Secrets for Managing NonStop Files and Databases

Kevin Christian, Mike Miller, Collin O’Brien, and John Fattig

© 2004 Hewlett-Packard Development Company, L.P.
The information contained herein is subject to change without notice
Terminology and Disclaimer

• “Secrets for managing …”
  – Some tools & techniques you can/should be using
  – Information not commonly known or disseminated

• “NonStop files and databases”
  – Enscribe files
  – NonStop SQL/MP tables
  – NonStop SQL/MX tables

• This presentation is a sampler & does NOT cover
  – Standard techniques you learn in HP NonStop classes
  – A full list of tools, products, or “best practices”
Managing NonStop Files & Databases

User might be looking for:

• Application Development tools
  – ADE (ETK), code generators (Pathmaker, ENABLE), DataLoader
  – Sizing (ASSET)
  – DB design (SQL example: Sybase PowerDesigner)
  – Query tools (reporting, BI, DM)

• Performance tools
  – Measure, SQL EXPLAIN, VQP, etc.

• Operations and Management tools
  – Space management (tools include FUP, DSAP/DCOM, SMF, SQLCI, MXCI, NSMweb, etc.)
  – Capacity Planning (TCM)
  – Future self-management (automatic load-balancing, partitioning, reorganization – first step NonStop dba/m)

• KEY POINT: HP Education offers numerous classes
Presentation Agenda

• Spotlight: Reload Analyzer (TRA)
• Spotlight: Enform Optimizer
• Spotlight: ASAP
• Spotlight: HP OpenView SQL support
• Some recent enhancements
  − Benefiting Enscribe & NonStop SQL
• Other Resources
TRA Tandem Reload Analyzer

Mike Miller

© 2004 Hewlett-Packard Development Company, L.P.
The information contained herein is subject to change without notice.
What is Reload Analyzer?

- **Common name:** Tandem Reload Analyzer
- Database management tool determines when Enscribe or SQL objects need reorganization
- Documented in NTL under “R” for Reload Analyzer
Organization versus disorganization

- When files, tables, or indexes are disorganized...
  - Data blocks are not physically adjacent.
  - Results in loss of sequential data-block pre-fetch
  - Results in excessive physical I/O and/or seeks
  - Sequential performance very poor if disorganized
  - Disorganized files cannot take advantage of
    • bulk reads for sequential pre-fetch
    • bulk writes for sequential updates in files.
  - To improve application performance and disk space utilization, files/tables must be periodically reorganized.
Reorganization of files and tables

- **FUP RELOAD**
  - Physically reorganizes key-sequenced Enscribe files, and SQL-MP/MX tables or indexes that are disorganized
  - FUP RELOAD is not a procedure that should be used indiscriminately
  - Determining when to reload is difficult

- **RELOAD ANALYZER**
  - Database management tool
  - Reload Analyzer analyzes Enscribe and SQL files/tables
  - Helps determine when files/tables need reorganization
  - Reload Analyzer generates FUP RELOAD commands if user specified fragmentation objective is not met
What Reload Analyzer does

- **Reload Analyzer**
  - Performs data-block chain fragmentation analysis
  - Determines if time to reload files, tables, indexes, and partitions
  - Reload Analyzer can work with single file or a batch list of files
  - Generates RELOAD command if blocks/chain is under threshold
  - Example, if percent total blocks per chain under 5%, then reload
Vertical and Horizontal analysis

- Reload Analyzer performs both
  - **Vertical** index-block analysis
  - **Horizontal** data-block analysis

- Too many **Vertical** index-blocks cause poor **random** access.

- Too many short, broken **Horizontal** data-block chains cause very poor **sequential** access (up to 128x slower).
What Reload Analyzer Computes

• Reload Analyzer computes
  - Number of data chains
  - Longest data-block chain
  - Shortest data-block chain
  - Histogram of blocks per chain
  - Average number of blocks/chain
  - Percentage of total blocks in avg chain ideally should be 100%
  - One physical chain is optimum
  - All blocks in one chain is ideal
  - Average blocks per chain = 100%

NOTES:
1) Reload Analyzer also provides values in the FUP Statistics option, but TRA does it faster due to block pre-fetching.
2) None of the above key reload metrics provided by the FUP statistics option.

T9516 Reload Analyzer
Data Chain Information

Number of chains - 203
Longest chain - 15
Chain length histogram

<table>
<thead>
<tr>
<th>Chain Length</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>191</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>11 - 25</td>
<td>3</td>
</tr>
<tr>
<td>26 - 50</td>
<td>0</td>
</tr>
<tr>
<td>51 - 100</td>
<td>0</td>
</tr>
<tr>
<td>&gt; 100</td>
<td>0</td>
</tr>
</tbody>
</table>

Average blocks/chain - 1

Percent total blocks in average chain < 1% (a badly fragmented table)
Reload Analyzer – New Features

• Product version T9516 AAE (01MAR2005)
  – Ships with G06.26 and higher
  – Works with all prior G06.xx RVUs.
  – Works with D42 and higher RVUs.

• Key New Features
  – Provides reload analysis of all database file types
    • Enscribe structured files
    • SQL/MP table/index files
    • SQL/MX table/index files
Enform
Optimizer

Collin O’Brien

© 2004 Hewlett-Packard Development Company, L.P.
The information contained herein is subject to change without notice
What is Enform Optimizer?

- Library to improve Enform query performance
- Processes queries up to 300% faster
- Reduces I/O
- Reduces external sorts
- Transparent to queries; no query changes required to use EFO
- Non-privileged code; EFO is a library attached to the Enform Query Process (QP)
- Works for all Enform operations – LIST, FIND, compiled queries, programmatic interface, …
How Does Enform Optimizer Work?

- Intercepts I/Os
- Uses large transfers
- Performs sorts internally whenever possible
- Stores intermediate data (workfiles) in memory
Enform Optimizer - Results

- Generally improves query performance by 30% - 300%
- Eliminates 80% - 95% of I/O to unstructured and entry sequenced files, including internal workfiles
- Eliminates 98% of sort time for sorts performed internally
- Reduces I/O time by 50% - 98% for:
  - Relative, entry-sequenced, or unstructured input files
  - Intermediate files (workfiles)
  - FIND output
- Impact for key-sequenced files not as significant, but can still achieve 25% improvement for complex queries involving sorts due to workfile efficiency
- Results with EFO never worse than without
Enform Optimizer - History

- EFO tracks its own performance via QPSTATS DB
- Used to analyze EFO benefits in your environment

Summary statistics for 2 days: earliest date is 30 MAR 2005
Query processes: 474, LIST/FLTs: 558
QP Elapsed time: 25,220.726 seconds
QP Cpu time: 613.632 seconds

<table>
<thead>
<tr>
<th>Description</th>
<th>Total</th>
<th>Standard</th>
<th>Optimized</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>File Opens</td>
<td>1,640</td>
<td>1,148</td>
<td>492</td>
<td>30%</td>
</tr>
<tr>
<td>Read I/Os</td>
<td>129,203</td>
<td>85,464</td>
<td>43,739</td>
<td>34%</td>
</tr>
<tr>
<td>Write I/Os</td>
<td>11,131</td>
<td>1,608</td>
<td>9,523</td>
<td>85%</td>
</tr>
<tr>
<td>Positions</td>
<td>13,493</td>
<td>5,966</td>
<td>7,527</td>
<td>55%</td>
</tr>
<tr>
<td>Total I/Os</td>
<td>155,467</td>
<td>94,186</td>
<td>61,281</td>
<td>39%</td>
</tr>
<tr>
<td>QP I/O time</td>
<td>94.545</td>
<td>65.202</td>
<td>29.343</td>
<td>31%</td>
</tr>
</tbody>
</table>

Sort

<table>
<thead>
<tr>
<th>Description</th>
<th>Total</th>
<th>Standard</th>
<th>Optimized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counts</td>
<td>380</td>
<td>145</td>
<td>235</td>
</tr>
<tr>
<td>Records</td>
<td>29,194</td>
<td>12,598</td>
<td>16,596</td>
</tr>
<tr>
<td>Create time</td>
<td>106.441</td>
<td>66.383</td>
<td>40.058</td>
</tr>
<tr>
<td>Process time</td>
<td>118.381</td>
<td>16.6</td>
<td>101.781</td>
</tr>
<tr>
<td>I/O time</td>
<td>41.15</td>
<td>21.74</td>
<td>19.41</td>
</tr>
<tr>
<td>Total time</td>
<td>265.972</td>
<td>104.723</td>
<td>161.249</td>
</tr>
</tbody>
</table>

This is an HP copyrighted work that may not be reproduced without the written permission of HP.
Enform Optimizer – New Features

• T9145AAI, shipped with G06.25, includes:
  − Compatible with Enform Plus as well as standard Enform
  − Support for Format 2 files
  − Takes advantage of larger memory sizes on most systems

• T9145H01 will ship with first Yosemite release
  − Currently included in EAP versions
  − Enform Plus standard with Yosemite; Enform obsolete
  − Contains the same features and enhancements as T9145AAI
ASAP – What is ASAP?

• ASAP provides an Availability Monitoring Infrastructure for NonStop Servers

• Monitors user defined service level objectives
  – System objects - Cpu, Disk, Expand, File, Process ...
  – Subsystems – Comm, RDF, Spooler, Tape, TMF ...
  – Applications – Domains of service ...

• Provides
  – Graphical interface
  – Alerts via EMS messages, phone, pager, email
  – Can take corrective actions when goals are not met.
ASAP – What ASAP does?

Monitors
• Status
• Performance

Reports
• Results

Notifies
• EMS event
• Phone
• Pager
• Email

Acts
• Takes
Recovery
Actions

Analyzes
• Goals
• Actions
• Availability

Objectifies
• Information into Object-State DB

Monitor Object-Status-Performance

This is an HP copyrighted work that may not be reproduced without the written permission of HP.
ASAP 2.5 - New Interfaces

- ASAP interfaces
  - Tokenized EMS alerts
  - Provider APIs
  - Consumer APIs
  - Application plug-ins
  - 3rd Party plug-ins
  - Published Database
  - Batch Query interface
  - Enform Interface
  - Conversational
  - Fat/Thin GUIs
  - EMF interfaces
  - Email interface
  - Phone interface
  - Pager interface
  - HTML interface
  - Web ViewPoint
  - Linux
  - OpenView

May 5, 2005
ASAP - New Notification Capabilities

- ASAP can raise alerts in a number of ways in addition to EMS events
- Send email reports
- Send text messages
- Notify cell phone
- Notify wireless pager
- Email reports
  - Object state reports
  - State change reports
  - Top “n” offenders
- Example
  - HTML content
  - View in Outlook
  - View in Browser
ASAP - New Action Capabilities

• ASAP can now optionally perform automation
• ASAP can now optionally take corrective actions, such as re-secure a file, or correct the priority of a process.
• New Goal and Action Language (GOAL)
  − Allows simple specification of goals and actions.
  − Example, the following automatically re-secures files in $DATA.DB subvol to the correct owner or access.

    GOAL FILE $DATA.DB, OWNER="255,255" ACTION GIVE
    GOAL FILE $DATA.DB, RWEP = OOOO ACTION SECURE
ASAP - Goal and Action Examples

- **FILE**
  - When files do not meet security goals, ASAP can raise alert and take action
  - When a file exceeds limits such as too full, ASAP can raise an alert or take action
  - When file such as ZZSA appears, ASAP can raise an alert or take action to analyze

- **DISK**
  - When a disk volume’s largest fragment size drops below critical level
    ASAP can raise alert or automatically take action to correct, eg DCOM
  - When disk metrics exceeds certain thresholds such as 80% full
    ASAP can raise alert and take a corrective action

- **ODBC**
  - When critical server processes need to be started/restarted, have their priority corrected, or switch to the correct CPU, ASAP can raise alert and take action

- **RDF**
  - When RDF backup node is too many seconds behind primary
    ASAP can raise alert or take actions such as run a TACL macro

- **TMF**
  - When transaction time exceeds objective, ASAP can raise alert and take action
  - When tape mount outstanding too long, ASAP can raise alert and take action
Web ViewPoint Plug-in for ASAP

- Browser interface to view all ASAP real-time availability metrics
- Identical colors, states and icons as fat client
- Complete integration with Web ViewPoint tab options
- Supports:
  - Tree View of objects
  - Selecting an entity in Tree displays object detail
  - Selecting object shows object history...
ASAP Hybrid Extension for Linux

- Integrates NonStop and Linux availability monitoring
- Provides unified view of hybrid NonStop/Linux applications
- Linux application domains are integrated with Nonstop server application domains
- Supports multiple NonStop and Linux environments
- All ASAP features and benefits are extended to Linux including interfaces to EMS alerts, email, phone, pager, Web ViewPoint and OpenView
ASAP Smart Plug-in for OpenView

- OpenView Operations (OVO) SPI for ASAP
- Automatically adds all ASAP monitored entities, object states and performance metrics into the OpenView environment
- OVO SPI for ASAP is included with ASAP, but does not require OpenView for customers to use or deploy ASAP
- The OVO SPI for ASAP provides the following OpenView features.
  - ASAP object-state info can be optionally integrated with OpenView
  - ASAP service-Level objectives reported in OpenView
  - ASAP alerts can optionally appear in OpenView
  - Allows OpenView monitoring of ASAP goals on:
    - System objects: Cpu, Disk, Expand, Comm, Node, System, Tape, and more...
    - Subsystem domains: File, Process, PCB, RDF, Spooler, TMF, and more...
    - Application domains: Tickets, Reservations, F-Exchange, Funds, Orders, etc...
    - OVO SPI objects appear in OpenView the same as any other monitored object
    - Application objects appear same as ASAP objects, eg: hierarchical drill down
    - Linux applications now also automatically appear in ASAP or OpenView via new ASAP Hybrid for Linux products
  - ASAP can be used with or without OpenView
HP OpenView Support
for NonStop SQL/MP and SQL/MX

using:
OpenView NonStop Server Management (OVNM)
and
OpenView NonStop Server Performance Management (OVNPM)

John Fattig

© 2004 Hewlett-Packard Development Company, L.P.
The information contained herein is subject to change without notice
OpenView NonStop Server Management (OVNM) DB Support

- OVNM provides a NonStop server OpenView agent that integrates NonStop server object states and events into the OpenView Operations (OVO)
- Monitors existence, location & numbers of key SQL/MP and SQL/MX infrastructure processes (executors, etc.)
- Execution of any SQL/MP or SQL/MX command line interface command as a result of an OVNM event received by OpenView Operations (OVO)
- The OVNM File System Object for monitoring Enscribe files and SQL tables can generate OVO events based on the following Table or Partition items

<table>
<thead>
<tr>
<th>Item</th>
<th>Condition options</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUDITED</td>
<td>Equal to &lt;value 1&gt;</td>
</tr>
<tr>
<td>CLEAR ON PURGE</td>
<td>Not equal to &lt;value 1&gt;</td>
</tr>
<tr>
<td>EOF</td>
<td>Less than &lt;value 1&gt;</td>
</tr>
<tr>
<td>FILE EXISTS</td>
<td>Less than or equal to &lt;value 1&gt;</td>
</tr>
<tr>
<td>FILE NOT EXISTS</td>
<td>Greater than &lt;value 1&gt;</td>
</tr>
<tr>
<td>FREE EXTENTS</td>
<td>Greater than or equal to &lt;value 1&gt;</td>
</tr>
<tr>
<td>INDEX LEVELS</td>
<td>Greater than &lt;value 1&gt; and less than &lt;value 2&gt;</td>
</tr>
<tr>
<td>LICENSED</td>
<td>Less than &lt;value 1&gt; or greater than &lt;value 2&gt;</td>
</tr>
<tr>
<td>MAX EXTENTS</td>
<td></td>
</tr>
<tr>
<td>NEEDS RECOVERY</td>
<td></td>
</tr>
<tr>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>PERCENT EMPTY</td>
<td></td>
</tr>
<tr>
<td>PERCENT FULL</td>
<td></td>
</tr>
<tr>
<td>PROGID</td>
<td></td>
</tr>
<tr>
<td>SQL VALID</td>
<td></td>
</tr>
</tbody>
</table>
OpenView NonStop Server Performance Management (OVNPM) DB Support

- OVNPM can generate OVO events based on the following SQL/MP and SQL/MX database performance metrics.

<table>
<thead>
<tr>
<th>Metric</th>
<th>Metric</th>
<th>Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read.nb [..]</td>
<td>Block-Splits.nb [..]</td>
<td>Full.% [..]</td>
</tr>
<tr>
<td>Requests-Blocked.nb [..]</td>
<td>Cache-Read-Hits.nb [..]</td>
<td>Lock-Bounces.nb [..]</td>
</tr>
<tr>
<td>Requests.nb [..]</td>
<td>Cache-Write-Cleans.nb [..]</td>
<td>Lock-Timeouts.nb [..]</td>
</tr>
<tr>
<td>sql-deletes.nb [..]</td>
<td>Cache-Write-Hits.nb [..]</td>
<td>Lockwait-Time.% [..]</td>
</tr>
<tr>
<td>sql-inserts.nb [..]</td>
<td>Disc-Ext-Warn.nb [..]</td>
<td>Open-Qtime.% [..]</td>
</tr>
<tr>
<td>sql-updates.nb [..]</td>
<td>Ect.KB. [..]</td>
<td>oss-blocks-write.nb [..]</td>
</tr>
<tr>
<td>Transient-Opens.nb [..]</td>
<td>Free-Extent.nb [..]</td>
<td>oss-cache-callbacks.nb [..]</td>
</tr>
<tr>
<td>Write.nb [..]</td>
<td></td>
<td>oss-callback-write.nb [..]</td>
</tr>
</tbody>
</table>

- For more info: [http://emo.atc-hp.com/ovnm](http://emo.atc-hp.com/ovnm)
DP2 improvements in recent past

Faster Throughput Using Less CPU  
September 2003  G06.21

- 128 KB I/O
  - Works for DP2 Read-ahead, buffered writes, audit trail writes
  - S74000 (or newer), S7600 (or newer), IOMF-2 for I/O enclosures
  - Review your DP2 cache sizes

- DP2 Cache Scatter/Gather Technology
  - Avoids cache byte moves and premature cache overwrites
  - Greater throughput, lower CPU consumption, automatic
  - DP2 cache is more efficient, reducing the need for increased size
More for NonStop SQL & Enscribe

- Online Disk Remirroring September 2003 G06.21
  - Replace mirror drive failures online transparent to application
  - Change the physical location of a volume’s disk(s)

- Online create a mirror disk for an unmirrored disk
- Unmirror a disk and select another drive to become mirror
More for NonStop SQL & Enscribe

- Automated Checksum Repair
  September 2003  G06.21

  - When a checksum error is detected, data is delivered to the application from the other side of the mirror
    - No change from past behavior
  - Data is then repaired automatically
    - Using data from the good side of the mirror
More for NonStop SQL & Enscribe

• **TMF Performance Enhancements**
  - G06.22: Faster dump-o-djs, faster recoveries, recoveries to new locations on disk or new system names/numbers
  - G06.24: Larger than 2 GB TMF Audit Trail

• **RDF 1.6  June 2004**
  - Improved RDF takeover performance
  - High Pin Enabled
  - Zero Lost Transactions (CA)

• **Fletcher Checksum  G06.24**
  - Even stronger disk error detection for ESS disks

• **Disk Data Scrubbing  G06.24 – FCHECK**
  - Can always run in low priority, or at other times
  - Useful to run just prior to downing one side of a mirror

• **Delta Revive  G06.24**
  - High speed, smart revive
    - Only the changed areas are synchronized
    - All disk types supported
Other Resources
NonStop Database Family of Products

– Database Engines
  • Enscribe
  • NonStop SQL/MP
  • NonStop SQL/MX with ODBC/MX* and JDBC/MX (with NonStop Java)

– Disaster Tolerance
  • Remote Database Facility (RDF) (also works for Enscribe)
  • NonStop AutoSYNC (also works for Enscribe)

– Manageability
  • Web-based graphical user interface for NonStop SQL/MX 2.0 and ODBC/MX*
  • Visual Query Planner
  • Dataloader
  • dba/m data manager
  • Storage Management Facility
  • Reload Analyzer

– Connectivity
  • ODBC/MP (for SQL/MP engine)
  • ODBC/MX* (part of SQL/MX) & JDBC/MX
  • SequeLink (MX engine)
  • Attunity Connect (available from Attunity)

– Large Objects for NonStop SQL

May 5, 2005
NonStop SQL Ecosystem Products

- Data Mining
- Manageability
- Rules Engines
- Report Writers
- Data Cleansing
- Data Replication
- Directory Services
- Business Continuity
- Campaign Management
- Extract, Transform, Load
- Online Analytical Processing

- Actional, Control Broker
- Acxiom, AbiliTec
- Ascential, DataStage
- Attunity, Attunity Connect
- Brio, Brio Query
- Cognos, Impromptu
- DataDirect Technologies, SequeLink
- DoubleClick (Protagona), Ensemble
- Hummingbird, BI/Query
- Extractor/Replicator from Golden Gate
- Faire-Isaac, Blaze Advisor
- Genus, Mart Builder, Mining Integrator, HSDCI
- IBM/Candle, MQ-Series products
- Informatica, PowerCenter
- Information Builders, FOCUS
- Integrated Research, Automated Storage Manager
- Integrated Research, Prognosis
- ITI, Shadowbase
- Mercator, Enterprise Broker
- Merlon Software, SQL Magic, Mpress reports
- MicroStrategy 7
- Network Technologies, DRNet
- Radiant Logic, Virtual Directory (LDAP Directory)
- SAS, Enterprise Miner
- Savant, Warehouse Transport
- Seagate, Crystal Decisions, Crystal Reports
- Trillium
- Unica
Other resources

• NonStop education:
  http://www.hp.com/go/nonstop/education

• NonStop Technical Library:
  http://techlibrary.cac.cpqcorp.net/ntl/

• ITUG: http://itug.org (See SIGs, including SQL-SIG)

• HP NonStop web sites
  – http://www.hp.com/go/nonstop
  – http://NonstopAsap.com

• Email contacts:
  – kevin.christian@hp.com, john.fattig@hp.com
Questions?

Lowest Total Cost of Ownership
Highest Availability

NonStop servers
ASAP DISK DB automation examples

• **DISK**
  - How to automatically generate critical EMS alert and defragment disk database volume if max fragment is less than 100mb...

    **GOAL DISK, FRAGMENT > 100 CRITICAL**
    **ACTION “DCOM <#object>”**

  - How to automatically generate repeating EMS alerts if any disk is 90% full or greater and how to take action...

    **GOAL DISK, FULL < 90 CRITICAL REPEAT**
    **ACTION “TACL CLEANUP <#object>”**

  - Actionable metrics:
    • Status, Primary Cpu, Backup Cpu, Primary controller path, Backup controller path, Percent Full, Request Rate, Total Busy%, Read%, Write%, Chit rate, Swap rate, Queue length, In-KB rate, Out-KB rate, Write rate, Read rate, Block Split rate, Blocked, Max Fragment, more...
ASAP DB File automation examples

- **FILE**
  - How to automatically re-secure database files that do not meet specified security goals...

    GOAL FILE $DATA1.DB.DataBase, RWEP=0000
    ACTION "FUP SECURE <#object>,<#goal>"

  - How to repeatedly raise alerts if a file is 80% full or greater, and how to initiate corrective actions ...

    GOAL FILE, FULL < 80 CRITICAL REPEAT
    ACTION "TACL File_Reload <#object>"

  - Actionable metrics:
    - Goals can be set on either individual objects or on aggregates
    - Actions can occur on either singular or aggregate object definitions
    - Existence, Status, Date, Time, Full, End-Of-File, Owner, RWEP, Open, TMF, Files, Count, Progid, License, Permissions, more...
ASAP RDF automation examples

- **RDF**

  - How to alert if RDF backup node is 60 seconds or more behind primary, and how to take actions...

    ```
    GOAL RDF, RTDSECS < 60 CRITICAL REPEAT
    ACTION “TACL ADD_EXTRACTORS <#object>”
    ```

  - ASAP only RDF metric interface that includes relative time delay (RTD) between primary and backup nodes
ASAP TMF automation examples

• TMF

  - How to ABORT TMF transaction if its duration exceeds 15 minutes (900 seconds)...

    GOAL TMF TRANSACTIONS, DURATION < 900
    ACTION “TMFCOM ABORT <#object>!”

  - How to automatically report on audit trail status, eg when audit trail overflow space in use...

    GOAL TMF Audittrail,Ovflw = "NO" Critical
    Action “TMFCOM STATUS audittrail <#object>"
ASAP Process automation examples

- **Process – how to correct misbehaving process**
  - How to automatically restart a stopped process...
    GOAL PROCESS $DBAPP, STATUS ACTION START
  - How to suspend overly busy DB app processes...
    GOAL PROCESS $Data.Apps.DBapp, BUSY < 50
    ACTION “SUSPEND <#object>”
  - How to reassert C compile priority if someone changes it
    GOAL PROCESS $System.System.C, PRIORITY=130
    ACTION “TACL ALTPRI <#object>,<#goal>”
A Word from our Sponsors!

ITUG & NonStop Education

© 2004 Hewlett-Packard Development Company, L.P.  
The information contained herein is subject to change without notice
NonStop Files & Databases

Education & Training Options

<table>
<thead>
<tr>
<th>Title</th>
<th>Audience</th>
<th>Availability</th>
<th>Location/Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Performance analysis and tuning U4195S</td>
<td>Operations Management</td>
<td>Now</td>
<td>United States Education</td>
</tr>
<tr>
<td>• Quick introduction to HP NonStop SQL/MX query analysis and tuning U8615S</td>
<td>Programmer Analysts System Administrators</td>
<td>Now</td>
<td>Centers Lecture/Lab,</td>
</tr>
<tr>
<td>• HP NonStop SQL/MX programming U5512S</td>
<td>Database Analysts</td>
<td></td>
<td>RAIL</td>
</tr>
<tr>
<td>Overviews, Presentations, Technical Update Presentations</td>
<td>Application developers System designers</td>
<td></td>
<td>Nonstop U</td>
</tr>
</tbody>
</table>

Keywords: Query Optimization, ASAP, Enscribe, Database Strategy

News from Nonstop Education & Training

<table>
<thead>
<tr>
<th>Free Hp Digital Camera promotion</th>
<th>Take any two NonStop classes and earn a Free Hp Digital camera.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private training price reduction</td>
<td>Up to 60% reduction on any 2 NonStop classes at your site.</td>
</tr>
</tbody>
</table>

Your NonStop Education & Training Contacts

<table>
<thead>
<tr>
<th>Private Classes at your site</th>
<th>Francine Barr  <a href="mailto:francine.barr@hp.com">francine.barr@hp.com</a> (703) 803-2931</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor-Led Live classes over Internet</td>
<td>Ben Wood  <a href="mailto:ben.wood@hp.com">ben.wood@hp.com</a> (408) 285-9662</td>
</tr>
<tr>
<td>Scheduled classes at Education Centers</td>
<td>Ben Wood  <a href="mailto:ben.wood@hp.com">ben.wood@hp.com</a> (408) 285-9662</td>
</tr>
<tr>
<td>Customer Conference Call enrollment</td>
<td>Dan Porter <a href="mailto:porter@hp.com">porter@hp.com</a> (412) 303-5213</td>
</tr>
<tr>
<td>Nonstop University Subscriptions</td>
<td>Phyllis Longbons  <a href="mailto:phyllis.longbons@hp.com">phyllis.longbons@hp.com</a> (408) 285-9131</td>
</tr>
</tbody>
</table>
ITUG: Major Conferences:

- **ITUG Europe 2005**
  - 23-25 May 2005
  - Estrel Convention Center
  - Berlin, Germany

- HP employees can register by visiting [http://nonstopdiv.corp.hp.com/object/ITUGEUROCONF05.html](http://nonstopdiv.corp.hp.com/object/ITUGEUROCONF05.html)


- The conference will be preceded by the NonStop Partner Summit ([https://h30204.www3.hp.com/hp/EMEANonStopPa_1552/](https://h30204.www3.hp.com/hp/EMEANonStopPa_1552/))

- HP employees can visit [http://nonstopdiv.corp.hp.com/object/ITUGEUROCONF05.html](http://nonstopdiv.corp.hp.com/object/ITUGEUROCONF05.html) for more details.

ITUG: Major Conferences:

- **OZTUG (Australian NonStop Users Group)**
  - Date: 25-26 July 2005
  - Topics: OZTUG Conference and Trade Show
  - Location: Sydney, Australia

- **ITUG Summit 2005**
  - October 24-27, 2005
  - San Jose Convention Center
  - San Jose, CA USA

- **Call for Speakers form** deadline for submitting presentation ideas is May 9.
- HP employees with questions can contact Joyce Perrelli in the Customer Liaison Office at 408-285-9166.
RUG News - 1

- **BUG (Boston NonStop User Group)**
  - Date: 10 May 2005
  - Topics: Hardware/software updates, Itanium migration, Solutions, vendor sessions
  - Location: Lexington, MA

- **SunTUG (Florida HP NonStop Users Group)**
  - Date: 18 May 2005
  - Topics: Education Day (Quick Introduction to WebServices for Nonstop Server)
  - Location: Tampa, Florida

- **MRTUG (Midwest Region Tandem Users Group)**
  - Date: 18 May 2005
  - Topics: TBD
  - Location: TBD

- **ATUG (Atlanta Tandem Users Group)**
  - Date: 19 May 2005
  - Topics: HP NonStop Hardware/software updates, Itanium migration
  - Location: Atlanta, Georgia
RUG News - 2

CNUG/ANUG (China NonStop User Group/Asia Pacific NonStop User Group)
- Part of HP NonStop Itanium® 2-based Server APD Launch
- Date: 7-8 June 2005
- Topics: HP NonStop Hardware/software updates, Itanium migration, Solutions, vendor sessions
- Location: Beijing, China
HP NonStop Itanium® 2-based Server Launches

North America Marketing HP NonStop Itanium® 2-based Server Launches for Regions
- NRTUG (Northeast Regional Tandem Users Group)
- CTUG (Canadian Tandem Users Group)
- MRTUG (Midwest Region Tandem Users Group)
- Date: 7 June 2005
- Topic: Regional Events - HP Integrity NonStop server launch
- Locations: New York, Toronto, and Chicago

• North America Marketing HP NonStop Itanium® 2-based Server Launches for Regions
  - SunTUG (Florida Tandem Users Group)
  - N2TUG (North Texas and Oklahoma Tandem Users Group)
  - NCTUG (Northern California Tandem Users Group)
  - Date: 9 June 2005
  - Topic: Regional Events - HP Integrity NonStop server launch
  - Locations: Tampa, Dallas, and San Jose
HP NonStop Itanium® 2-based Server Launches

RMTUG (Rocky Mountain Tandem Users Group)
- Date: 8-9 June 2005
- Topics: TBD (Education day on 9 June)
- Location: Lone Tree, Colorado
- TNUG (Taiwan NonStop User Group)
- Part of HP NonStop Itanium® 2-based Server APD Launch
- Date: 10 June 2005
- Topics: HP NonStop Hardware/software updates, Itanium migration, Solutions, vendor sessions
- Location: Taipei, Taiwan

• KNUG (Korea NonStop Users Group)
  - Part of HP NonStop Itanium® 2-based Server APD Launch
  - Date: 14 June 2005
  - Topics: HP NonStop Hardware/software updates, Itanium migration, Solutions, vendor sessions
  - Location: Seoul, Korea
HP NonStop Itanium® 2-based Server Launches

MSTUG (Mid-Southern States NonStop Users Group)/ ATUG (Atlanta Tandem Users Group)
- Part of the Southeastern Regional Roadshow
- Date: 11 July 2005
- Topics: HP NonStop Hardware/software updates, Itanium migration, vendor sessions
- Location: Memphis, TN

MATUG (Mid-Atlantic Tandem Users Group)
- Part of the Southeastern Regional Roadshow
- Date: 12 July 2005
- Topics: HP NonStop Hardware/software updates, Itanium migration, vendor sessions
- Location: D.C./Maryland area

• N2TUG (North Texas and Oklahoma Tandem Users Group)
  - Part of the Southeastern Regional Roadshow
  - Date: 14 July 2005
  - Topics: HP NonStop Hardware/software updates, Itanium migration, vendor sessions
  - Location: Dallas, TX
HP NonStop Itanium® 2-based Server Launches

SunTUG (Florida Tandem Users Group)
- Part of the Southeastern Regional Roadshow
- Date: 15 July 2005
- Topics: HP NonStop Hardware/software updates, Itanium migration, vendor sessions
- Location: Tampa, FL
Next month

“Itanium Announcement Overview & NS Server Advanced Architecture - System Configuration”