

# PerfsonarUI

From GEANT2-JRA1 Wiki

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**PerfsonarUI - A sample user interface application**

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## PerfsonarUI's objectives and audience

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PerfsonarUI is designed and implemented as an open source, easy to use and yet powerful stand alone graphical user interface client capable of querying a range of perfSONAR services deployed around the world (currently 15 Round Robin Database Measurement Archives and one IP Performance Metrics Measurement Archive). The primary target user groups for perfsonarUI include NOC and PERT staff, as well as projects with demanding network performance requirements. End-users with some basic technical background also are supposed to master the tool quite easily.

## Main PerfsonarUI features overview

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- a sample user interface (UI) application implemented in Java;
- retrieval of published data from RRD MA services;
- retrieval of published data from Hades MA services;
- ability to run queries to RRD MAs and Hades MAs simultaneously (in parallel threads);
- visualization of OWD, IPDV and packet loss between Hades (IPPM) measurement points;
- compatible with all currently deployed RRD MA services, using either the "NMWG(v2) 2" or the older "perfsonar" XML schema;
- search for interfaces within a list of user-supplied IPv4 or IPv6 addresses;
- parsing of arbitrary IPv4 or IPv6 traceroute command output and visualization of summary/details for the matched interfaces;
- utilization summary for all selected interfaces in tabular and graphical form;
- visualization of utilization details for a chosen interface and a selected time period;
- interface selection through the interfaces table, the bar summary graph or the radar (spider) chart;
- time interval for summary selection through radio buttons;
- time interval for details selection through a slider;
- measurement identifier (mid), packet size, group size, interval, and precedence selection for Hades measurements;
- zoom-in (right-click & drag in SE direction) and zoom-out (right-click & drag in NW direction) in Hades measurement plots;

## Downloads

[\[edit\]](#)

### Latest release

[\[edit\]](#)

- (13 Jun 2006) PerfsonarUI v0.08 [Windows installer](#) (including optional Java Runtime Setup)
- (13 Jun 2006) PerfsonarUI v0.08 [ZIP archive](#) (suitable for any other platform)

### Older releases

[\[edit\]](#)

- (05 May 2006) PerfsonarUI v0.07 [Windows installer](#) (including optional Java Runtime Setup)
- (05 May 2006) PerfsonarUI v0.07 [ZIP archive](#) (suitable for any other platform)

- (03 Apr 2006) PerfsonarUI v0.06 [ZIP archive](#)
- (05 Mar 2006) PerfsonarUI v0.05 [ZIP archive](#)

All releases are available from [here](#) as well.

## System requirements and installation

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PerfsonarUI requires Java(TM) 2 Runtime Environment, Standard Edition 1.4 or newer on the target system and it is platform-independent. It runs under any host operating system, which supports Java (TM) 2 Runtime Environment, Standard Edition.

PerfsonarUI is distributed with a fully automated offline installer (PerfsonarUI-vX.YZ-setup.exe), compatible with recent versions of the Microsoft Windows (NT, 2000, XP, 2003) operating system, as well as a ZIP archive. Both distributions include the source code of the application. Windows users should prefer the automatic installer, while the ZIP archive is suitable for any other platform.

In order to install the application on Windows platforms just run the installer and follow its instructions. It contains all the required packages, including the Java(TM) 2 Runtime Environment, Standard Edition 1.4 setup. Users of other platforms should unzip the PerfsonarUI-vX.YZ.zip archive and launch the application (see perfsonarUI documentation for more details).

If the installer does not detect Java(TM) 2 Runtime Environment, Standard Edition 1.4 or newer on the target system, it will attempt to install it before proceeding with application's setup. In this case, the user running the installer **SHOULD HAVE ADMINISTRATIVE PRIVILEGES** on the target system (otherwise the Java(TM) 2 Runtime Environment, Standard Edition setup would be aborted and perfsonarUI would not be installed).

If the installer detects Java(TM) 2 Runtime Environment, Standard Edition 1.4 or newer already installed on the target system, it will proceed directly with application's setup. In this case, **ADMINISTRATIVE PRIVILEGES ARE RECOMMENDED BUT NOT NECESSARILY REQUIRED.**

When the installer is launched by a user with administrative privileges, it will create perfsonarUI start menu shortcuts for all the users registered in the target system. Otherwise, start menu shortcuts will be created only for the unprivileged user, who launched the installation.

After a successful installation, perfsonarUI could be launched from the Start Menu ("Start -> All Programs -> PerfSONAR -> PerfsonarUI-vX.YZ -> PerfsonarUI-vX.YZ").

Each version of perfsonarUI could be uninstalled either by using the "Control Panel -> Add or Remove Programs" or by clicking the "Uninstall" link located in "Start -> All Programs -> PerfSONAR -> PerfsonarUI-vX.YZ -> Uninstall-PerfsonarUI-vX.YZ". Any application files which may happen to be

locked during the uninstall procedure would be deleted after the next reboot of the system. Java(TM) 2 Runtime Environment, Standard Edition would not be uninstalled by perfsonarUI's uninstaller. If needed, it could be uninstalled via its own entry in "Control Panel -> Add or Remove Programs".

## Using PerfsonarUI

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The perfsonarUI documentation is under development.

Meanwhile we provide here a brief outline (scenario) of common perfsonarUI usage:

### Launch the application (step 01)

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Launch the application either by double-clicking the "perfSonarApp.jar" file, located in the "bin" application subfolder, or by executing the following command:

```
java -jar perfSonarApp.jar
```

You might want to enable debugging output, by invoking the following command line option:

```
java -Dperfsonar.debugging=true -jar perfSonarApp.jar
```

Be aware that switching on debugging output will create a (possibly huge) perfsonar.log file.

### Select a RRD MA service/endpoint (step 02)

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Select the RRD MA service(s)/endpoint(s) which will be queried by clicking on the "Endpoints" button. The dialog lists the RRD MA service(s)/endpoint(s), defined in the MA.conf file (located in the "bin" application subfolder). Either one or several RRD MA services/endpoints could be selected. You could also get live data for the availability and response time status of the publicly available services at the following address:

- [Availability and response time status for deployed PerfSONAR services \(live\)](#)

The MA.conf file contains the following data for each listed service (1 row per service, CSV):

- service name (currently GEANT, CARNET, CESNET, GRNET, ISTF-Java, ISTF-Python, MREN, PIONIER-RRD, PIONIER-SQL, SEEREN, SWITCH, UNINETT, ESNET, Internet2, RNP) - arbitrary string, shown in the endpoints dialog for user convenience;
- service URL;
- service XML schema;
- service authentication realm (currently not used);
- event type (in);

- event type (out);

An up-to-date version of MA.conf is available here:

- [MA.conf](#) (6 Sep 2006)

### Run a query (step 03)

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Select the time interval for summary through the radio buttons and then either:

- press the "Retrieve all" button in order to fetch all the interfaces from the previously selected RRD MA service(s)/endpoint(s);
- provide a list of IPv4/6 addresses and press the "Search" button in order to fetch interfaces with matching IPv4/6 addresses from the previously selected RRD MA service(s)/endpoint(s);
- paste the output of a traceroute command and press the "Search" button in order to fetch interfaces with matching IPv4/6 addresses from the previously selected RRD MA service(s)/endpoint(s);

Please note that some of the services respond rather slowly to queries. If a large number of RRD MA services/endpoints are selected and subsequently the "Retrieve all" functionality is used, the query could take up to several minutes to complete, regardless of the bandwidth of the users' network connection. However, a running query could be stopped by simply pressing the same button, which has been used to start the query (the label of this button is changed to "Stop" during query execution). After query interruption, the application keeps/displays the data acquired so far.

While the application is doing some work or waiting for query completion the radar gif is animated. During such periods some of the buttons/links are not accessible.

### Summary visualization (step 04)

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Observe the load summary for all interfaces in the table, as well as in the bar chart. The bar chart summary represents an average over the previously selected time interval.

### Select an interface (step 05)

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Select an interface (either from the table or through the bar summary graph) for detailed load visualization. You could also sort the table/bar chart by clicking on the table column titles. The selected interface is highlighted both in the table and in the bar chart.

### Time interval selection (step 06)

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Select through the slider a time interval for the detailed interface load visualization. By default statistics

for the last week are shown.

#### **Browse the summary bar chart (step 07)**

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Each bar chart "page" consists of up to 30 interfaces. If the dataset contains more than 30 interfaces, the "first", "previous", "next" and "last" links provide means to navigate between pages.

#### **View details for different interfaces/time intervals (step 08)**

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Repeat steps (05)-(07) for different interfaces/time intervals.

#### **Run an update query (step 09)**

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Press the "Refresh" button in order to retrieve new data from the same RRD MA service(s)/endpoint(s).

#### **Clear the workspace (step 10)**

[\[edit\]](#)

Press the "Clear" button in order to clean-up the table/charts before launching a different query.

#### **Select different RRD MA service(s)/endpoint(s) (step 11)**

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Repeat steps (02)-(10) with a different set of RRD MA service(s)/endpoint(s).

#### **Select the Hades MA service tab (step 12)**

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Run queries for various source/destination pairs, dates, packet sizes, group sizes, intervals, and precedence. The list of available source/destination pairs is configured in the Hades.conf file, located in the "bin" application subfolder. The location/parameters of the Hades MA service are defined in MA.conf, also located in the "bin" application subfolder.

An up-to-date version of Hades.conf is available here:

- [Hades.conf](#) (26 Jul 2006)

An up-to-date version of MA.conf is available here:

- [MA.conf](#) (6 Sep 2006)

It lists the Hades MA service, deployed by DFN-Erlangen.

By default perfsonarUI retrieves Hades measurements with mid="0" for the current day. Users can select various source/destination pairs, dates, packet sizes, group sizes, intervals, and precedences. If there is

no data for the specific combination of parameters, an error message with hints for available similar data for the same source/destination pair and date would be displayed.

PerfsonarUI supports the "NMWG(v2) 2" and the older "perfsonar" XML schema. PerfsonarUI also supports the Hades MA, deployed by DFN-Erlangen. At the time of this writing the following 15 RRD MA services are publicly available and compatible with perfsonarUI:

- GEANT;
- CARNET;
- CESNET;
- GRNET;
- ISTF (Java and Python implementations);
- MREN;
- PIONIER (RRD and SQL versions);
- SEEREN;
- SWITCH;
- UNINETT;
- ESNET;
- Internet2;
- RNP;

An up-to-date list of available MA RRD services is compiled at:

- [RRD type MA Service Installations](#)

Live data for their availability and response time is available at the following address:

- [Availability and response time status for deployed RRD MA service \(live\)](#)

## Screenshots

[\[edit\]](#)

- [PerfsonarUI-v0.08 RRD MA tab with radar and bar chart summaries of utilization over a path from ESnet to ISTF](#)
- [PerfsonarUI-v0.08 Hades \(IPPM\) MA tab with OWD, IPDV and packet loss details over a path from New York to Sofia](#)

## Bug reports and feedback

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You should send any comments, inquiries, bug reports, feature requests and other suggestions to Nina Jeliaskova <nina@acad.bg>

## Feature requests

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- 1) add support for the LS service;
- 2) implement the capability to chose between the avg, max and min for the bar chart, provided that the RRD MAs return this data;

## TO DO

[\[edit\]](#)

- By the end of November 2006 we plan to deliver the following new functionalities (Fxy) and enhancements (Exy) of perfsonarUI:

- F01: enable use of the deployed LS(es);
- F02: enable JavaWebStart distribution, by using a self-signed certificate;
- F03: enable sending of parallel requests to different services;
- F04: enable sending of aggregated requests, containing queries for several endpoints in a given service;
- F05: enable use of keys whenever possible/meaningful;
- F06: enable MetadaKeyRequests/Responses in the interactions with Hades MA;
- F07: implement the necessary logic for generating on the fly the information, stored currently in Hades.conf;
- F08: implement the necessary logic for generating on the fly the information, stored currently in MA.conf (depending on the availability of relevant LS deployment(s));
- F09: show status of MAs (reachable/not reachable);
- F10: integrate support for retrieval and visualization of Ripe test data from Hades service;
  
- E01: clear buttons should clear everything (including the search by interface IP window);
- E02: the "retrieve all" and the "search" buttons are confusing; a single one should be used to display some data (if there are some traceroute outputted in the "Search by interface", it should trigger that one, otherwise it should retrieve all the interfaces from the selected end-points;
- E03: the default time granularity for summary and detailed statistics should be the same;
- E04: think of more appropriate names for the RRD MA and Hades tabs and change them accordingly;
- E05: add a warning/safety check for "retrieve all" queries, since this retrieval can take some time;
- E06: add a button to import traceroute output from a file;
- E07: add new and revise existing tooltips for buttons/graphs;
- E08: find and implement a more reasonable solution for dropping requests;
- E09: check if the client could have some control over the Axis timeouts;
- E10: check/resolve the reported issue about inbound/outbound legend below all interfaces summary being not visible on Macintosh;
- E11: change the "Detailed interface statistics" text in the Hades tab, shown while loading data for the first time;
- E12: change "packet count" to "packet loss" in Hades tab, third graph and remove .000 as these are discrete values;
- E13: find a way to make the zoom function in Hades tab more obvious;
- E14: add buttons in Hades tab for navigating in time (next day, etc);



- E15: add a clear button to Hades tab;
- E16: add zoom options to Hades tab, in order to enable separate zooms over the different axes;
- E17: add JavaDoc to the source code;
- E18: design and implement an animated perfSONAR gif image with a turning radar over the O symbol;
- E19: improve error reporting for services which support result codes;

- By the end of May 2007 we plan to:

- integrate more perfSONAR services (e.g. AA, BWCTL, TopS, etc...), depending on their availability, deployment, existence of alternative clients and user demand;
- enable visualization of different kinds of MA metrics (e.g. interface errors, drops, CPU/memory usage, etc), when available in services and supported by the schema;
- implement an interface for user preferences input and storage of those preferences;
- gather user feedback and implement suggested new functionalities, enhancements and bug fixes;
- improve/update the documentation;
- start work on plug-in API;
- consider merging of LookingGlass client in perfsonarUI;

## Change log

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- v0.08 - 13 Jun 2006:

- resolved "double-click in summary bar/radar chart" bug;
- resolved several sorting bugs;
- resolved "disappearing legend in summary bar chart" bug;
- resolved refresh bug on RRD MA slider;
- changed bytes to bits in the last two columns of the RRD MA table;
- improved consistency with adopted terminology (e.g. rate->utilization);
- replaced all references to IPPM with Hades;
- enabled sending mid="0" queries to Hades MA by default;
- enabled visualization of Hades MA errors;
- enabled packet size, group size, interval, and precedence selection in Hades MA tab;
- various other small bug fixes and optimizations;

- v0.07 - 05 May 2006:

- added automatic installer for Windows platforms;
- added clickable summary radar chart with tooltips in RRD MA tab;
- several GUI improvements, suggested by user feedback;
- improved status bar for RRD MA;
- added status bar for Hades (IPPM) MA;
- added numbers to summary bar chart's X axis legend;

- resolved summary bar chart paging bug;
- resolved utilization/rate display switching bug;

- v0.06 - 03 Apr 2006:

- added Hades (IPPM) MA service support;

- v0.05 - 05 Mar 2006:

- changed the IPv4 and IPv6 address pattern matching regular expressions;
- IPv6 address pattern matching is now compatible with [RFC 4291](#) (full, compressed and mixed textual representations should be recognized correctly);
- improved support for xmlns:netutil="<http://ggf.org/ns/nmwg/characteristic/utilization/2.0/>";

- v0.04 - 16 Feb 2006:

- changed MA.conf in order to re-enable sending queries to ESNET RRD MA (default setting);
- added support for xmlns:netutil="<http://ggf.org/ns/nmwg/characteristic/utilization/2.0/>";
- introduced new "NMWG2v2\_netutil" value for MA.conf's 3rd field;
- changed MA.conf lines for ISTF and SWITCH RRD MAs;

- v0.03 - 13 Feb 2006:

- createSearchMetadataSection now adds "eventType" tag in the message (PIONIER's Java RRD MA implementation needs eventType tag in MetadataKeyReq, others work happily without it...);
- presentDataFromResponse - was looking for <data> tag instead of <nmwgnamespace:data> changed  
nodelist = dataSetupResp.getElementsByTagName(E\_DATA);  
to  
nodelist = dataSetupResp.getElementsByTagNameNS(URI\_nmwg[nmwg\_version],E\_DATA);
- added support for IPv6 searching and IPv6 traceroute parsing;
- added code to write response messages in the log file when debug is enabled;

- v0.02 - 08 Jan 2006:

- improved interface layout;
- added search by IP address capability;
- added traceroute output parsing;
- added support for RRD MA services using older XML schema;
- added ability to select more than one RRD MA service simultaneously;
- added ability to interrupt a running query;

- cleaned source code;
- added source code to the distribution;

- v0.01 - 8 Dec 2005:

- first public release of the perfsonarUI application;

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