PerfDat

A new performance solution for OpenVMS

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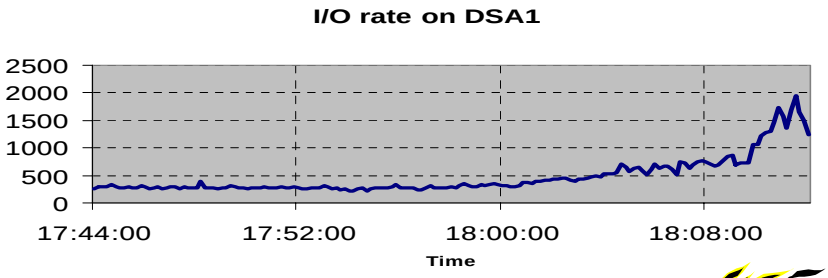
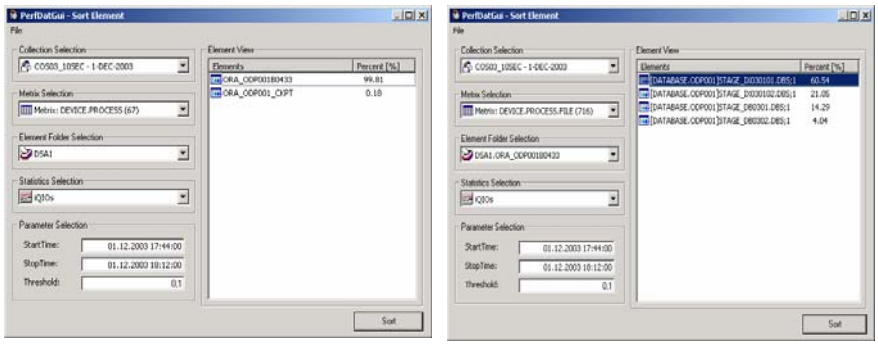
Did you ever face …



- Sudden I/O rate increase
- Massive user complaints right away
- > 100 processes active
- No process I/O request data correlation

Whould you like to identify with low effort …

- Which processes are the originators of the problem?
- Which „hot“ files are accessed by that process?



Have you ever tried …

- to get these kind of information from existing performance tools on OpenVMS?

Austrian lottery …

- Did have the problem
- Tried to identify the device I/O originator
- Recognized any conclusion was educated guess

- *This was the birth of PerfDat*

Agenda

- Requirements
- Concepts and components
- PerfDat installation
- PerfDat licensing
- Supported versions
- PerfDat links

Key design goal

- From the very beginning PerfDat was designed as a powerful solution that is capable to support all performance and capacity planning related activities during the lifetime of a system.

Key design goal (cont.)

- This includes
  - Benchmarking runs
  - Stress testing
  - System sizing
  - System characterization
  - Tuning
  - Troubleshooting and bottleneck identification
  - Investigation of performance anomalies
  - Validating the performance impact of new software / software versions / OpenVMS releases
  - Trend analysis
  - …

Requirements

- Powerful data collector
- Easy to handle and control (plug and play)
- Ability to handle huge amounts of data (> 1TByte)
- As little data management as possible
- Best practice workflow support based on a variety of statistical functions for any kind of performance analysis task in order to
  - Reduce analysis time
  - Get a clue about what is going on without expert knowledge
- Analysis tool shall not depend on the source data format – principle: “analyze what you get”

Requirements (cont.)

- Data analysis shall be done without any kind of data preprocessing
- Automatic trend reporting and data compression
- Archive and housekeeping functionality
- Data from different sources (different nodes - native data of the PerfDat data collector, mapped or imported data) shall be transparently accessed via one single common interface.
- Data analysis shall neither depend explicitly nor implicitly on the start time or sample interval of any data collection.
- Easy data transfer of the performance data base or parts of it for offline analysis

Requirements (cont.)

- Up- and downward data compatibility
- Ability to map / import data from additional data sources
- State of the art GUI
  - Easy to handle
  - Intuitive
  - Ability to visualize and analyze data from remote
- No dependency on any layered products except those available on the OpenVMS installation CD
- No dependency on any 3rd party product or any kind of shareware / freeware.

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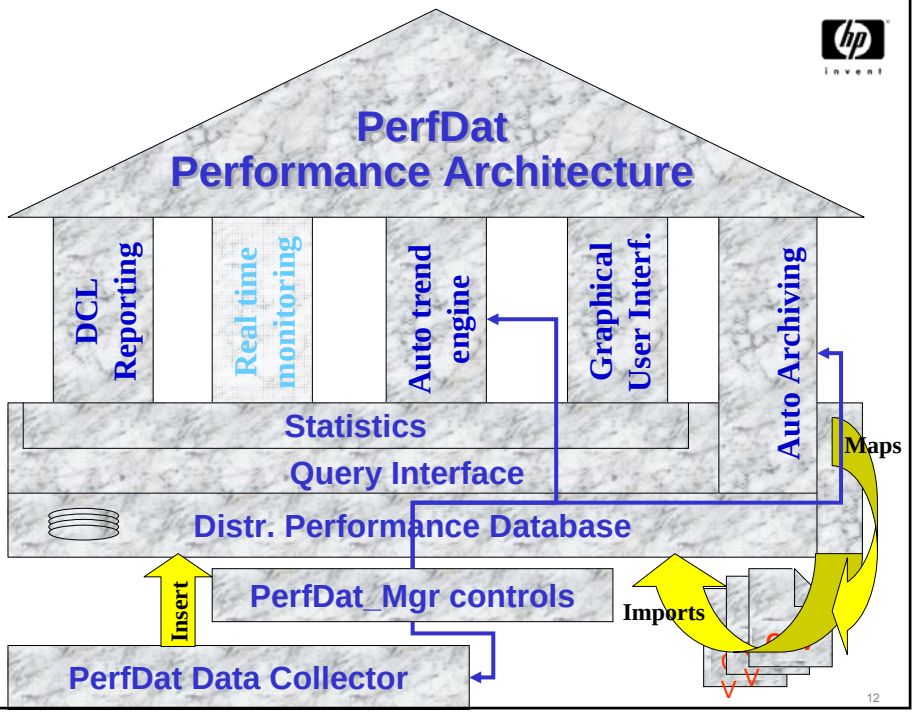

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Data Collector - Features

- Up to 3 collections in parallel
- Currently 600 statistics organized in 20 metrics
- Profile controlled – Profiles reside in the profile database and are configured via PerfDat_Mgr
- Sample interval is freely definable (Min = 1 sec)
- Each metric can be enabled/disabled independently
- For each metric (except the system metric), thresholds can be set to minimize the amount of data

Data Collector – Features (cont.)

- Metrics can be restricted to single / multiple devices, processes, users, images and volumes
- Device metric allows I/O resolution to single process, files and files per process (not only hot file statistic but also the originator of hot files can be identified)
- Files in the device- and XFC statistics not only resolved to file ID's but also to their real file names
- complete XFC integration
- Permits online monitoring

Data Collector – Features (cont.)

- Dynamic resource trimming.
  - In order to avoid performance problems due to running PerfDat, PerfDat watches its own resource consumption, and if CPU load and/or I/O load exceeds definable thresholds PerfDat automatically increases collection sample intervals and/or dismisses metrics rule based.
- Is controlled by PerfDat_Mgr

Available metrices

- System
- CPU
- Process
- User
- Image
- Device
- Device.IOSize
- Device.File
- Device.Process
- Device.Process.File

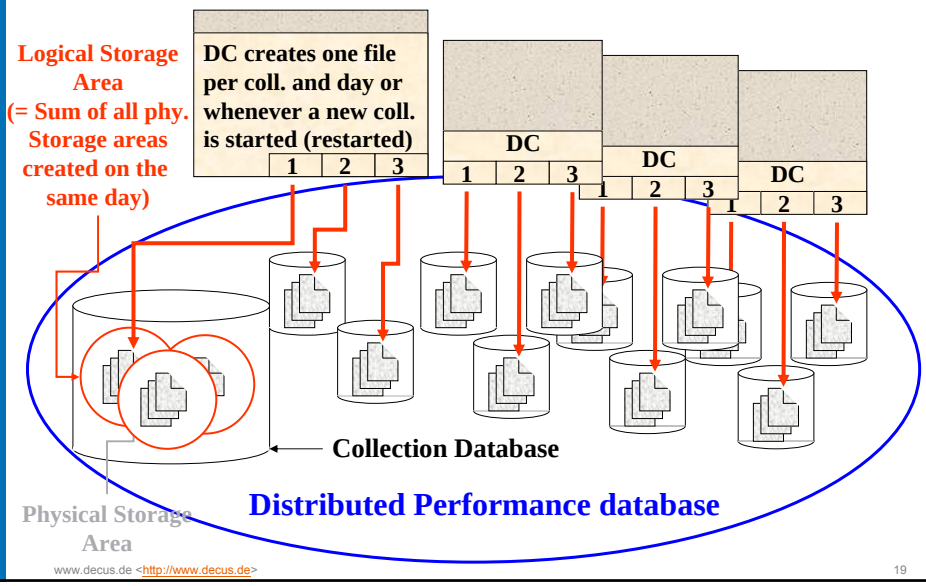
Available metrices (cont.)

- XFCVolume
- XFCVolume.IOSize
- XFCVolume.File
- XFCVolume.File.IOSize
- LANAdapter
- LANAdapter.Device
- LANProtocol
- SCSPort
- SCSPort.VC
- SCSPort.VC.Channel

Management interface - PerfDat_Mgr

- Startup and shutdown of the environment on the local node
- Add, copy, modify, delete collection profiles
- Start, stop collections
- Shows status of actual running collections
- Add, copy, modify, delete trend report profiles
- Licensing
- Start, stop and configuration of Archiver

Database Organisation



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Database & Query Interface - Features

- RMS based
- Self defining
- Distributed
- Query interface (DQL$) similar to SQL
- Transparent single point access via network abstraction layer via DQL$ interface
- Up- and downward data compatibility via data abstraction layer
- Dynamic CSV file mapping capability for accessing and analyzing data from different data sources

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Database & Query Interface Features (cont.)

- Multi file version support
- No root file involved.
  - This has the advantage that single files can be moved to other nodes and accessed without restoring the whole database
- CSV import capability.
  - Data is not only inserted but normalized.
- CSV export capability
- Statistic package fully integrated in data query interface

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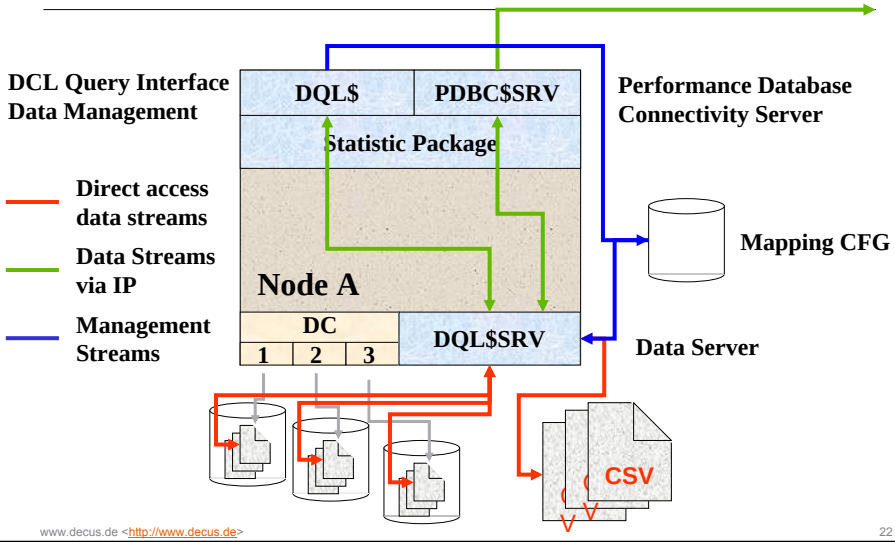
Query Interface - Components



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Query Interface - Community

- When accessing the performance database via a dedicated server the Community defines the database view
- Community
  - Defined via the logical PERFDAT$COMMUNITY
  - Defines the nodes of interest
  - Only data created by these nodes will be visible
- Independently of the Community definition, the local node and the archive node (if available) are always accessed

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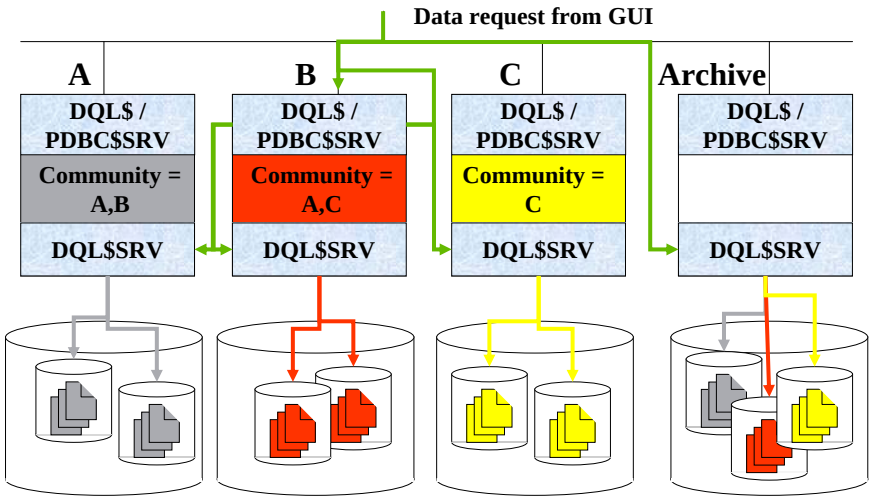
Query Interface - Data Flow



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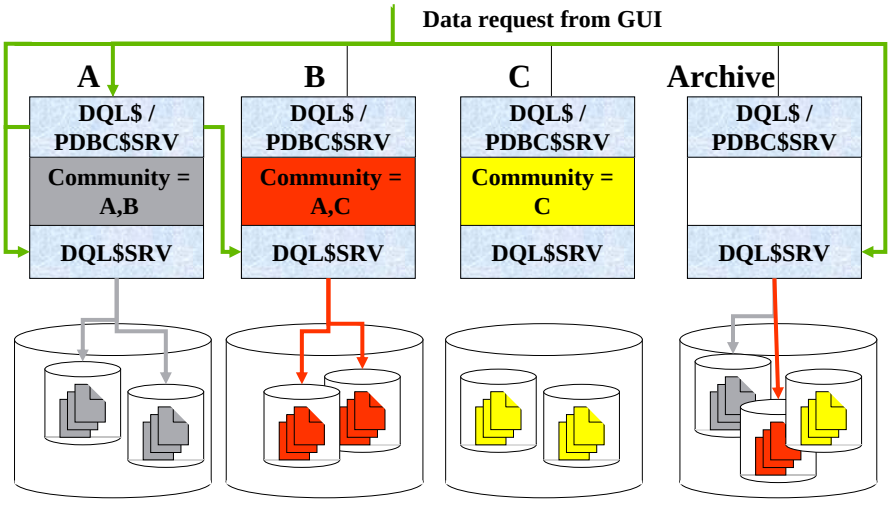
Query Interface - Data Flow



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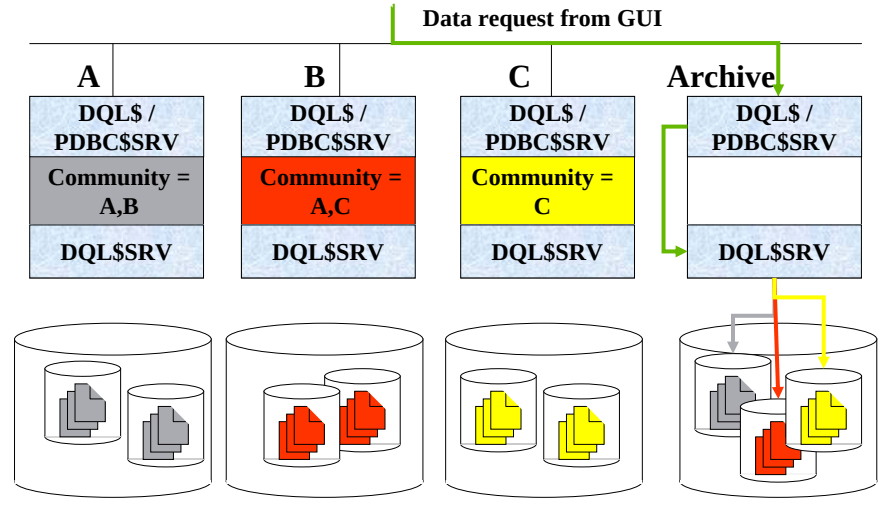
Query Interface - Data Flow



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Statistic package - Features

- Min/max calculations
- Mean value calculations
- Standard deviation
- Correlation
- Integral and mean value based deviation calculation
- Integral and mean value sorting of each element of a metric (freely definable time period, statistics and elements)
- The package is part of the query interface. Thus, it is available from the GUI as well as from the command line interface (DCL) on OpenVMS.

Archiving and housekeeping

- Daily log-file and temp file cleanup
- Periodical archiving of logical storage areas
- Archiving time is freely defineable
- Keep time of data is freely definable
- Logical Storage areas that are older then the actual date minus keep time are unconditionally deleted
- Trend reports are not deleted
- Archiving can be done locally or on dedicated archiving nodes

Archiving and housekeeping

- CSV-files are not processed by the archiver
- Data manually moved to PERFDAT$DB_SAVE are not processed either
- PERFDAT$DB_SAVE is used as the target directory for performance data base-lining
- Is controlled via PerfDat_Mgr

Auto trend engine

- Is triggered by the archiver (if the archiver is stopped the auto trend engine is stopped too)
- Only processes performance data of the local node
- Automatic selection and compression of performance statistics for trend- and capacity analysis.
- Time span of a trend report can be day, week, month, quarter or year.
- Trends are generated based on predefined report profiles
- Trend report profiles are defined via PerfDat_Mgr

Graphical user interface

- Delivered kit is self-contained
- Representation of line graphs
- Representation of variation functions
- Capabilities of data overlays (graphs of different time periods can be overlapped to allow visual comparison)
- Stack/unstack function
- Zoom in/out

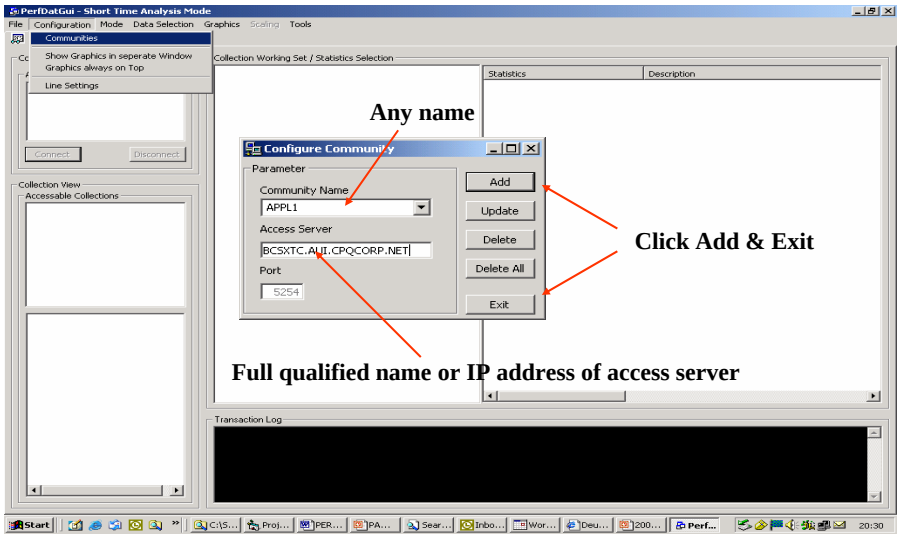
Graphical user interface

- Shift left /right
- Data scanning
- Up to 8 curves in one graph (in overlay mode up to 16)
- Each graph is scaled separately
- Auto, native and manual scaling capability

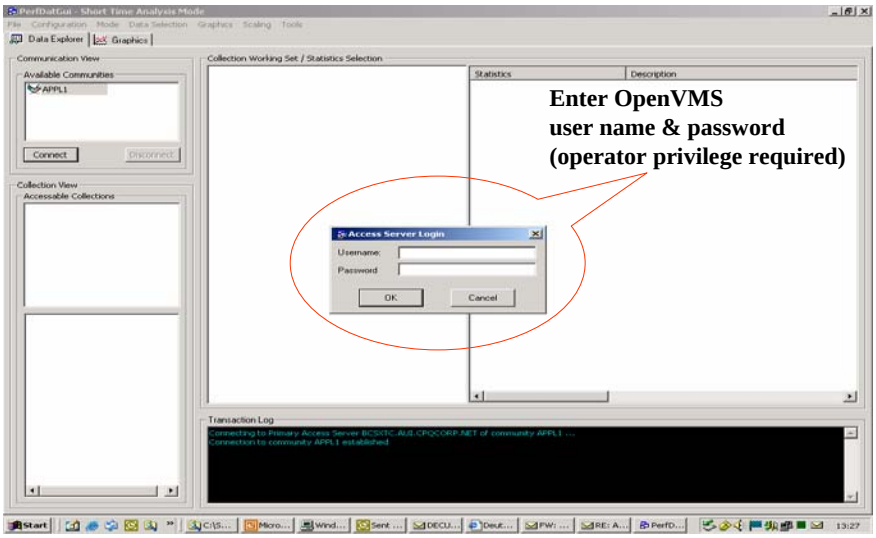
Graphical user interface

- Correlation- and deviation analysis capability
- Multi window support for multi screen systems
- Online deviation calculation of free definable statistics
- Export capability to Excel
- Fully supported on Win2000/XP

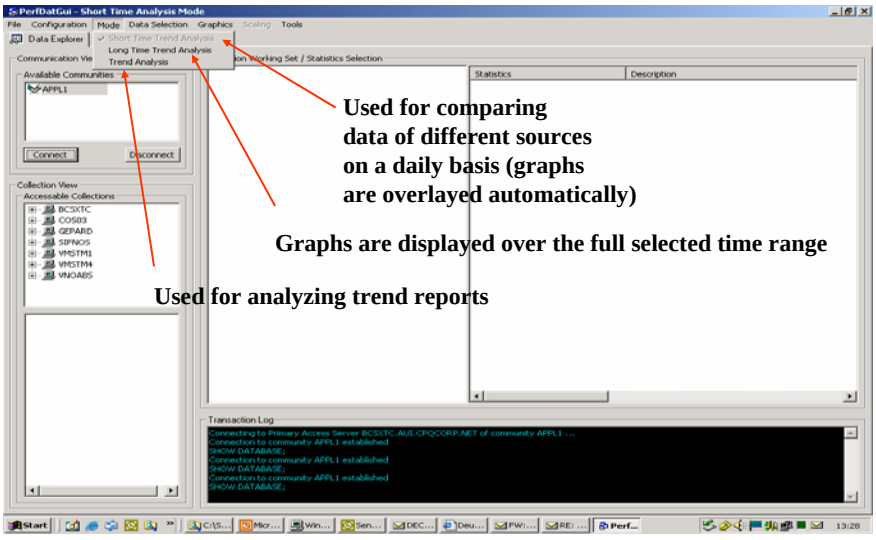
GUI - Customization



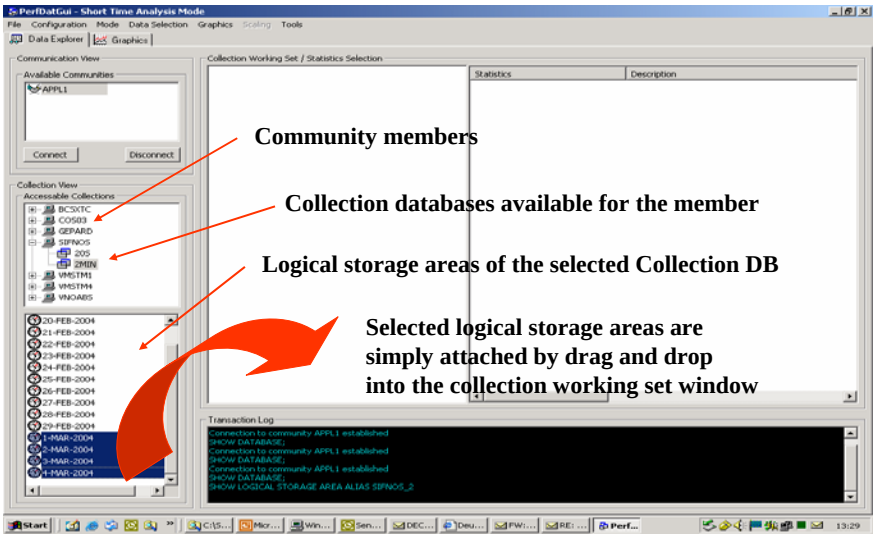
GUI – Data access (1)



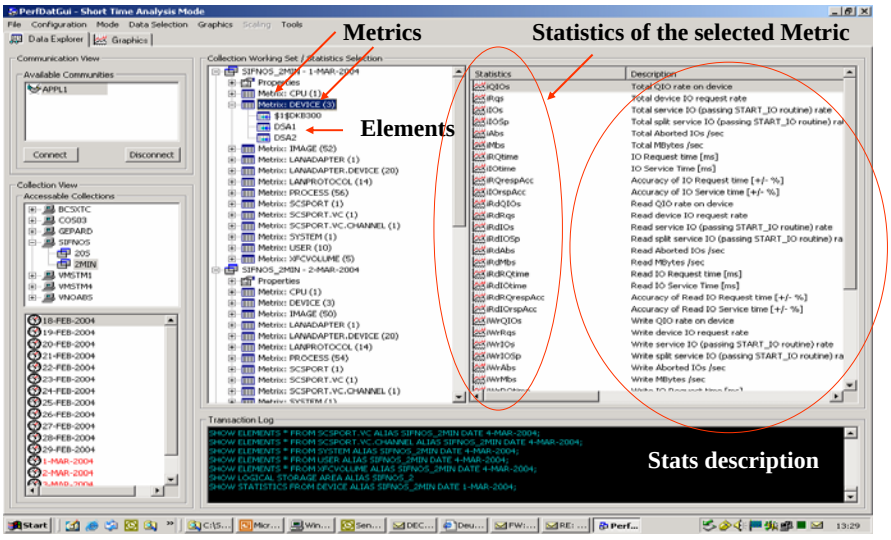
GUI – mode selection



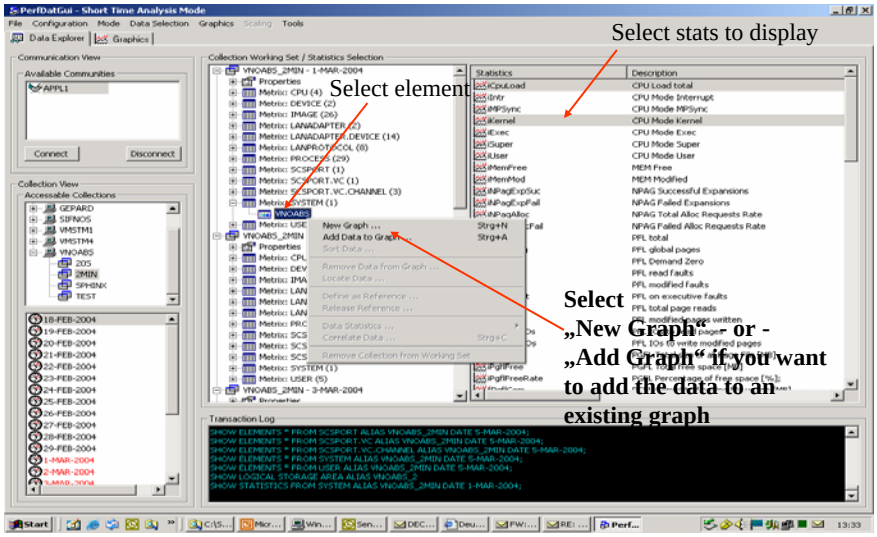
GUI – Data access (2)



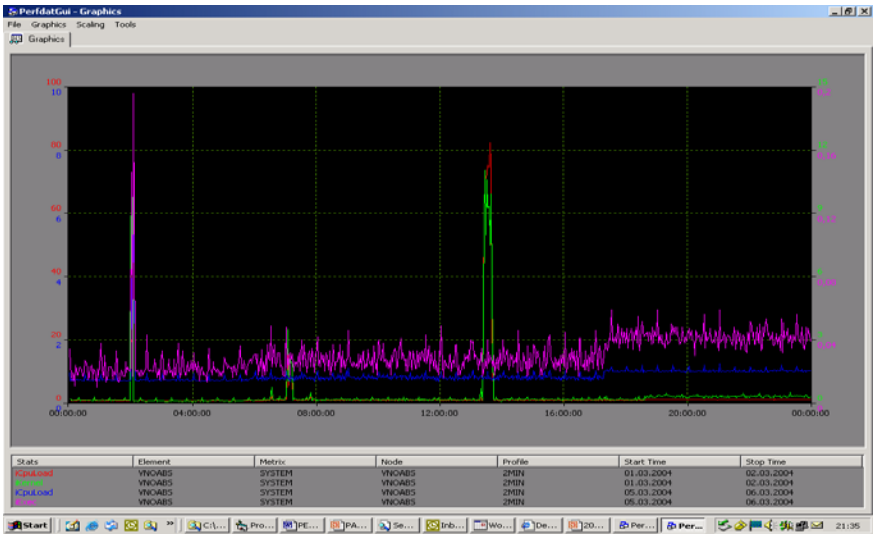
GUI – Data access (3)



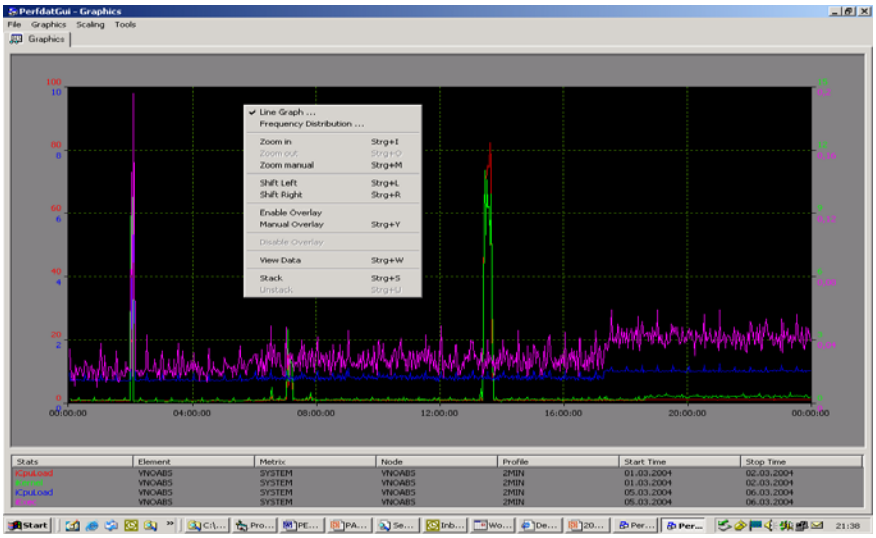
GUI – Select graphics



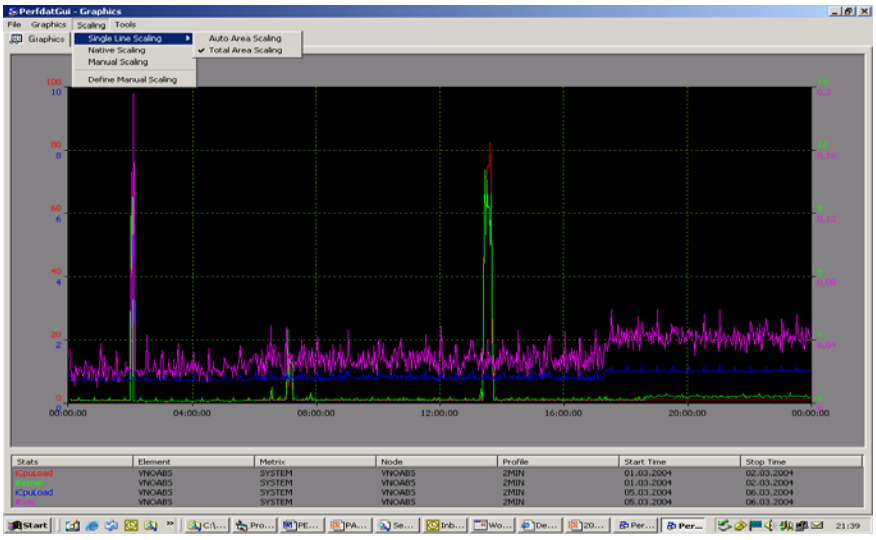
GUI – Graphics Example



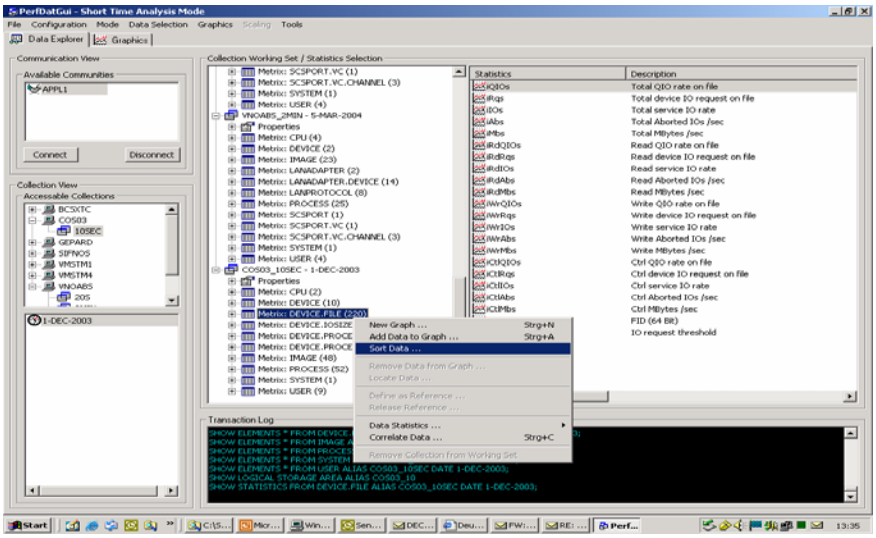
GUI – Graphics Options



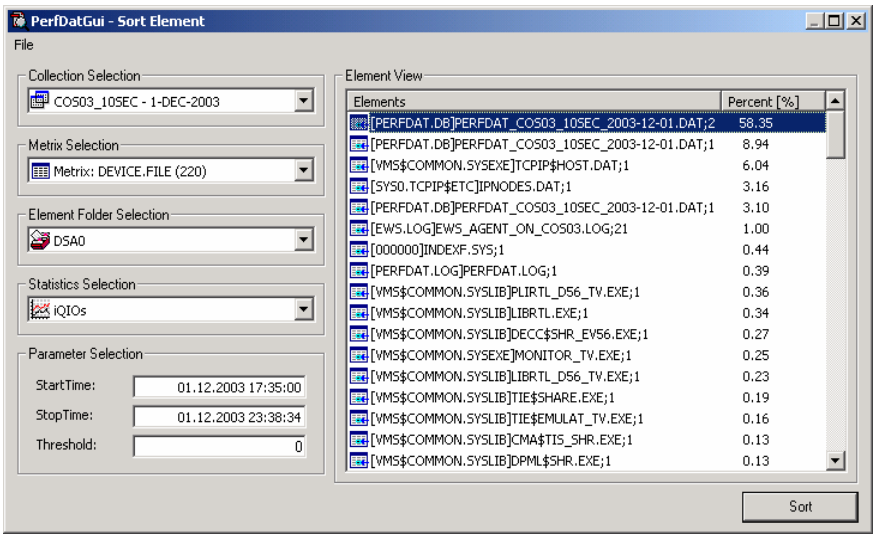
GUI – Scaling Options



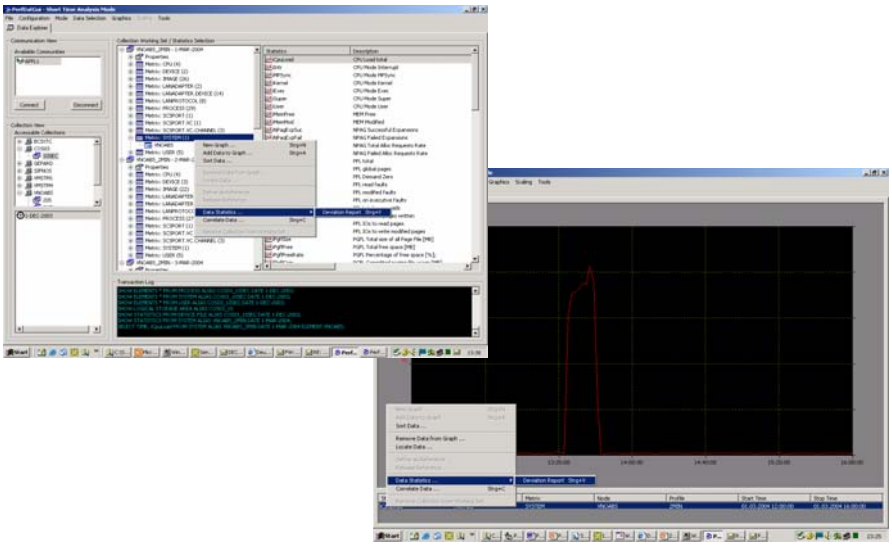
GUI – Data sorting (1)



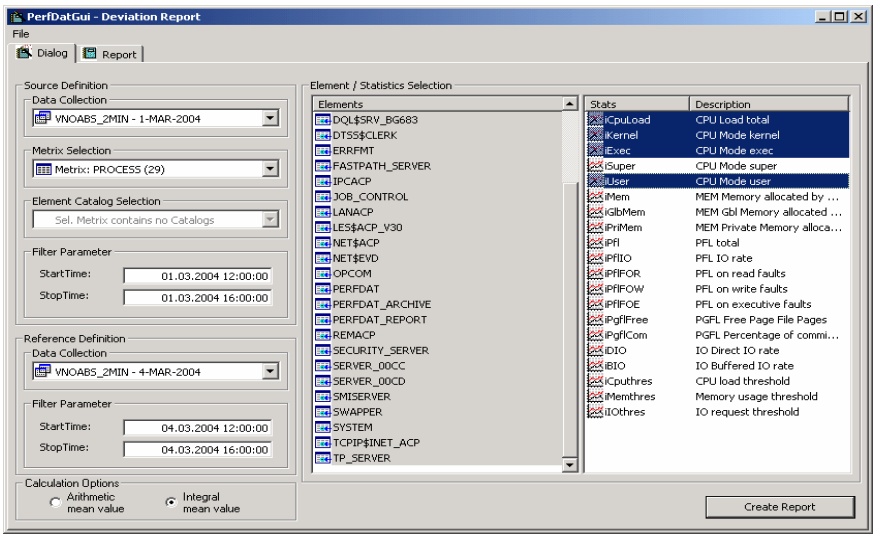
GUI – Data sorting (2)



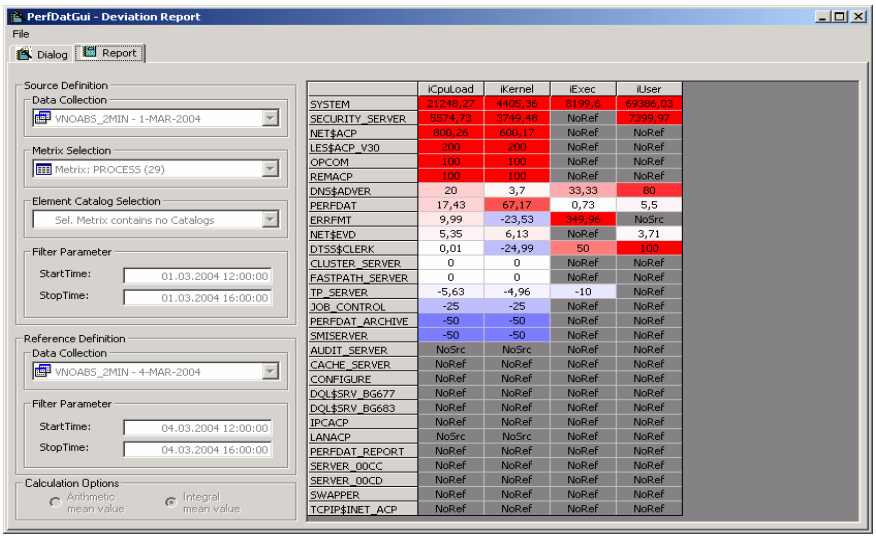
GUI – deviation report (1)



GUI – deviation report (2)



GUI – deviation report (3)



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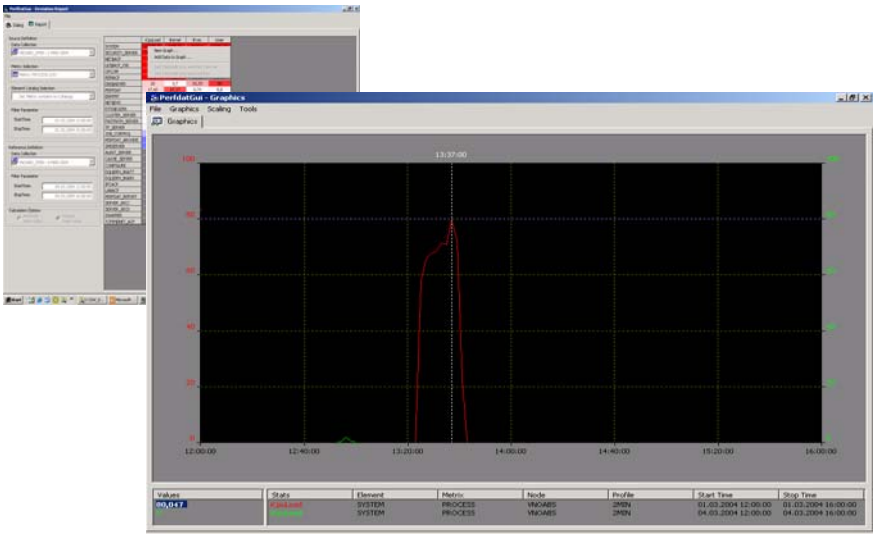
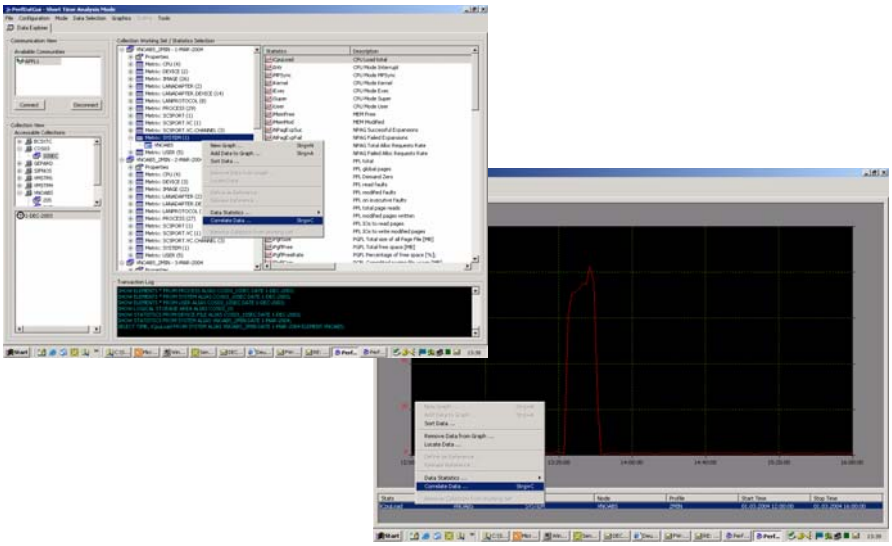
SECURITY_SERVER	5574,73	3749,48	NoRef	7399,97
NET$ACP	800,26	600,17	NoRef	NoRef
LES$ACP_V30	200	200	NoRef	NoRef
OPCOM	100	100	NoRef	NoRef
REMACP	100	100	NoRef	NoRef
DNS$ADVER	20	3,7	33,33	80
PERFDAT	17,43	67,17	0,73	5,5
ERRFMT	9,99	-23,53	349,96	NoSrc
NET$EVD	5,35	6,13	NoRef	3,71
DTSS$CLERK	0,01	-24,99	50	100
CLUSTER_SERVER	0	0	NoRef	NoRef
FASTPATH_SERVER	0	0	NoRef	NoRef
TP_SERVER	-5,63	-4,96	-10	NoRef
JOB_CONTROL	-25	-25	NoRef	NoRef
PERFDAT_ARCHIVE	-50	-50	NoRef	NoRef
SMISERVER	-50	-50	NoRef	NoRef
AUDIT_SERVER	NoSrc	NoSrc	NoRef	NoRef
CACHE_SERVER	NoRef	NoRef	NoRef	NoRef
CONFIGURE	NoRef	NoRef	NoRef	NoRef
DQL$SRV_BG677	NoRef	NoRef	NoRef	NoRef
DQL$SRV_BG683	NoRef	NoRef	NoRef	NoRef
IPCACP	NoRef	NoRef	NoRef	NoRef
LANACP	NoSrc	NoSrc	NoRef	NoRef
PERFDAT_REPORT	NoRef	NoRef	NoRef	NoRef
SERVER_00CC	NoRef	NoRef	NoRef	NoRef
SERVER_00CD	NoRef	NoRef	NoRef	NoRef
SWAPPER	NoRef	NoRef	NoRef	NoRef
TCPIP$INET_ACP	NoRef	NoRef	NoRef	NoRef

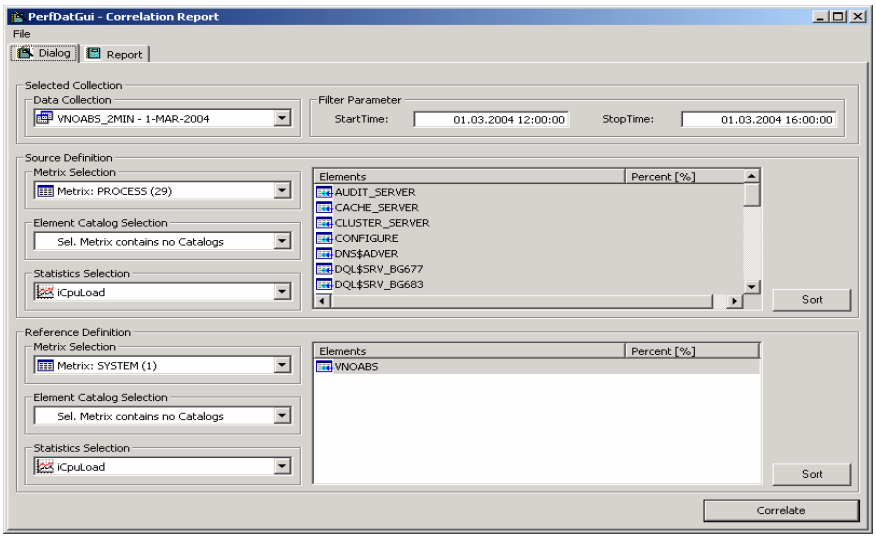
GUI –
Graph selection from deviation report



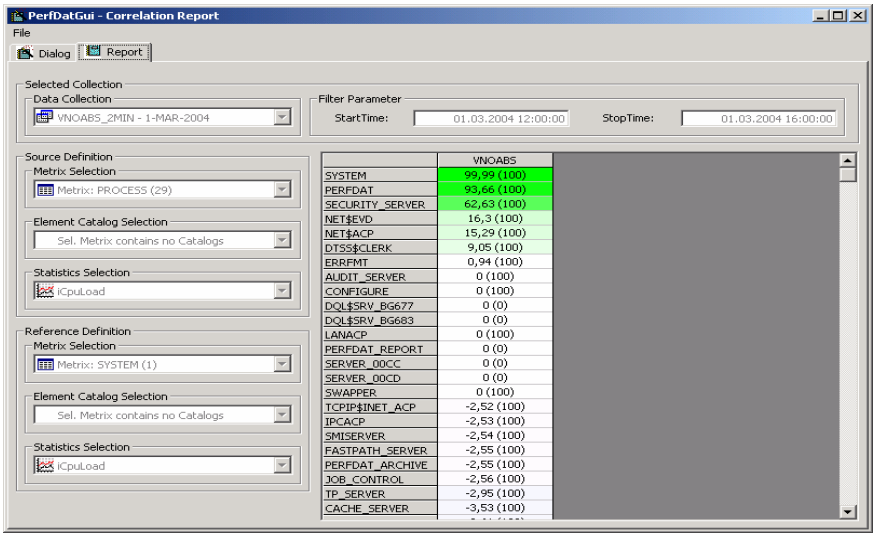
GUI – correlating data (1)



GUI – correlating data (2)

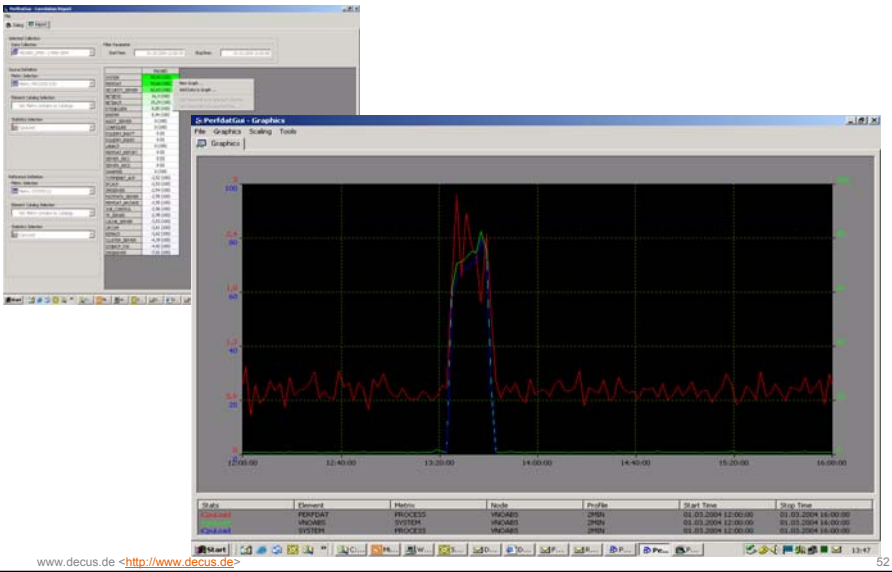


GUI – deviation report (3)



	VNOABS
SYSTEM	99,99 (100)
PERFDAT	93,66 (100)
SECURITY_SERVER	62,63 (100)
NET$EVD	16,3 (100)
NET$ACP	15,29 (100)
DTSS$CLERK	9,05 (100)
ERRFMT	0,94 (100)
AUDIT_SERVER	0 (100)
CONFIGURE	0 (100)
DQL$SRV_BG677	0 (0)
DQL$SRV_BG683	0 (0)
LANACP	0 (100)
PERFDAT_REPORT	0 (0)
SERVER_00CC	0 (0)
SERVER_00CD	0 (0)
SWAPPER	0 (100)
TCPIP$INET_ACP	-2,52 (100)
IPCACP	-2,53 (100)
SMISERVER	-2,54 (100)
FASTPATH_SERVER	-2,55 (100)
PERFDAT_ARCHIVE	-2,55 (100)
JOB_CONTROL	-2,56 (100)
TP_SERVER	-2,95 (100)
CACHE_SERVER	-3,53 (100)

GUI –
Graph selection from correlation report



OpenVMS installation

- @SYS$STARTUP:VMSINSTAL PERFDAT022
  - Enter the device where the common resources should reside (images, CFG file, locally archived data, trend report data, saved data)
    - Make sure that highwater marking is disabled on that volume
  - Enter data collector working device
    - The data collector writes to this device
    - Make sure that highwater marking is disabled on that volume
    - Choose device with low I/O activity or use separate device
    - Can share device of PerfDat common resources

OpenVMS installation

- Enter the archive node in your environment, if any.
  - If you intend to use an archive node make sure that FTP client is enabled on the local node
- Enter a valid license key
  - If you have already applied a valid license key or you install PerfDat and you don't have one, ignore the input request. The installation procedure continues anyway
- Enter the community members as a comma separated list
  - No quotation marks
- Perform the post installation activities recommended by the installation procedure

GUI installation

- Click SETUP
  - Follow the instructions provided by the setup procedure

Licensing

- No traditional LMF
- Only the OpenVMS components have to be licensed
- GUI needs no license
- License can be applied during installation or via PerfDat_Mgr
  - PERFDAT_MGR> LOAD LICENSE *key*
- Kit is provided with a 30 day temp. license key

Supported Versions

- OpenVMS AXP 7.2-1
- OpenVMS AXP 7.2-2
- OpenVMS AXP 7.3
- OpenVMS AXP 7.3-1
- OpenVMS AXP 7.3-2
- OpenVMS Itanium V8.1
- GUI – supported on Win2000 / XP

Contact information

PerfDat@hp.com


invent