Reference Guide
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OpenEnterprise OEPing Reference Guide (V2.83)

Remote Automation Solutions

Website: www.EmersonProcess.com/Remote

Contents

1 OEPing

OEPing provides a basic form of network aware redundancy by monitoring the network connectivity of both Master and Standby OpenEnterprise servers.

Network connectivity is determined by using the Ping functionality to determine a Server's connectivity to one or more configurable hosts. Connectivity status is then used within Open Enterprise redundancy to force a failover if the standby server has a more favourable network connectivity status than the current master.

Each server is configured with a list of one or more hosts. Each will be "Pinged" at a configurable frequency. Each configured host is assigned a 'weighting' value and a separate number of retries to use if the host becomes 'questionable' in status due to a Ping failure.

The weighting value determines the particular hosts importance (the default is 1 – higher than this gives a greater weighting). For example, a critical plant host can be assigned a higher weighting than a less important host so redundancy favours the more important host and hence maximises master to host connectivity.

At every configurable Ping frequency, all configured hosts are 'Pinged' to determine the overall network connectivity of the host Server. If a Ping to a host fails, the host's status is changed from 'Active' to 'Questionable'. After a defined number of retries whilst in a Questionable state, the host's status moves to 'Dead'. It is only then that a zero weighting for that host is passed to the OEPing. A complete breakdown of what happened if there is a Ping failure is written to the OE Ping interface, giving statistical details of all failures. An output trace file can also be set up to track a host's state over a period of time.

A total weighting is then calculated as the sum of the weightings for all hosts that are configured for OE Ping. This total weighting is then written to the Arbitrator.

The Arbitrator will continually compare the total weighting of the Master and Standby servers. If the Standby server has a more favourable weighting, after a configurable number of consecutive Ping intervals, a failover will be initiated.

1.1 Starting OEPing

OEPing can be started as a task in a redundant OpenEnterprise Session. It is critical that the ActiveOnStandby registry value be set to 1 (one).

The relevant settings for the OEPing Task in the main OpenEnterprise settings file, when using a separate OEPing.ini file as a settings override are as follows.

Key: OpenEnterprise\Sessions\Standalone\Tasks\OEPing

Value: ShutdownCommand =_CLOSE

Value: Application=D:\Program Files\Bristol\OpenEnterprise\Bin\OEPing.exe

Value: Visible=1

Value: WorkingDirectory=D:\Program Files\Bristol\OpenEnterprise\Data (the Data directory for the database)

Value: CommandLine=/Section=<Section name>

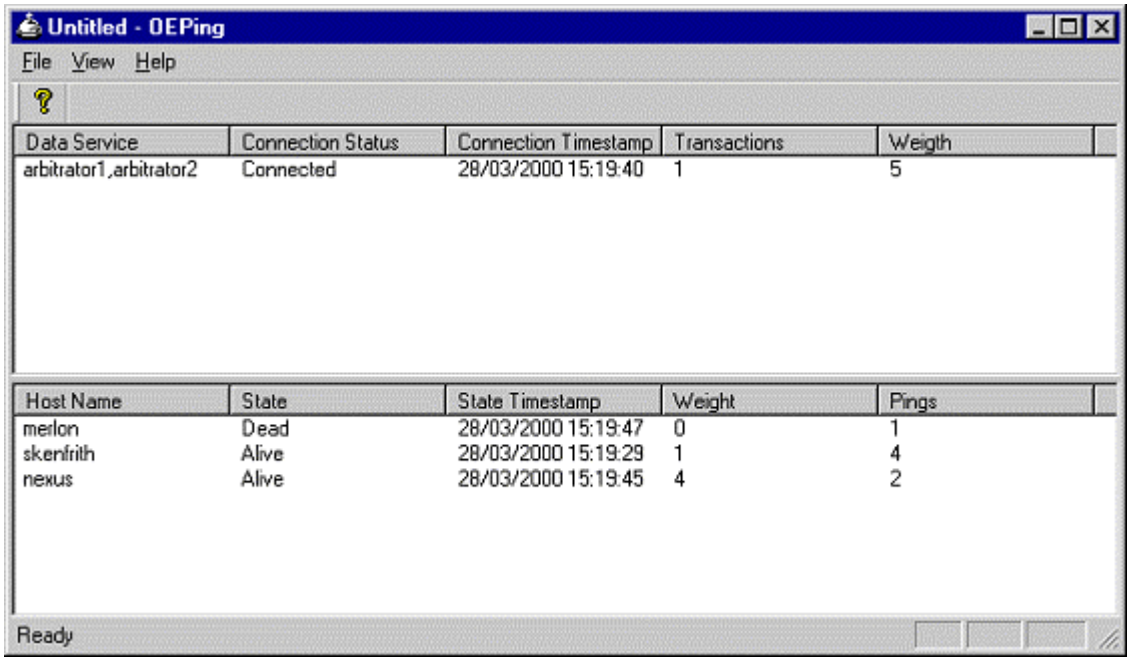
Value: ActiveOnStandby=1

Note:

- The CommandLine value above assumes that the user has an INI file to configure OEPing. The Section specifies the section within OEPing.ini.
- The values used within the OEPing.ini file can alternatively be placed within the main OpenEnterprise settings file on the OEPing Task key for the Session being run.
- When using the Registry in this way to configure OEPing then the CommandLine value should be set as follows CommandLine="/Session=<SessionName>".

1.2 OEPing Interface

OEPing has a User Interface that displays the Arbitrator connectivity and Host Pings status.



1.2.1 Arbitrator Connectivity Pane

Displays the Arbitrator connectivity status and the current Weighting last sent to the Arbitrator.

1.2.2 Host Connectivity Pane

Displays the network connectivity of the configured hosts as seen from the Server. See the Additional Host Statistics topic for more information.

1.2.3 Additional Host Statistics

Should a ping fail, the extra statistics listed below will be displayed in the Host Connectivity pane. These statistics can also be saved to a file. See the Trace Output File topic for more information on this. The meaning of these statistics is as follows:

- **Changes to Failed** – The number of times the host's state has changed to 'Failed'
- **Changes to Quest** – The number of times the host's state has changed to 'Questionable'
- **Current Fails** – The number of current consecutive pings the host has been failed for.

- **Current From** - The time the current failed period began.
- **Current From** – The time the current failed period has stretched to so far.
- **Previous Fails** – The number of previous consecutive pings the host was failed for.
- **Previous From** – The time the previous failed period began.
- **Previous From** – The time the previous failed period ended.
- **Highest Fails** – The highest number of previous consecutive pings the host was failed for.
- **Highest From** – The time the highest failed period began.
- **Highest From** – The time the highest failed period ended.
- **Lowest Fails** – The lowest number of consecutive pings the host was failed for.
- **Lowest From** – The time the lowest failed period began.
- **Lowest From** – The time the lowest failed period ended.
- **Send Fails** – Number of times the call to send data to the host failed.
- **Timeouts** – Number of times the Timeout period was exceeded waiting for a response from a host.
- **Receive Fails** – Number of times the call to receive data from the host failed.
- **Host Lookup Fails** – Number of times the call resolve the host name failed (usually a sign that a host has been off the network for a long period of time).
- **Decode Fails** – Number of times the received response did have the correct information in it.

1.2.4 Trace Output File

State changes can be output to a file to track a host's state over a period of time. The trace files all have a common root with an extension of "_<host>.txt" on the end. The default root is "C:\Temp\OEPing" therefore the trace file for a host named 'Host1' using this root would be:

'C:\Temp\OEPing_Host1.txt"

The user only needs to specify the "C\Temp\OEPing" part of the filename for the "FileRoot" parameter. The host name is added by OE Ping.

1.2.5 File

Provides an Exit option, enabling the closing of the OEPing application.

1.2.6 View

Provides two options to enable or disable the OEPing toolbar or status bar

1.2.7 Help

Provides access to this help file and the 'About' box, which provides contact information.

1.3 Configuration

OEPing can be configured using an INI file or the Windows Registry. Both Windows Registry and INI file can be used but the Windows Registry data takes precedence.

It is critical that both A and B servers are configured identically with respect to Ping intervals, hostnames, host weightings and refresh intervals.

1.3.1 Using an INI File

The OEPing's own configuration file is named OEPing.ini and it should reside in the same directory as the main OpenEnterprise settings file. For Windows XP, this will be 'C:\Documents and Settings\All Users\Application Data\Bristol\OpenEnterprise\Application Data'. For Vista it would be 'C:\Program Data\Bristol\OpenEnterprise\Application Data'.

To override the settings in the main OpenEnterprise settings file, run OEPing with a command line of:-

oeping /Section=<Section Name>

1.3.1.1 Definition

The INI file is structured as follows.

[Section]

Hosts= List of hostnames to Ping with associated weightings, trace option and questionable retry number.

Arbitrator1= Arbitrator data service as specified in the Poly.cfg file.

ServerLetter= Server ID Letter, A or B

PingFrequency= Frequency at which the named hosts will be Pinged specified in milliseconds

PingTimeout=50

PingRetries=1

RefreshInterval= Frequency at which to update the Arbitrator and OEPing User interface.

FileRoot= The trace file root

1.3.1.1.1 Notes

Hosts is specified as Hostname[:w=x;t=y;q=z>], {Hostname…}

Where:

- x is an integer specifying the weight
- y is an integer specifying whether tracing is enabled. 0 = disabled, any other integer = enabled.
- z is the number of Questionable retries.

1.3.1.1.2 Default Values:

Weight = 1

Trace = Off (0)

Questionable Retries = 3

1.3.1.1.3 Example

An example INI file for the OpenEnterprise Session Redundant1 would look like.

[Redundant1]

Hosts=serverA,serverB,nexus:w=4;t=1;q=10

Arbitrator1=arbitrator1,serverB_jcp:arbitrator1,serverB:arbitrator1

ServerLetter=A

PingFrequency=10000

PingTimeout=50

PingRetries=1

RefreshInterval=10000

FileRoot="C:\Temp\OEPing"

This Pings the hostnames skenfrith, merlon and nexus. Nexus, being a critical host is given a higher weighting of 4 (four), Tracing is set to be on and the number of Questionable Retries is set to 10. The other two have a default weighting of 1 (one), tracing takes the default value of zero (off) and the number of Questionable Retries is set to the default of 3.

1.3.2 Using the Main OpenEnterprise Settings File

The main OpenEnteprise Settings file is named OpenEnterprise.ini. It resides in 'C:\Documents and Settings\All Users\Application Data\Bristol\OpenEnterprise\Application Data' on a Windows XP host. For Vista it would be 'C:\Program Data\Bristol\OpenEnterprise\Application Data'. This file should be edited using the Settings Editor.

1.3.2.1 Definition

Open the OpenEnterprise Settings Editor and do the following.

1.3.2.1.1 Key

Create the following key: -

`OpenEnterprise\Sessions\<Session>\Tasks\OEPing\INI`

1.3.2.1.2 Values

On the created key create the following values:-

Hosts= List of hostnames to Ping with associated weightings, trace option and questionable retry number.

Arbitrator1= Arbitrator data service as specified in the Poly.cfg file.

ServerLetter= Server ID Letter, A or B

PingFrequency= Frequency at which the named hosts will be Pinged specified in milliseconds

PingTimeout= 50

PingRetries= 1

RefreshInterval= Frequency at which to update the Arbitrator and OEPing User interface

1.3.2.1.3 Example

Key = OpenEnterprise\Sessions\Redundant1\Tasks\OEPing\INI

Values:-

Hosts=" serverA,ServerB,nexus:w=4;t=1;q=10"

Arbitrator1="arbitrator1,serverB_jcp:arbitrator1,serverB:arbitrator1"

ServerLetter="A"

PingFrequency= 10000

PingTimeout= 50

PingRetries= 1

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