



# **Node Monitor User Guide**

***Release 6.x***

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# 1

## Preface

### 1.1 About the Vortex OpenSplice Node Monitor User Guide

The *Vortex OpenSplice Node Monitor User Guide* provides the information needed by anyone who wants to monitor the statistics about the performance of a system.

*This Guide contains:*

- a list of supported platforms
- instructions for starting and stopping the Node Monitor
- descriptions of the Node Monitor configuration options
- a categorized list of the types of data that can be accessed with the Node Monitor

### 1.2 Conventions

The icons shown below are used in the Vortex product documentation to help readers to quickly identify information relevant to their specific use of OpenSplice.

| Icon                                                                                | Meaning                                                                 |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
|  | Item of special significance or where caution needs to be taken.        |
|  | Item contains helpful hint or special information.                      |
|  | Information applies to Windows ( <i>e.g.</i> XP, 2003, Windows 7) only. |
|  | Information applies to Unix-based systems ( <i>e.g.</i> Solaris) only.  |
|  | Information applies to Linux-based systems ( <i>e.g.</i> Ubuntu) only.  |
|  | C language specific.                                                    |
|  | C++ language specific.                                                  |
|  | C# language specific.                                                   |
|  | Java language specific.                                                 |

# 2

## Introduction

Node Monitor is a Vortex OpenSplice application implemented in the Java language which is installed as part of Vortex OpenSplice.

It is possible to use Node Monitor on platforms where both Vortex OpenSplice and the *Sigar API* can be installed. See [Supported Platforms](#) below for detailed information.

Node Monitor publishes the following system-monitoring data into the OpenSplice backbone:

- CPU information and statistics
- Memory statistics
- Network interface information and statistics
- Operating System information
- Process information and statistics

Refer to *Data Available through Node Monitor* for complete list of data that can be obtained from Node Monitor.

### 2.1 Supported Platforms

- x86 / Linux kernel 2.6 and up (32/64-bit)
- x86 / Microsoft Windows 2003 Server/XP/7 (32/64-bit)

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## Starting and Stopping Node Monitor

The Vortex OpenSplice environment must be set up correctly before starting the Node Monitor. Please refer to the *Vortex OpenSplice Getting Started Guide* for detailed information about how to install and configure Vortex OpenSplice.

### 3.1 Linux

Source the `release.com` file from the shell command line to set up the Vortex OpenSplice environment.

To start Node Monitor, enter the following command in the shell:

**Linux**

```
> ./nodemon
```

### 3.2 Windows

To start Node Monitor, open an Vortex OpenSplice Command Prompt and enter the following command:

**Windows**

```
> nodemon.bat
```

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## Configuring Node Monitor

### 4.1 Setting up the configuration file

It is possible to control the frequency of the information and metrics that are pushed to the Vortex OpenSplice backbone. Setting the interval to -1 for a specific category will disable the push of monitoring data for that category.

To override the default configuration, create your own `application.conf` file in the same directory where you start the Node Monitor.

#### 4.1.1 Configuration parameters

|                     |                                                                                                                                                   |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| domain              | Domain ID of the OpenSplice system.                                                                                                               |
| partition           | Partition name to which monitoring data will be published. Default is <code>NODE_INFO</code> . Do not change this when using with Vortex Insight! |
| historyDepth        | History depth for <code>HistoryQosPolicy</code> . -1 to keep all history.                                                                         |
| cpuInfo             | CPU information interval in milliseconds. -1 to disable.                                                                                          |
| cpuStats            | CPU statistics interval in milliseconds. -1 to disable.                                                                                           |
| memStats            | Memory statistics interval in milliseconds. -1 to disable.                                                                                        |
| netInfo             | Memory statistics interval in milliseconds. -1 to disable.                                                                                        |
| netInterfaceInfo    | Network interface information interval in milliseconds. -1 to disable.                                                                            |
| netInterfaceStats   | Network interface statistics interval in milliseconds. -1 to disable.                                                                             |
| operatingSystemInfo | Operating system information interval in milliseconds. -1 to disable.                                                                             |
| processInfo         | Process information interval in milliseconds. -1 to disable.                                                                                      |
| processCPUStats     | Process CPU statistics interval in milliseconds. -1 to disable.                                                                                   |
| processMemoryStats  | Process memory statistics interval in milliseconds. -1 to disable.                                                                                |

### 4.2 Default configuration file (`application.conf`)

```
# define default scope variables to be used for setting the value of
other parameters.
default {
  domain = 0
  partition = NODE_INFO
  historyDepth = 10
  interval {
    information = 60000
    statistics = 2000
  }
}

opensplice {
  hm {
    nodeinfoservice{
```

```
domain = ${default.domain}
partition = ${default.partition}
historyDepth = ${default.historyDepth}
interval {
  cpuInfo = ${default.interval.information}
  cpuStats = ${default.interval.statistics}
  memStats = ${default.interval.statistics}
  netInfo = ${default.interval.information}
  netInterfaceInfo = ${default.interval.information}
  netInterfaceStats = ${default.interval.statistics}
  operatingSystemInfo = ${default.interval.information}
  processCPUStats = ${default.interval.statistics}
  processInfo = ${default.interval.information}
  processMemoryStats = ${default.interval.statistics}
}
}
```

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## Data Available through Node Monitor

### 5.1 CPU Information

- Vendor
- CPU Model
- CPU Frequency
- Cache size
- Number of cores on the CPU

### 5.2 Operating System Information

- OS name
- Distribution name (*e.g.* Ubuntu 12.04)
- Architecture of the OS
- Linux kernel image version
- Vendor and vendor version
- Data model (32/64 bit *etc.*)
- Endianness

### 5.3 Network Information

- Primary interface primary address primary MAC address and primary netmask
- Domain name
- Default gateway default gateway interface
- Primary DNS and secondary DNS

### 5.4 Network Interface Information

- Interface name
- Interface type (*e.g.* Ethernet Loopback)
- MAC address
- Destination

- Broadcast
- Netmask
- MTU

## 5.5 Process Information

- Process ID
- Name
- Current working directory
- Priority
- Number of threads in the process
- OSPL environment variables (*e.g.* OSPL\_URI, OSPL\_HOME, *etc.*)

## 5.6 Network Interface Statistics

- RX values: bytes packets errors dropped overruns and frame
- TX values: bytes packets errors dropped overruns collisions and carrier

## 5.7 Memory Statistics

- Total system memory
- Total used system memory
- Total free system memory
- Actual total used system memory
- Actual total free system memory
- Total swap size
- Total used swap size
- Total free swap size
- RAM size in MB

## 5.8 CPU statistics

- Load and load average
- Total number of processes in idle state
- Total number of processes in running state
- Total number of processes in sleeping state
- Total number of zombie processes
- Total number of processes
- Total number of threads

## 5.9 Process Memory Statistics:

- Process ID
- Resident memory size used in Bytes
- Shared memory size used in Bytes
- Number of minor page faults
- Number of major page faults
- Total number of page faults (Major + Minor)
- Virtual memory size used in Bytes

## 5.10 Process CPU Statistics

- Process ID
- Percent CPU used
- Start time in milliseconds (Epoch time)
- Total CPU time in milliseconds (User + System)
- User CPU time in milliseconds
- System CPU time in milliseconds

|                                      |                   |       |
|--------------------------------------|-------------------|-------|
| data[5].switch                       | PROCESS_CPU_STATS |       |
| data[5].processCPUStats.procid       | 15927             |       |
| data[5].processCPUStats.percent      | 0.024975024975025 |       |
| data[5].processCPUStats.startTime    | 1402582003000     |       |
| data[5].processCPUStats.totalCPUTime | 17220             |       |
| data[5].processCPUStats.userCPUTime  | 13060             |       |
| data[5].processCPUStats.sysCPUTime   | 4160              |       |
| data[6].switch                       | PROCESS_MEM_STATS |       |
| data[6].processMemStats.procid       | 15969             |       |
| data[6].processMemStats.resident     | 60477440          |       |
| data[6].processMemStats.share        | 15241216          | 15969 |
| data[6].processMemStats.minorFaults  | 19708             |       |
| data[6].processMemStats.majorFaults  | 46                |       |
| data[6].processMemStats.pageFaults   | 19754             |       |
| data[6].processMemStats.size         | 1793462272        |       |

Figure 5.1: Example Process Memory & CPU statistics

# 6

## References

### **Sigar API**

<https://github.com/hyperic/sigar>

# 7

## Contacts & Notices

### 7.1 Contacts

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### 7.2 Notices

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