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# Serfboard Installation Guide and Reference

## Version 1

CML00025-01

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## Contents

<b>1</b>	<b>Introduction</b>	<b>2</b>
1.1	<i>Serfboard</i> overview . . . . .	2
1.2	About this Manual . . . . .	2
<b>2</b>	<b>Required Software</b>	<b>3</b>
2.1	Web Server . . . . .	3
2.2	Refclock Client and Server . . . . .	3
<b>3</b>	<b>Installation</b>	<b>4</b>
3.1	Set Code Magus Home Directory . . . . .	4
3.2	Unpack the Installation File . . . . .	4
3.3	Apache Configuration Files . . . . .	4
3.4	Restart the Web Server . . . . .	4
<b>4</b>	<b>Testing and verifying the installation</b>	<b>5</b>
4.1	Start the <i>Serfboard</i> Server . . . . .	5
4.2	Send Metric Data to the Server . . . . .	5
4.3	View the Dashboard Web Page . . . . .	6
<b>5</b>	<b>Further Configuration</b>	<b>7</b>
5.1	Web Access to a DashBoard . . . . .	7
5.2	Further Reading . . . . .	7
<b>6</b>	<b>Appendix</b>	<b>8</b>
6.1	Apache Configuration Files . . . . .	8
6.1.1	CodeMagus_serfboard.conf . . . . .	8
6.2	Serfboard Demo Index Web Page . . . . .	10

# 1 Introduction

## 1.1 *Serfboard* overview

The *Serfboard* system enables a user to monitor, and possibly interact with, a running system or systems via a web based graphical dashboard. Dashboards of this nature that show a unified view of key performance indicators of different systems are extremely effective in the management of networked systems testing or systems stress testing. In stress testing, being interactive, the user can change various thresholds and key values in order to watch the effect of different loads on the system under stress.

The *Serfboard* system comprises the following parts:

- The core server (*serfboard*) which is a daemon process (executes in the background) that receives metric data, stores it and supplies it to the web application on request.
- The display instrument plug-in programs and web application which are responsible for rendering the final dashboard as viewed by the user. The web application continuously requests updates of data from the server.
- Metric feed probes and feed library. The metric feed probes are responsible for querying a specific system that supplies metrics (for example SNMP), extracting the relevant data, converting it to the *Serfboard* format and forwarding the metric data on the the server. There is also a C programming library interface available for development of user written metric feeder programs. See the following for more information about supplied probes:
  - *cmlxaixp*: AIX Performance Metric Probe [5]
  - *cmlxsolp*: Solaris Performance Metric Probe [9]
  - *cmlxsnmp*: SNMP Metric Probe [4]
  - *cmlxwinp*: Windows Performance Metric Probe [6]
  - *cmlxwasp*: Websphere Application Server Performance Metric Probe [7]

## 1.2 About this Manual

This document explains the procedure for installing the *serfboard* server, the web application and required software.

## 2 Required Software

### 2.1 Web Server

As the *Serfboard* server only runs on Linux/Unix platforms, it is assumed that Apache HTTP Server (preferably version 2.0 or later) will be used.

### 2.2 Refclock Client and Server

The Code Magus Reference Clock Sever, although not required, is used in order to make sure that all systems that feed metrics to the server and the server are running on the same clock reference. See `refclock: Reference Clock API and Server Reference Version 1` [8] for more information about installing and setting it up.

## 3 Installation

This version of Serfboard can only be installed on the GNU/Linux operating system. It has been tested on two distributions, namely Red Hat Enterprise Linux and OpenSuse.

To install the system, obtain the most recent install file, e.g.

```
CODEMAGUS_RHEL50_____I686_____PRODUCT_BIN_SERFBOARD__D20100225_T1858.tgz
```

Perform the following steps to install *Serfboard*:

### 3.1 Set Code Magus Home Directory

Set the environment variable `CODEMAGUS_HOME` to the directory where all Code Magus software will be installed. This is usually `/usr/local/CodeMagus`. This should be made persistent for the machine by specifying it in `/etc/profile` or an equivalent logon script (depending on the Linux distribution).

### 3.2 Unpack the Installation File

This must be unpacked in `CODEMAGUS_HOME` as follows:

```
[root@codemagus ~]# cd ${CODEMAGUS_HOME}
[root@codemagus CodeMagus]#tar zxvf \
CODEMAGUS_RHEL50_____I686_____PRODUCT_BIN_SERFBOARD__D20100225_T1858.tgz
```

### 3.3 Apache Configuration Files

Copy the file `Serfboard/etc/CodeMagus_serfboard.conf` to the Apache configuration directory. This is usually `/etc/apache2/conf.d/`; consult the Apache documentation and the machine's configuration to determine this directory if it is not.

Change all occurrences of `SERFBOARD_INSTALL_BASE` to the same value as was set for `CODEMAGUS_HOME`.

This file is shown in appendix [6.1](#) on page [8](#)

### 3.4 Restart the Web Server

Once the configuration changes are complete, the Apache server must be restarted. Log on with root access and use `apachectl` or `apache2ctl` to restart the server as follows:

```
[root@codemagus CodeMagus]# apache2ctl restart
```

## 4 Testing and verifying the installation

To verify that the installation works, perform the following steps (which are explained in more detail in the following sections):

1. Start the *Serfboard* server.
2. Start a process to replay saved metrics and send them to the server.
3. View and check the web page showing the demo dashboard.

These steps are explained in more detail in the following sections.

### 4.1 Start the *Serfboard* Server

Start the *Serfboard* server from a terminal window as follows.

```
cd ${CODEMAGUS_HOME}
nohup ./Serfboard/demo/scripts/serfboard_demo.keep &
```

This starts the script `./Serfboard/demo/scripts/serfboard_demo.start` and restarts it in the event it fails or is killed.

To verify that the server is running use `ps` as follows:

```
ps -ef | grep serfboard
```

If there is no indication that the server is running then check the logs in the directory `./Serfboard/demo/logs`. Also invoke the start script directly in the foreground to see if there are any messages written to `stdout` or `stderr`.

### 4.2 Send Metric Data to the Server

The metric data replay files are supplied as zipped files and need to be expanded before the replay script can be started. Unzip them with the commands

```
gunzip Serfboard/demo/data/replay_serfboard_demo01.mlog.gz
gunzip Serfboard/demo/data/replay_serfboard_demo02.mlog.gz
gunzip Serfboard/demo/data/replay_serfboard_demo03.mlog.gz
```

Once the server is up and running, metric data can be sent to it from the replay file by starting the replay scripts as follows:

```
nohup ./Serfboard/demo/scripts/replay_serfboard_demo01.keep &
```

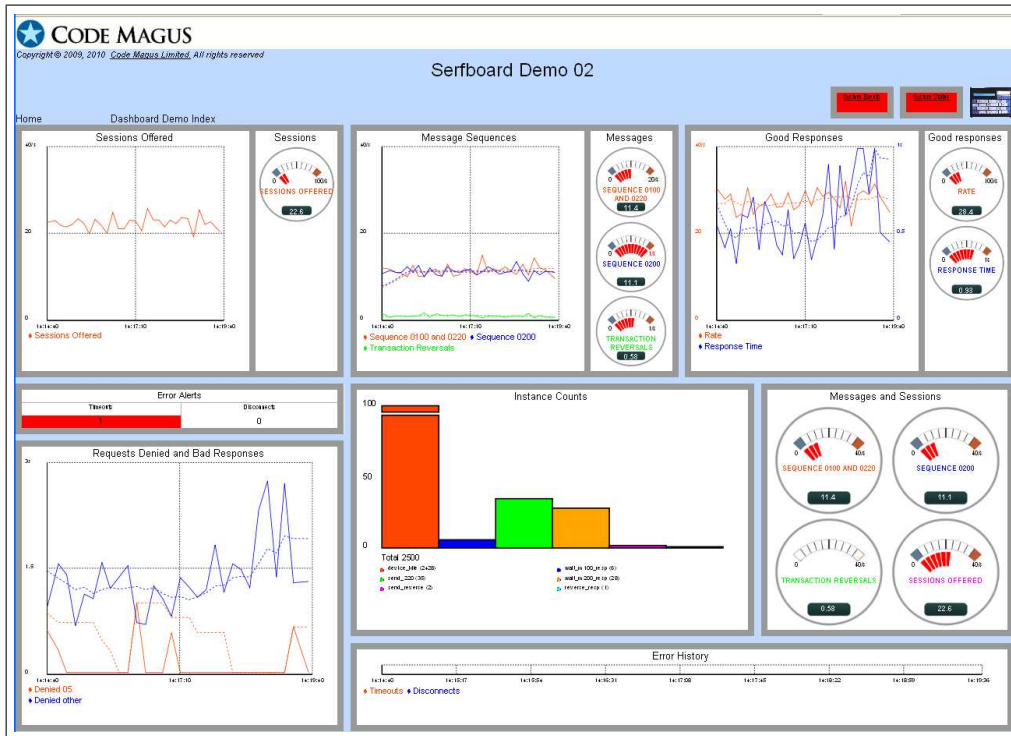
There are 3 demo replay scripts and they can all be started in the same way. Again use `ps` to check that the script is running.

### 4.3 View the Dashboard Web Page

To view the list of demo dashboards, use the following URL:

[http://<SERFBOARD\\_HOST>/serfboard/html/serfdemo.html](http://<SERFBOARD_HOST>/serfboard/html/serfdemo.html)

Click on the start button for 'Serfboard Demonstration 2'. The demo dashboard should load and will look similar to this:



The dashboard should automatically update after it has loaded.

## 5 Further Configuration

### 5.1 Web Access to a Dashboard

Links to any configured dashboard can be embedded in any web page allowing users easy access to a dashboard that they need to monitor. This link is a link to a CGI program and must name, as parameters, the dashboard and the port within the *Serfboard* daemon to connect to. The demo index page, as shown in appendix 6.2 on page 10, can be used as a template for this.

The link to a dashboard looks similar to:

```
/serfboard/cgi-bin/serfdashcgi?dname=serfboard_demo01&port=9000
```

This is covered in more detail in the serfboard manuals that show how to set up a dashboard.

### 5.2 Further Reading

See the following manuals for more information on configuring and running a *Serfboard* instance and associated dashboards.

- CML00023-01  
Serfboard Configuration Guide and Reference Version 1 [1]
- CML00024-01  
Serfboard Instruments Guide and Reference Version 1 [2]
- CML00027-01  
Serfboard User Guide Version 1 [3]



## 6 Appendix

### 6.1 Apache Configuration Files

#### 6.1.1 CodeMagus\_serfboard.conf

```
# File: CodeMagus_serfboard.conf
# This Apache configuration file defines all the Apache settings required for
# the correct running of the Code Magus Ltd. Serfboard system. It should be
# copied to the Apache configuration file include directory: This is usually
# /etc/apache2/conf.d/. If it is not then consult the Apache documentation and
# the set up of the machine to determine where this is.
#
# $Author: janvlok $
# $Date: 2010/08/27 11:09:58 $
# $Id: CodeMagus_serfboard.conf,v 1.6 2010/08/27 11:09:58 janvlok Exp $
# $Name: $
# $Revision: 1.6 $
# $State: Exp $
#
# $Log: CodeMagus_serfboard.conf,v $
# Revision 1.6 2010/08/27 11:09:58 janvlok
# Change sub dir serfboard to Serfboard
#
# Revision 1.5 2010/05/04 09:54:56 hayward
# Add environment variable base for CGI scripts.
#

# Define the Code Magus home directory for CGI scripts.
SetEnv CODEMAGUS_HOME SERFBOARD_INSTALL_BASE

# Define the Code Magus Ltd. HTML and CGI directories as aliases
Alias /serfboard/html/ SERFBOARD_INSTALL_BASE/Serfboard/html/
Alias /serfboard/cgi-bin/ SERFBOARD_INSTALL_BASE/Serfboard/cgi-bin/

# Properties for HTML files.
<Directory SERFBOARD_INSTALL_BASE/Serfboard/html>
    AllowOverride All
    Options +FollowSymLinks +Includes +Indexes
    Order allow,deny
    Allow from all
</Directory>

# Properties for CGI scripts.
<Directory SERFBOARD_INSTALL_BASE/Serfboard/cgi-bin>
    SetHandler cgi-script
    Options ExecCGI
    Order allow,deny
    Allow from all
</Directory>
```



## 6.2 Serfboard Demo Index Web Page

```

<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">
<!--
File: serfboard_index.html
This html page displays the list of available Demo Dashboards.
$Author: hayward $
$Date: 2012/05/16 13:10:42 $
$Id: serfdemo.html,v 1.9 2012/05/16 13:10:42 hayward Exp $
$Name: $
$Revision: 1.9 $
$State: Exp $
$Log: serfdemo.html,v $
Revision 1.9 2012/05/16 13:10:42 hayward
Add favicon.ico to the web pages.

Revision 1.8 2011/01/26 14:37:35 janvlok
Embedded dashboards

Revision 1.7 2010/08/23 12:44:46 janvlok
Combined the demo's into one serfboard

Revision 1.6 2010/05/10 12:07:57 hayward
Remove old serfboard index html pages
update the serfdemo page and tidy it.

Revision 1.5 2010/05/05 22:51:39 hayward
Update dashboard descriptions to better fit their purpose.

Revision 1.4 2010/05/05 22:42:19 hayward
Improve layout of demo index.

-->
<html>
  <head>
    <meta name="generator" content=
      "HTML Tidy for Linux/x86 (vers 31 October 2006), see www.w3.org">
    <link rel="shortcut icon" href="/serfboard/html/images/favicon.ico"/>
    <title>
      Code Magus Demo Dashboards.
    </title>
    <meta http-equiv="content-type" content="text/html; charset=us-ascii">
    <style type="text/css">
BODY { background-color: #BFD9FF; };
      font-family: "times new roman", Symbol, serif; font-size:large}
      A:link { color: DarkBlue }
      A:visited { color: maroon }
      A:active { color: fuchsia }
      span.TT {font-family: monospace; font-weight: lighter; font-size: large;}
      ul.grp { border-color: black; border-width: medium;border-style:solid;background-color: #87CEFA ; }
      li.oddrow { background-color: LightBlue; width: 100%;
        border-bottom-color: LightBlue; border-bottom-width: thick;
        border-bottom-style: solid; }
      li.evenrow { background-color: LightCyan; width: 100%;
        border-bottom-color: LightCyan; border-bottom-width: thick;
        border-bottom-style: solid; }
      p.row {margin: 0px 0px 0px 20px; background-color: transparent; }
      table.products {text-align: left; border: 0; width: 60%; }
      form.grp { border-color: black; border-width: medium;border-style:solid;
        background-color: PowderBlue; }
      table.tabinp { width: 60%; background-color: PowderBlue; }
      td.xcolhead {text-align: right; }
      input.inpbox {width: 40%;}
    </style>
  </head>

```

```

<body>
  <div>
    <h2>
      Code Magus Demo Dashboards
    </h2>
    <blockquote>
      <table class="products" frame="none" cellpadding="2" cellspacing="2"
        summary="Code Magus Dashboards">
        <colgroup span="1"></colgroup>
        <colgroup span="1"></colgroup>
        <tr>
          <td style="vertical-align: top">
            <h3>
              Pre-defined Dashboards
            </h3>
            <ul class="grp">
              <li class="odddrow">
                <a href=
                  "/serfboard/cgi-bin/serfdashcgi?dname=serfboard_demo01&port=9000">
                  Serfboard Demonstration 01.</a>
                <p class="row">
                  This dashboard is an example of Credit and Debit card
                  transactions from an ATM device showing approvals, denials
                  and rate and response times.
                </p>
              </li>
              <li class="evenrow">
                <a href=
                  "/serfboard/cgi-bin/serfdashcgi?dname=serfboard_demo02&port=9000">
                  Serfboard Demonstration 02.</a>
                <p class="row">
                  This dashboard is an example showing different ways that
                  the number of sessions and rate and response time in a
                  system under test may be displayed.
                </p>
              </li>
              <li class="odddrow">
                <a href=
                  "/serfboard/cgi-bin/serfdashcgi?dname=serfboard_demo03&port=9000">
                  Serfboard Demonstration 03.</a>
                <p class="row">
                  This dashboard is an example of monitoring the key
                  components of a physical machine. These components include
                  CPU time, memory used and network activity.
                </p>
              </li>
              <li class="evenrow">
                <a href=
                  "/serfboard/cgi-bin/serfdashcgi?dname=serfboard_demo&port=9000">
                  Serfboard Demonstration.</a>
                <p class="row">
                  This dashboard is an example of monitoring the key
                  components of the three demonstration dashboards.
                </p>
              </li>
            </ul><br>
            <h3>
              Launch an ad hoc Dashboard
            </h3>
            <p>
              An ad hoc dashboard may be launched if the dashboard name and
              connection port number of a running instance of serfboard are
              known.
            </p><br>
            <form class="grp" id="launch" action=
              "/serfboard/cgi-bin/serfdashcgi" name="launch">

```

```
<input type="hidden" name="host" id="host" value="localhost">
<table class="tabinp" summary="Adhoc Dashboard">
  <tr>
    <td class="xcolhead">
      <label for="dname">Dashboard Name:</label>
    </td>
    <td>
      <input class="xinpbox" type="text" name="dname" id=
        "dname" size="15">
    </td>
  </tr>
  <tr>
    <td class="xcolhead">
      <label for="port">Port:</label>
    </td>
    <td>
      <input class="inpbox" type="text" name="port" id="port">
    </td>
    <td align="right">
      <input type="submit" name="submit" id="submit" value=
        "Submit"> <input type="reset" name="reset" id="reset"
        value="Reset">
    </td>
  </tr>
</table>
</form>
</td>
</tr>
</table>
</blockquote>
</div>
</body>
</html>
```

---

## References

- [1] Serfboard Configuration Guide and Reference Version 1. CML Document CML00023-01, Code Magus Limited, July 2008. [PDF](#).
- [2] Serfboard Instruments Guide and Reference Version 1. CML Document CML00024-01, Code Magus Limited, July 2008. [PDF](#).
- [3] Serfboard User Guide Version 1. CML Document CML00027-01, Code Magus Limited, July 2008. [PDF](#).
- [4] cmlxsnmp: SNMP Metric Probe. CML Document CML00044-01, Code Magus Limited, June 2009. [PDF](#).
- [5] cmlxaixp: AIX Performance Metric Probe. CML Document CML00045-01, Code Magus Limited, June 2009. [PDF](#).
- [6] cmlxwinp: Windows Performance Metric Probe. CML Document CML00048-01, Code Magus Limited, June 2009. [PDF](#).
- [7] cmlxwasp: Websphere Application Server Performance Metric Probe. CML Document CML00049-01, Code Magus Limited, June 2009. [PDF](#).
- [8] refclock: Reference Clock API and Server Reference Version 1. CML Document CML00058-01, Code Magus Limited, January 2010. [PDF](#).
- [9] cmlxsolp: Solaris Performance Metric Probe. CML Document CML00065-01, Code Magus Limited, June 2009. [PDF](#).