of NSK subsystems (both Guardian and application), hp OVO policy and event acknowledgement import and running the Reflex GUI Client.



Reflex Smart Plug-In functions provide a comprehensive and future proofed strategy for managing your entire NonStop network through the hp OpenView Operations solution. The Reflex SPI now makes it possible to deliver pertinent NonStop information and status, providing real and effective NonStop problem resolution to the enterprise management layer of the business, for the first time.

Benefits

The Reflex SPI is hp certified and engineered to extend a feature rich set of functions to the hp OVO end user for managing all aspects of hp NonStop systems.



- Comprehensive Monitoring for hp NonStop Systems
- Monitoring of all Application Components
- Monitoring of all Hardware Components and System Software
- Performance Thresholds Monitored
- NonStop Subsystem Breakdown in hp OVO Service Views
- Complete End-to-End EMS Event Management
- Full Automatic Detection
- Operator Initiated and System Initiated Tasks
- Maintained HP NonStop Security and Automatic Auditing
- BASE24™ and XPNET™ Support
- Detailed Object Information, Configuration and Real-Time Health accessible.
- Probable Cause and Recommended Action
- Batch and Job Schedule Monitoring
- A True NonStop Approach
- User-friendly Graphical Interface for Advanced Troubleshooting

Comprehensive Monitoring for hp Nonstop Systems

The Reflex SPI is not a 'quick-fix' to resolve shortfalls in relaying NonStop troubleshooting information to hp OVO. This point can be clearly appreciated through the thought-out, non-cryptic informational and real time status displays now available in the hp OVO Management Console for the hp NonStop network. The NonStop EMS alert relay, automatic detection agents, probable cause, recommended action texts, configuration and statistical readouts, detailed object information and task automation, are functions already available in the long established Reflex product. These features have now been securely extended to the hp OVO end user through the hp Smart Plug-In technology. System views, previously available to hp NonStop departments running a collection of diagnostic utilities, have now been brought directly into the hp OVO Management Console. This allows hp NonStop Servers to be seen in full at the enterprise layer, providing true end-to-end monitoring of your business service provision.

Monitoring of all Application Components

Not all application components raise EMS alerts when an issue arises. For instance, if an ENSCRIBE file becomes corrupt or a process disappears or starts to loop, no indicator of the problem will be forwarded to hp OVO since the Guardian operating system does not flag the problem. The Reflex Smart Plug-In is different as it is engineered to make use of all Reflex deployed NSK agents for application subsystems not covered by the standard deliverable NonStop event ranges. This provides full coverage of all application objects and maintains absolute confidence in the hp OVO Management Console for reporting NonStop issues as and when they occur.

Monitoring of all Hardware Components and large Subsystems

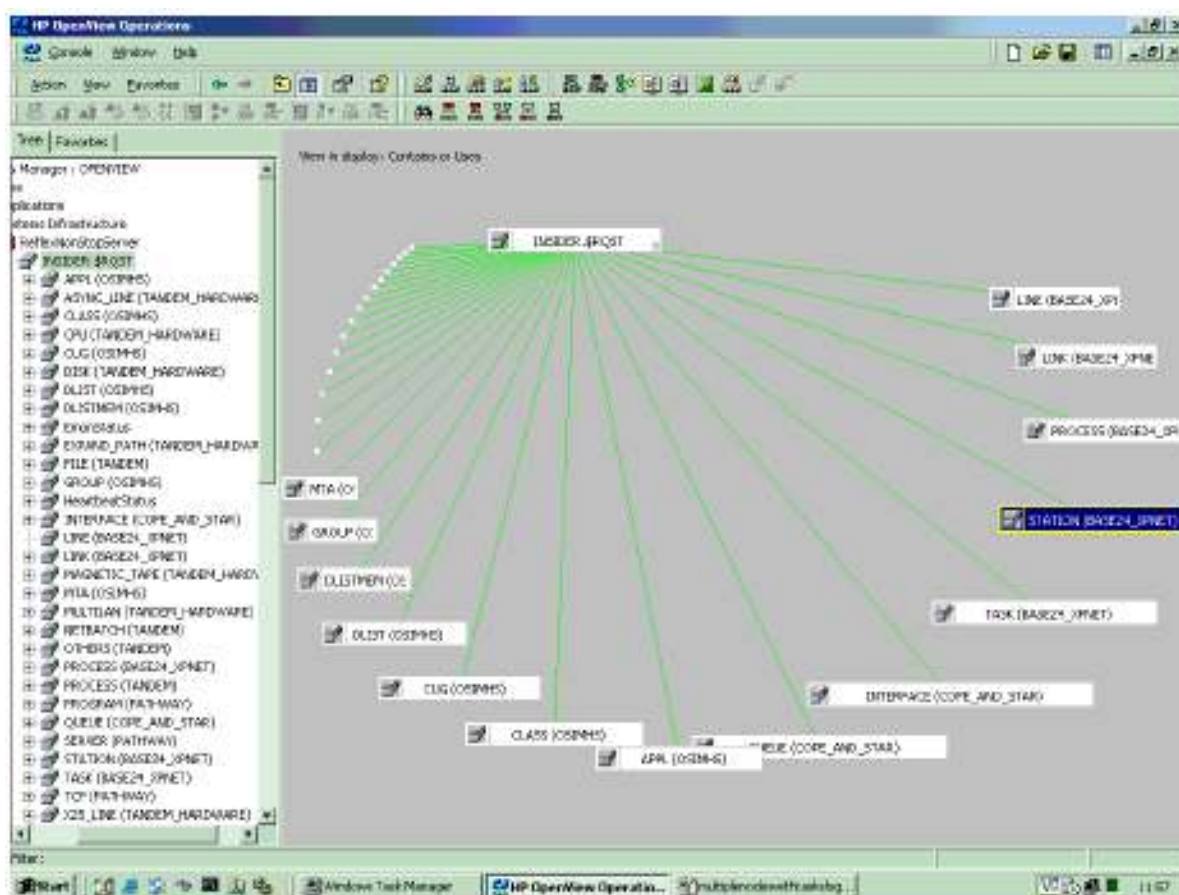
The Reflex Smart Plug-In makes use of all delivered automatic detection utilities that reside on the NonStop platform. Any hardware plugged directly into the NonStop server or potentially large subsystems, for instance XPNET™, Pathway, WebSphere MQ (formerly MQ Series), TCP/IP and X25 can be configured to relay state changes directly to the hp OVO Management Console and its Service and topology views.

Performance Thresholds Monitored

Performance thresholds that are exceeded such as CPU utilisation, Disk resource utilisation including cache hits, process busy or suspect, X25 and TCP/IP utilisation, queue and switch interchange issues can all be forwarded to the hp OVO Server and alerted on using the Reflex Smart Plug-In technology. Each reported problem can be mapped to a corresponding service tree event holder with a user chosen identifier, e.g. “ATM Rate/Q Alerts”.

NonStop Subsystem Breakdown in hp OVO Service Views

The hp OVO user view of the NonStop world would not be totally complete without a sensible and logical separation of each of the subsystems currently installed across each of the hp NonStop Servers. Without an advised breakdown of each area of the NonStop platform, the hp OVO Management Console can become cluttered and slow to respond.

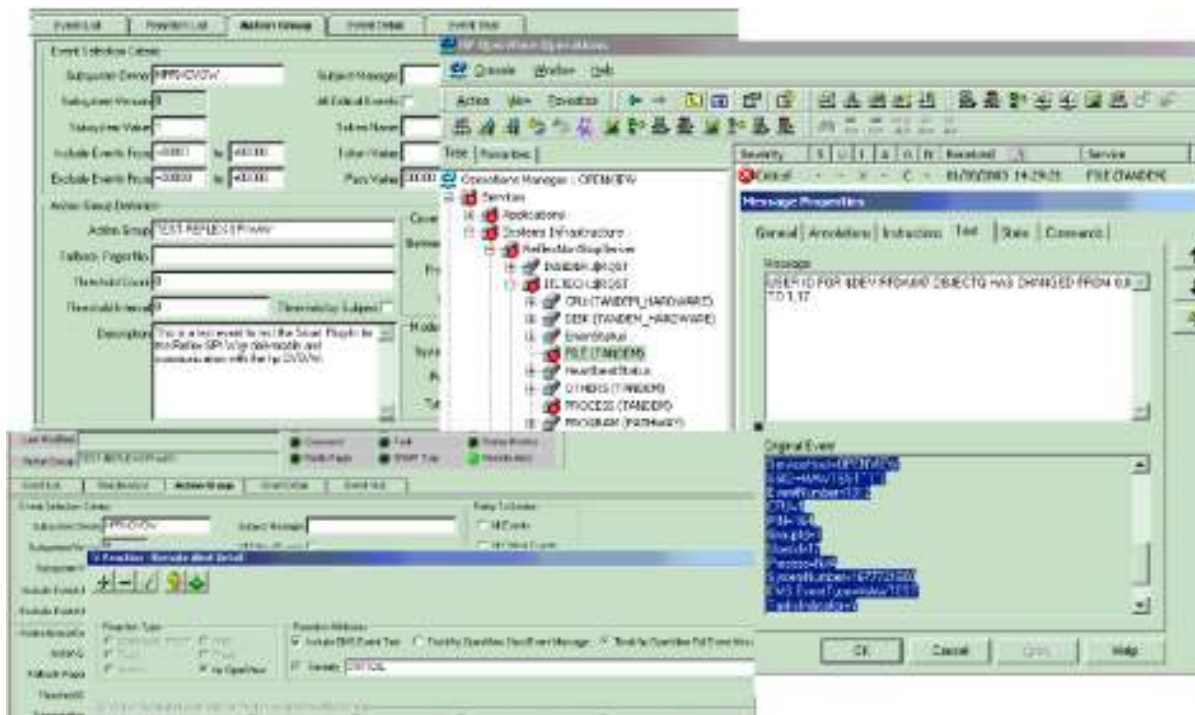


The Reflex SPI provides an hp OVO service view that is not only grouped by object subsystem type and subtype but also by NonStop system node. This rationalised approach provides the perfect topology presentation and service branch view for EMS alert mapping and user initiated requests. In combination with this, hp OVO administrators can customise branch presentation with their own elected identifier, e.g. “VISA Interchange Alerts”, “Station Rate/Q Alerts”.

Complete End-to-End EMS Event Management

The Reflex SPI takes full advantage of the unique dynamic EMS filter generation capability of the Reflex product to provide only nominated key alerts to hp OVO. Pre-filtering of NonStop EMS events ensures that the hp OVO Management Console does not become inundated with unnecessary and non-critical alerts and remains quick to respond.

Another intelligent feature of the Reflex SPI is the provision of an automatic event acknowledgement dialog. This inclusion promotes better use of the hp OVO management display by automatically completing any active alerts with the corresponding healthy event when it is raised by the NonStop system. This point is best illustrated when annoying 'system threshold exceeded' alerts persist needlessly. With the Reflex SPI, when the original issue has been resolved or system thresholds are recovered, active messages are then removed (in real-time) to the 'Acknowledged Message' view of hp OVO.

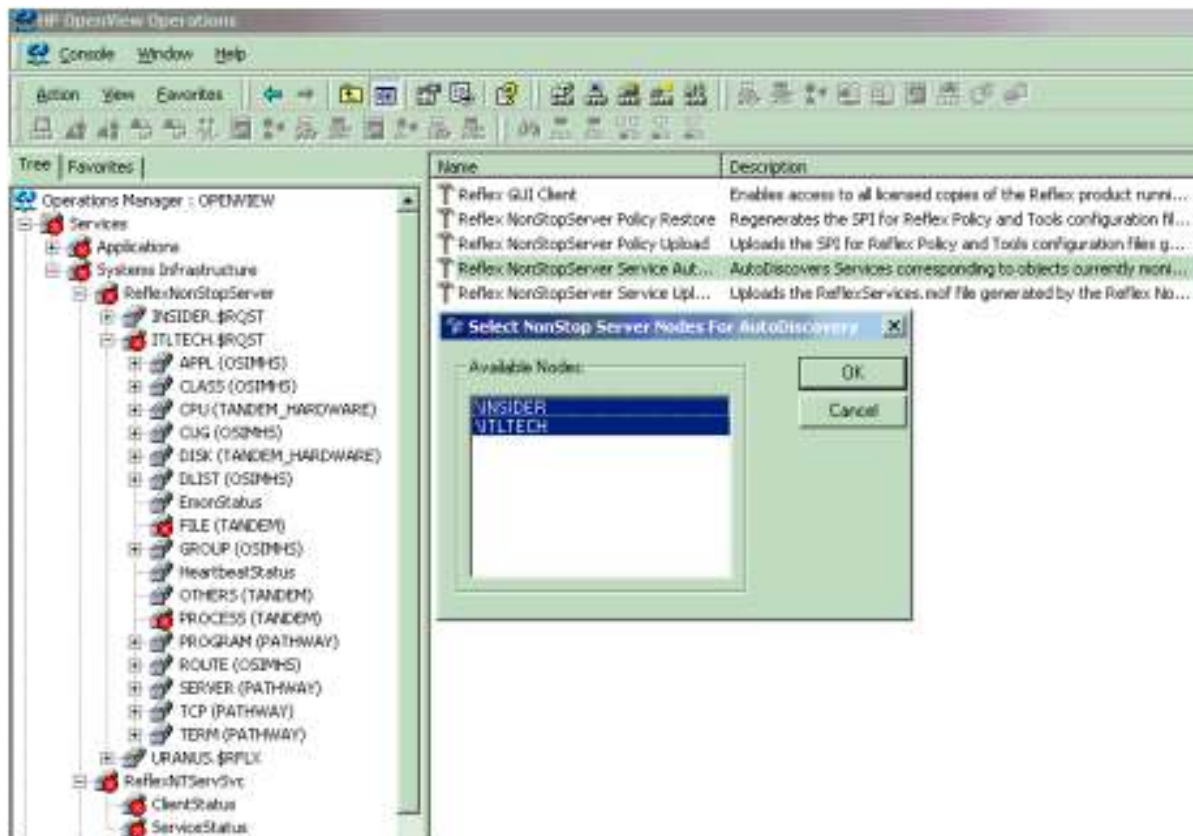


With the Reflex SPI, users are able to customise alerts, add cover periods for the specific event (or event ranges) and assign an hp OVO compatible severity setting before the alert is forwarded to the hp OVO Server. The EMS event is forwarded with all mandatory informational tokens intact, including log time, generation time, CPU, User ID, PIN, subject, manager, action id, priority, process descriptor and full EMS problem event text. This rich tokenised event detail ensures hp OVO end user responses are not compromised by cryptic, meaningless message formats.

The alert is also automatically tagged in the NonStop server, with an event type, subtype specifier and a task token. When hp OVO receives the alert, it is subsequently mapped to the corresponding subsystem service branch and topology view event holder. The task token allows hp OVO to detail which tasks are available for the alert type in order to rectify the problem.

Full Automatic Detection

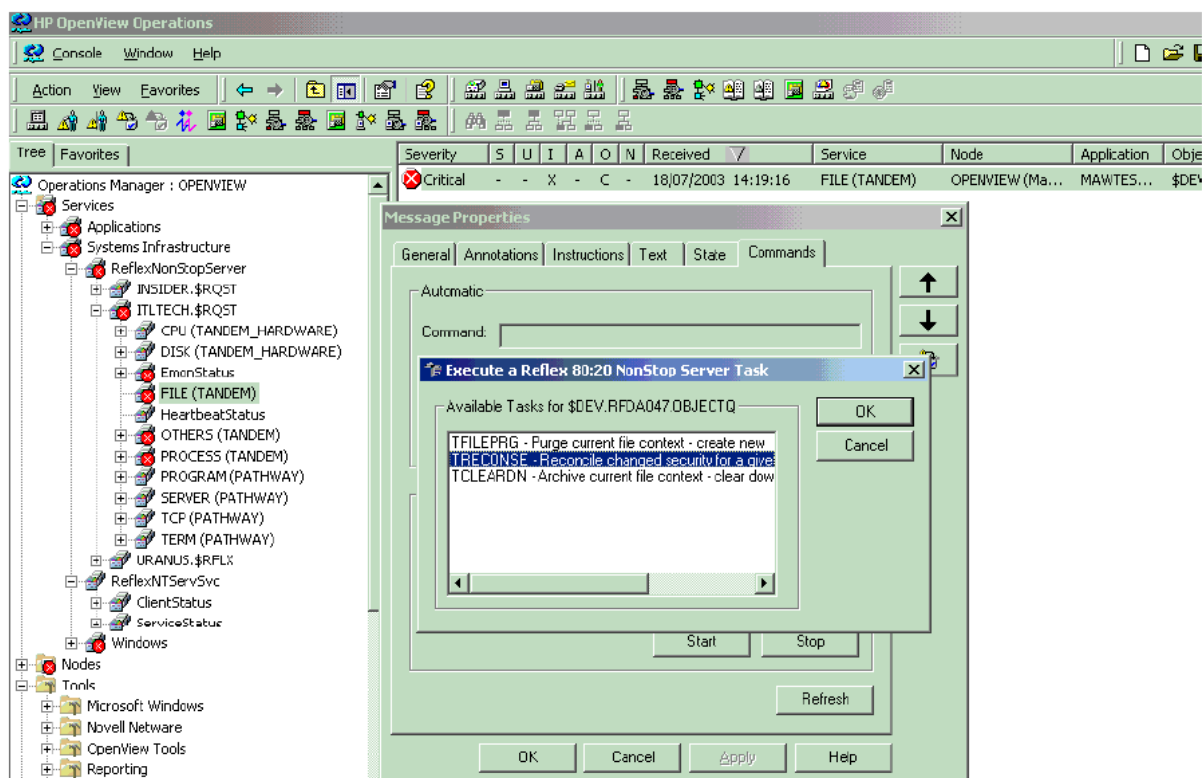
The automatic detection agents available for use by the Reflex Smart Plug-In have been developed over a considerable number of years and include detection for; Pathways, XPNET™, Transactional Interface Interchange Counters, Rate and Queue counters, WebSphere MQ, SPOOLER, OSI/MHS, MultiBatch™, TCP/IP, X25 and OMF™.



All component state changes can be relayed to the service tree views of hp OVO and default policies are delivered as standard as part of installing the Reflex SPI. This allows for significant elements of the hp NonStop network to be monitored as part of the initial set-up of the Smart Plug-In solution, even before customised hp OVO policies are configured.

Operator Initiated and System initiated Tasks

The Reflex SPI solution goes beyond just mere scripting typically associated with enterprise management solutions. It does this by plugging into the Guardian and Reflex secured and audited tasks database on the NSK platform. Users of hp OVO are not required to have an understanding of the hp NonStop server command interface (TACL) in order to initiate both application and system management tasks.

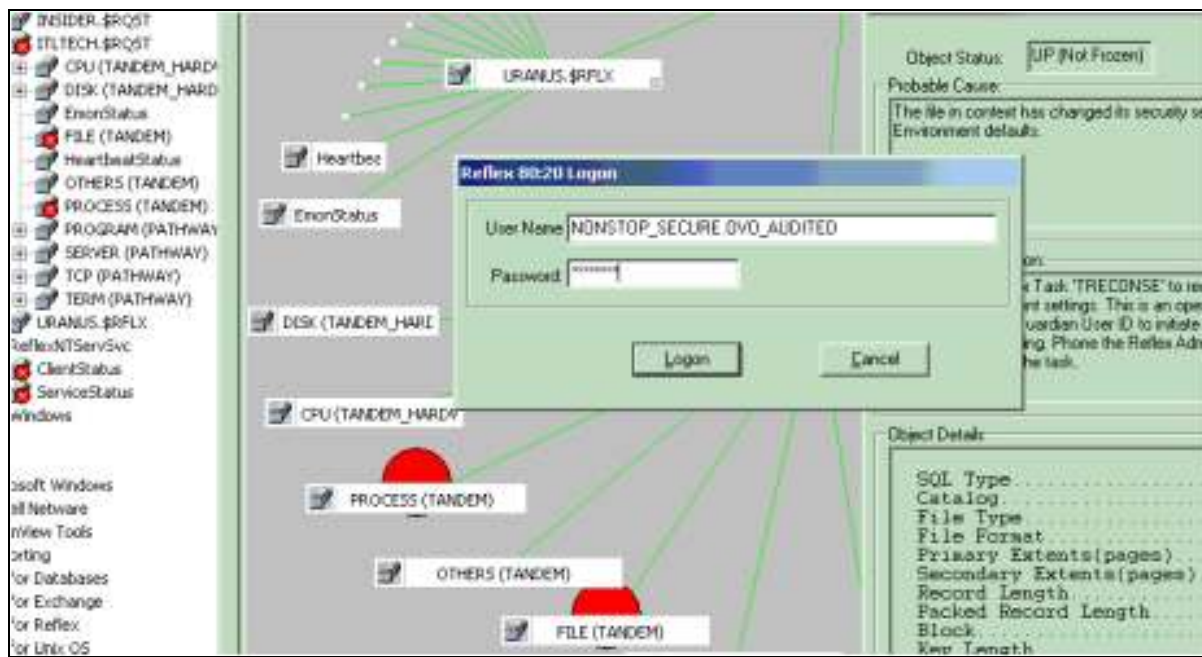


If an incoming EMS alert has been tagged by Reflex as having tasks associated with it, an hp OVO end user can list the tasks using a Reflex SPI tool. This will provide a list of all available Reflex tasks for an object event (as part of an hp OVO initiated command). A task consists of one or more commands or programs to be initiated on the NonStop platform. These can be macros, obey files or object code executables.

These tasks are set-up within the Reflex product and tagged with a type and subtype so that only relevant tasks are listed in the hp OVO Console for a particular EMS alert, thereby speeding up problem resolution; an appropriate description is also supplied next to the task key. All automatic system initiated task events can be forwarded to the hp OVO console for further follow up by the hp OVO end user.

Maintained HP NonStop Security and Automatic Auditing

One of the observed shortfalls of integrated enterprise management approaches to task initiation is the lack of appropriate levels of security imposed for each proprietary platform. In providing an integrated, end-to-end graphical view of service provision, authorisation needs to be maintained.



The Reflex Administrator first needs to allocate the Reflex Tasks function to a specific hp OVO user to allow them access this facility. If not allocated, the user will not be able to invoke any NSK automation.

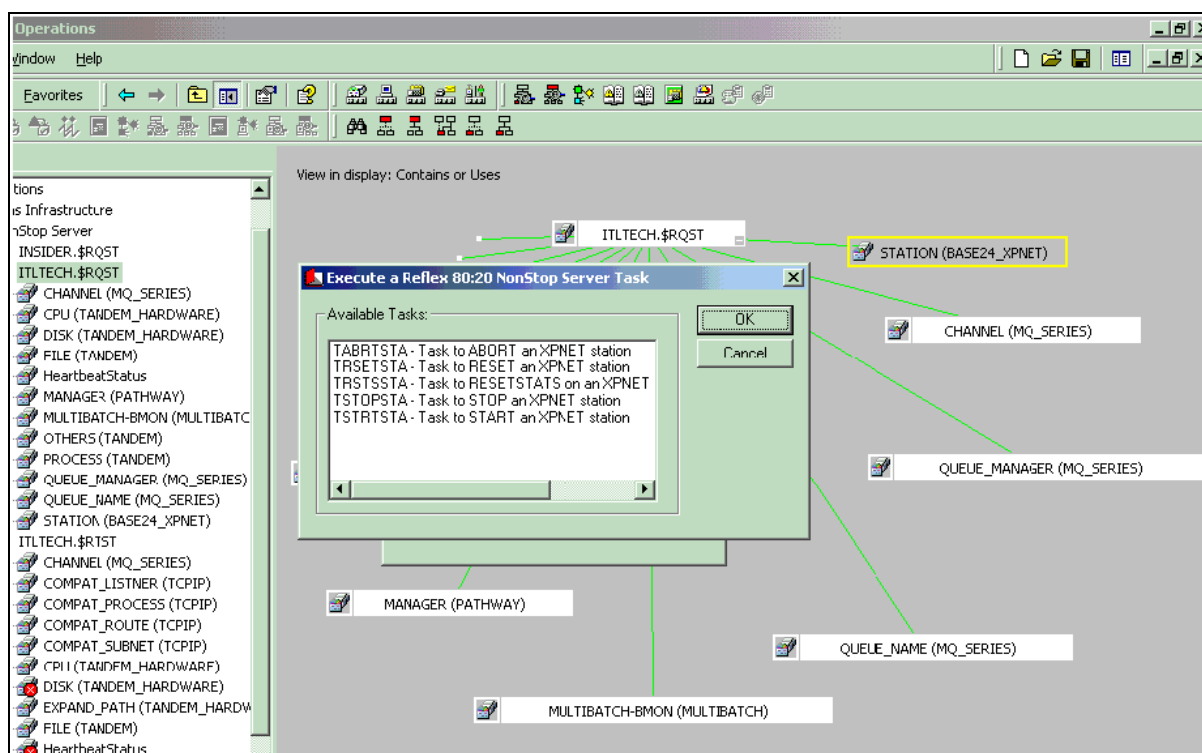
Once allocated, if the hp OVO end user requests a Reflex task to be initiated, they will be required to enter an appropriate NSK Guardian User ID first. If the supplied User ID does not own the Reflex Task then the task will not be initiated. If the task is assigned a runtime Guardian User ID that does not have appropriate authority to execute the files associated with the task, the task will fail to initiate.

This provides a totally secure and tiered interface within hp OVO for initiating NSK based tasks. All operator actions are audited and held for historical look-up to provide extra levels of security and confidence to the business.

BASE24™ and XPNET Support™

The Reflex SPI makes use of an advised approach for BASE24™ and XPNET™ monitoring, developed after discussions with both the users and technicians close to the application. The Smart Plug-In provides extensive health checking, discovery and mapping for BASE24™ application and XPNET™ component types within the hp OVO Management Console. Users of hp OVO are also able to request detailed configuration information, real-time status and current statistics for any of the offending XPNET™ nodes, stations, lines, processes, links and devices.

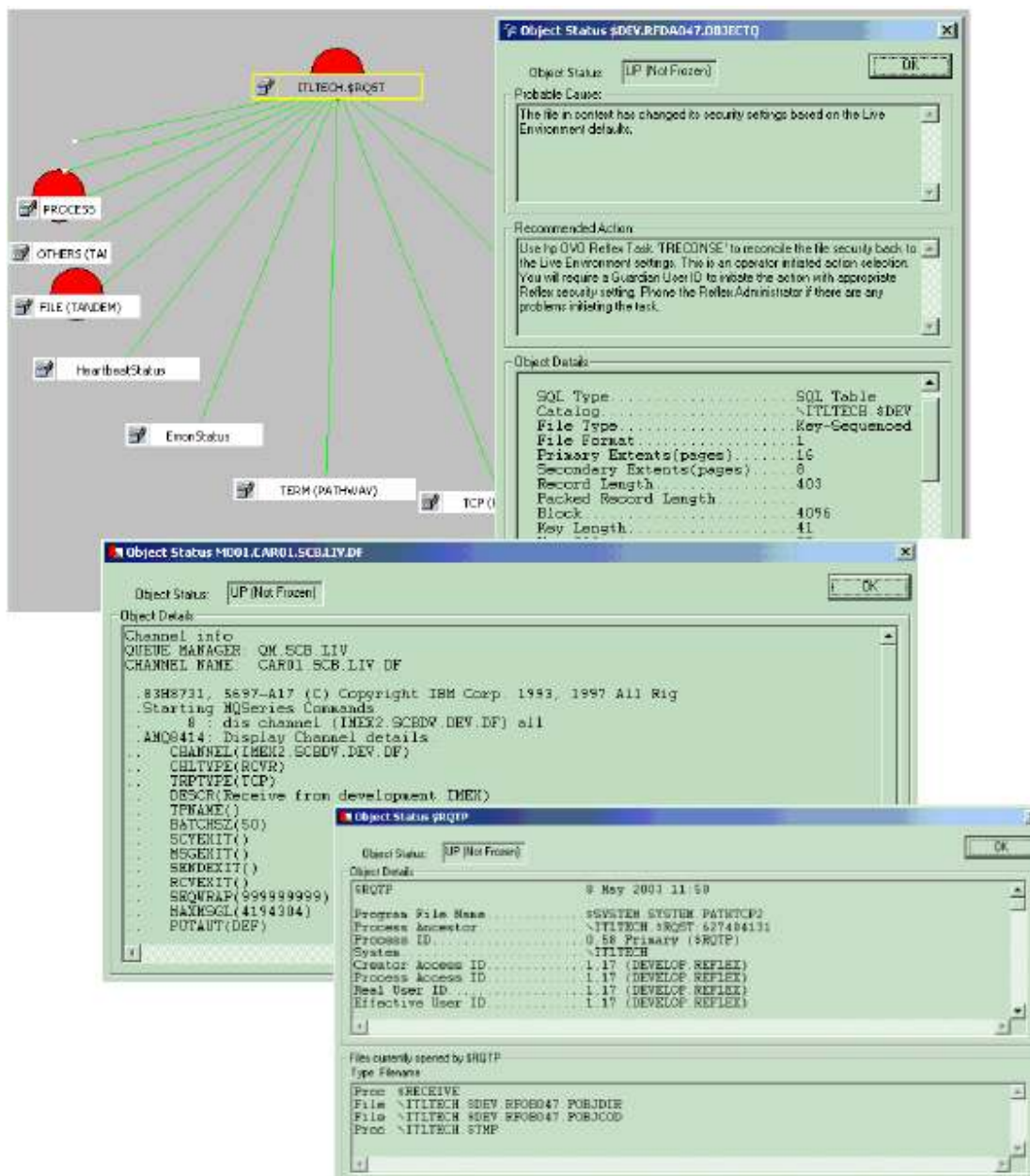
Pre-deliverable event transit files ensure that each layer of the BASE24™ application is monitored in hp OVO. This includes the logical XPNET™ event ranges for component state changes as well as the device handler and manufacturer device type events. Alerts for the various ATM issues relating to cash amounts, hopper levels and general device status can be relayed with plug-and-play configuration, to the hp OVO Service Trees.



Building still further on the recommended strategy for BASE24™ performance monitoring, the Reflex SPI can now receive threshold alerts for the switch interchange transactional interface layer of the application, for each of the approved and declined transaction counts maintained. In combination with these interchange thresholds, a true picture of the efficiency and performance of the BASE24™ application can be viewed by also relaying the state, rate and queue metrics of XPNET™ to the hp OVO Management Console.

Detailed Object Information, Configuration and Real-Time Health

The Reflex SPI makes use of a considerable number of NonStop status agents that are all accessible within the hp OVO Management Console. These agents deal with hp OVO end user requests for more information relating to any object event alert raised by the hp NonStop platform. Agents include cover for all files types (including ENSCRIBE, OSS and SQL), WebSphere MQ, OSI/MHS, PATHWAY components, NSK Processes, Spooler, all NonStop hardware, TCP/IP and X25 objects, MultiBatch™ jobs and XPNET™ components.



The screenshot displays the hp OVO Management Console interface. On the left, a tree view shows a hierarchy of objects under the root 'ITLTECH.\$RCST'. The tree includes categories like 'PROCESS', 'OTHERS (TAI)', 'FILE (TANDEM)', 'HeartbeatStatus', 'ErrorStatus', 'TERM (PATHWAY)', and 'TCP (IP)'. Three detailed object status windows are overlaid on the right side of the console:

- Object Status \$DEV.RFD047.DB3ECTQ**: Shows 'Object Status: UP (Not Frozen)'. The 'Probable Cause' is 'The file in context has changed its security settings based on the Live Environment defaults.' The 'Recommended Action' is to use the 'TRECONSE' task to restore security settings. The 'Object Details' table is as follows:

SQL Type	SQL Table
Catalog	\ITLTECH \$DEV
File Type	Key-Sequenced
File Format	1
Primary Extents(pages)	16
Secondary Extents(pages)	0
Record Length	403
Packed Record Length	4096
Block	41
- Object Status MQ01.CAR01.SCB.LIV.DF**: Shows 'Object Status: UP (Not Frozen)'. The 'Object Details' section contains the following text:


```
Channel info
QUEUE MANAGER QM.SCB.LIV
CHANNEL NAME CAR01.SCB.LIV.DF
.83H8731, 5897-A17 (C) Copyright IBM Corp. 1993, 1997 All Rig
Starting MQSeries Commands
0 : dis channel (IMEX2.SCBDEV.DF) all
ANQ0414: Display Channel details
. CHANNEL(IMEX2.SCBDEV.DF)
. CHLTTYPE(RCVR)
. TRPTYPE(TCP)
. DESCR(Receive from development IMEX)
. TPNAME()
. BATCHSZ(50)
. SCYENIT()
. MSGENIT()
. SEQINDEXIT()
. RCYEXIT()
. SRQWRAP(999999999)
. MAXMSGL(4194304)
. POTAUT(DEF)
```
- Object Status \$RQTP**: Shows 'Object Status: UP (Not Frozen)'. The 'Object Details' section contains the following text:


```
9 May 2003 11:50
Program File Name          $SYSTEM.SYSTEM.PATHTCP2
Process Ancestor           \ITLTECH.$RCST.627484131
Process ID                 0.58 Primary ($RQTP)
System                    \ITLTECH
Creator Access ID          1.17 (DEVELOP.REFLIX)
Process Access ID         1.17 (DEVELOP.REFLIX)
Real User ID              1.17 (DEVELOP.REFLIX)
Effective User ID         1.17 (DEVELOP.REFLIX)
```

 The 'Files currently opened by \$RQTP' section lists:

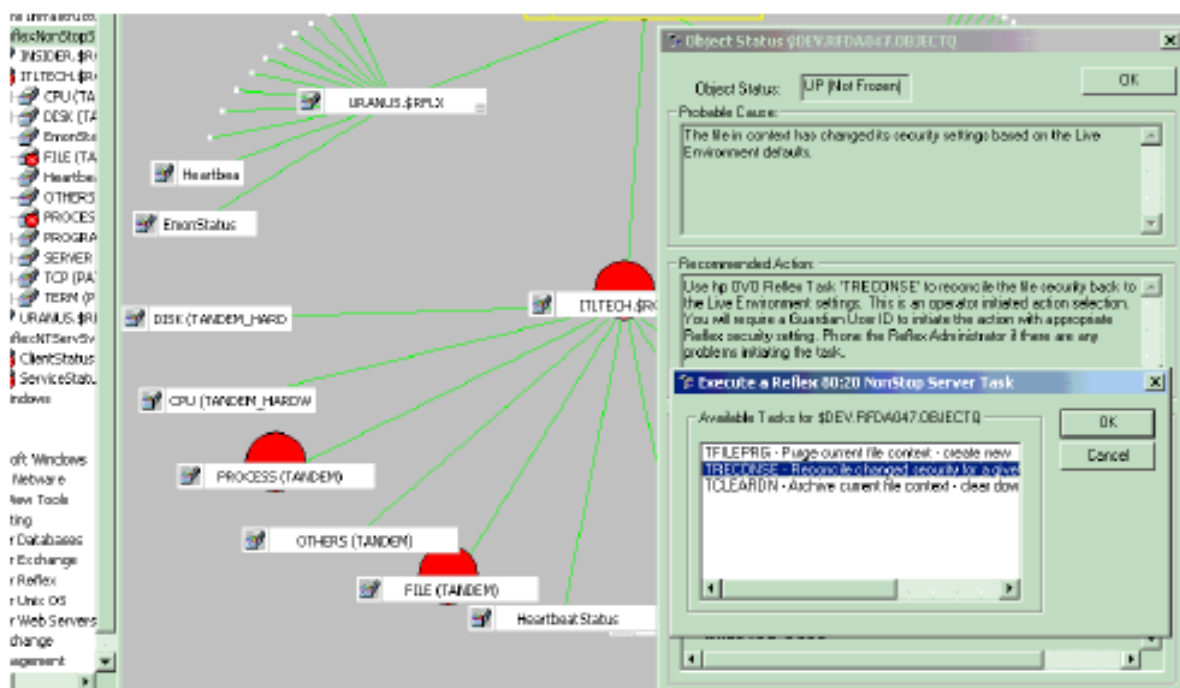

```
Type Filenames
Proc $RECRIVE
File \ITLTECH.$DEV.RFD047.POB3DIR
File \ITLTECH.$DEV.RFD047.POB3COD
Proc \ITLTECH.$TMP
```

Users of hp OVO are also able to request real-time status of any of these components in order to verify health after the initiation of a Smart Plug-In task or after user intervention. This combination of rich EMS alert feeds and user requested status checks guarantees efficient use of NSK based resources for centralised enterprise control with hp OVO.

Probable Cause and Recommended Action

In monitoring hp NonStop platforms, it is vitally important to maintain the currently established methods and approaches for troubleshooting NSK based problems. The Reflex SPI ensures that traditional approaches for hp NonStop problem solving are preserved, as well as supplying instruction text for each event policy delivered as part of the standard installation.

A clear example of this approach is the NSK based probable cause and recommended action texts associated with every delivered EMS alert on the NonStop platform. The Reflex SPI provides a user initiated command to enable these texts to be presented to the end user.



Each delivered NSK alert relayed to the 'Active Messages' view of hp OVO is tagged to allow full recovery texts to be requested. This is very much an advantage of relaying the NonStop EMS alert messages over using more basic SNMP approaches. The event policy 'instruction text' can also be accessed from the hp OVO Management Console for a two-layer approach to hp NonStop problem solving.

Batch Job Schedule Monitoring

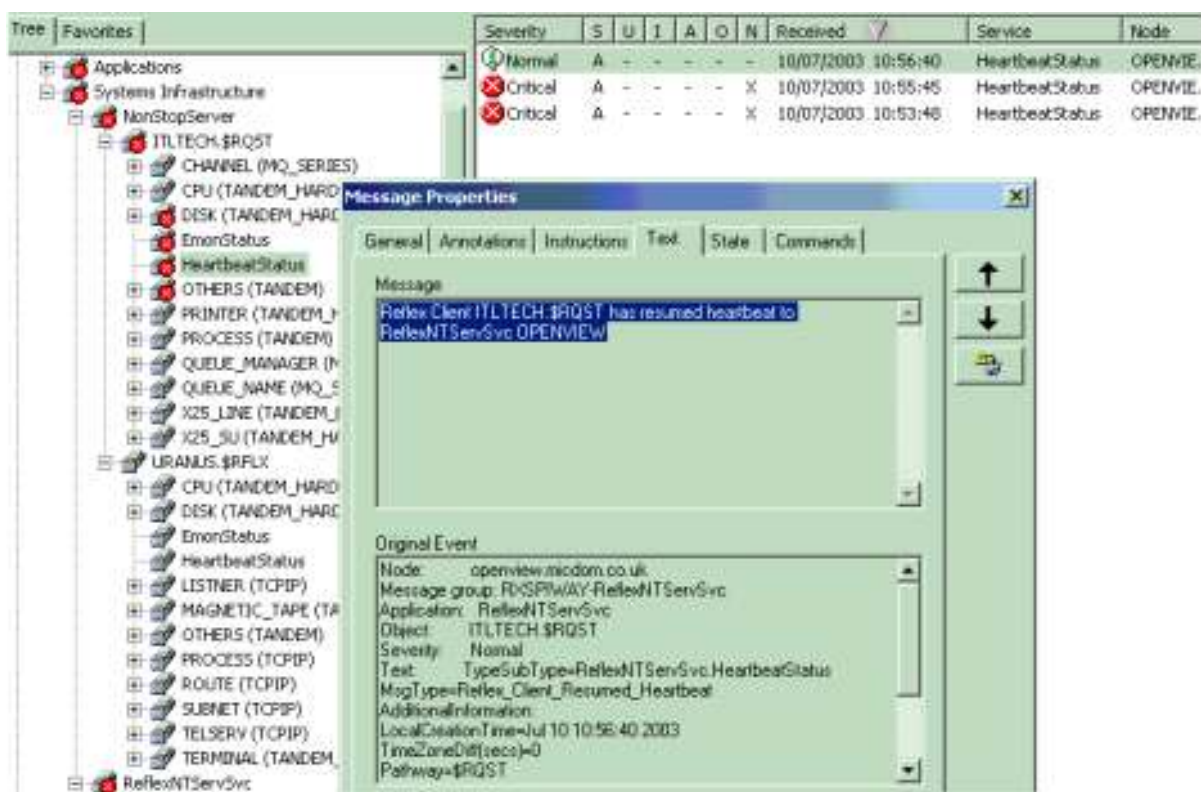
The Reflex SPI can keep track of all batch schedules and current job status by making use of the NSK delivered MultiBatch™ status agent. Users of hp OVO can request current job configuration and current status through the hp OVO Management Console as well as keep track of any failing jobs. The MultiBatch™ product issues an alert at each stage of the batch lifecycle all the way down to job level for tight control and monitoring through the hp OVO Service Trees.

Reflex alert transit files for all job state events generated on the NonStop platform, are delivered to provide quick and easy inclusion within hp OVO. All events indicating a potential issue in completing an overnight or daily schedule can be quickly isolated and remedied using Reflex SPI commands, which interact with the batch interface process.

A True NonStop Approach

In relaying NSK alerts away from the NonStop platform for display in the hp OVO Management Console, true NonStop approaches need to be employed by design. The main and supporting processes for the Reflex SPI are coded with NonStop check-pointing technology to recover automatically when the primary process fails. The event relay mechanisms of the Smart Plug-In even includes a contingency back-up for re-routing messages dynamically to an alternative TCP/ IP address in the event of PC Server or TCP/IP communication failure.

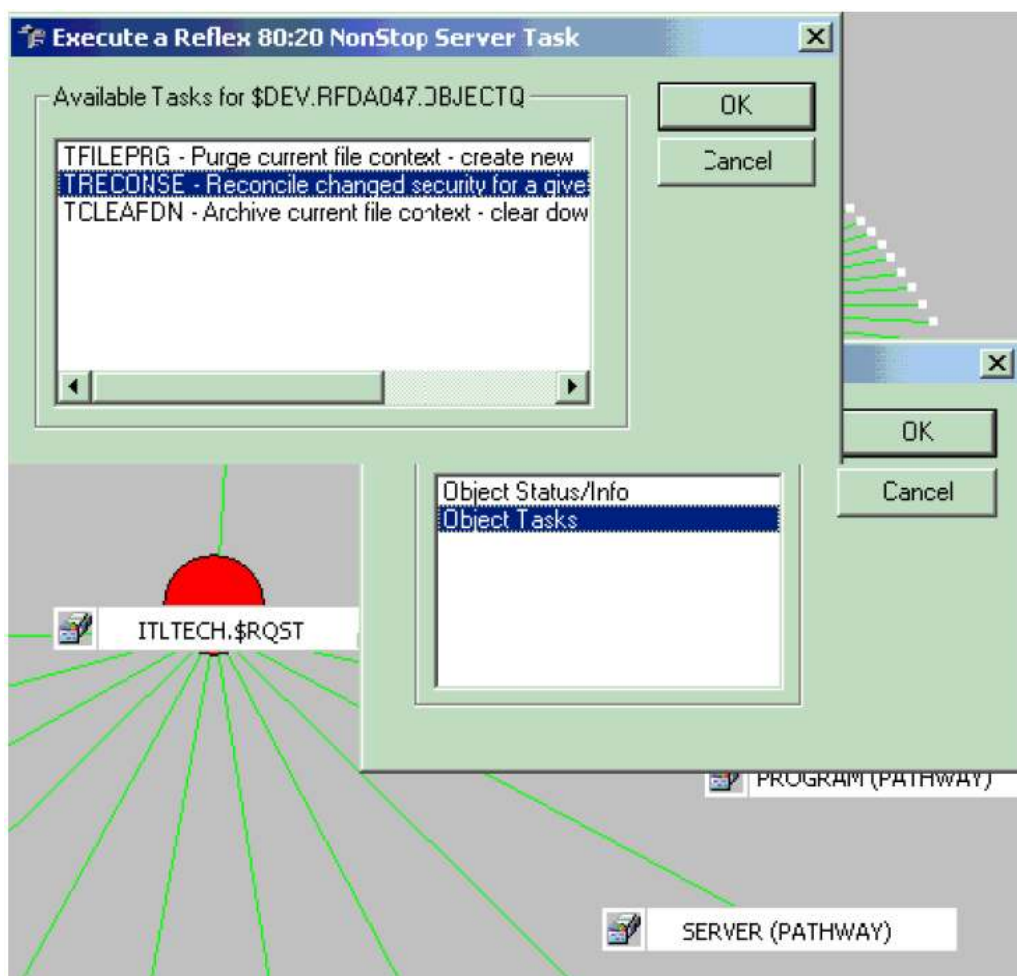
A second level of connectivity verification is included by way of both NSK and Reflex Smart Plug-In event heartbeats. If the event pulses are not received by the hp OVO Server after a configurable timeframe, the service trees within hp OVO will detail a potential compromise in hp NonStop monitoring for the affected NSK node. This is recorded in hp OVO directly against heartbeat and event monitor signifiers and also in the graphical topology view.



These failure and recovery approaches to hp NonStop network monitoring are not optional considerations for central enterprise control and are delivered as standard, as part of installing the Reflex SPI

User-Friendly Graphical Interface for Advanced Troubleshooting

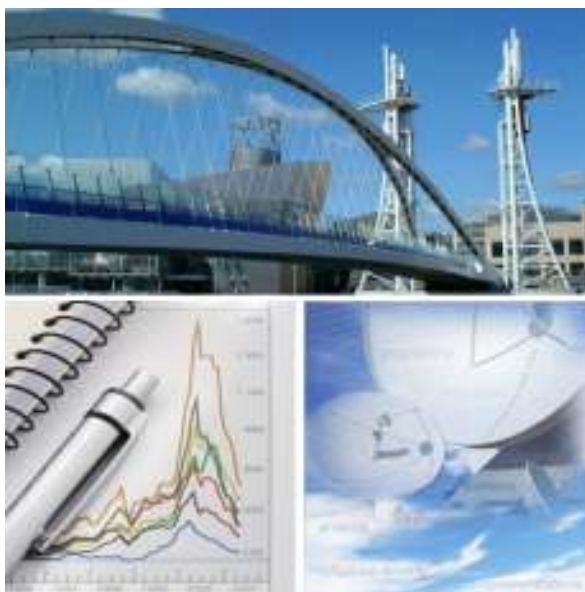
The Reflex SPI comes complete with easy to use interactive object status, information, cause/recovery texts and task initiation options as well as tools for policy import and NSK subsystem detection.



All functions are single click and allow for quick troubleshooting on hp NonStop issues. The Reflex GUI Client can also be invoked directly from the hp OVO Management Console for more advanced hp OVO users.

System Requirements

HP Non-Stop Node	NonStop Kernel Version D40 or Higher (including G series) NonStop TCP/IP 32 MB RAM per CPU Reflex LITE (80:20 or ONE24)
HP OpenView Environment	Windows 2000 for hp OVO hp OVO 7.0 and Higher 128 MB (Minimum Ram)
Workstation Environment	(Optional Configuration) Windows (NT/2000/XP) TCP/IP Protocol 64 MB (Minimum RAM)



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