

**IBM SPECTRUM COMPUTING SUPPORT TOOLS v1.2 – README**

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**1. What is included in this package?**

This IBM Spectrum Computing Support Tools v1.2 package includes:

* Support\_Tool\_Lic\_Agreement.pdf: the license agreement file
* README.pdf: the readme file
* support\_tools: the binary executable file of the support tools suite
* lsfsupporttool.conf: the LSF support tools configuration file

**2. Why use IBM Spectrum Computing Support Tools?**

IBM Spectrum Computing Support Tools suite is not meant to replace IBM Spectrum Computing Technical Support. It can, however, be used in conjunction with IBM Spectrum Computing Technical Support for IBM Spectrum LSF (“LSF”) as a diagnostic and analytical tool suite. Currently, it can do the following:

1. **Check LSF cluster health**

* Operating system environment
* LSF daemon versions and patch levels
* LSF binary owner and permission
* LSF daemon CPU and memory usage
* LSF master communication and connection
* LSF working file system performance
* LSF daemon log files
* Host name resolution performance
* User name resolution performance

1. **Check LSF binary version and patch level**

Check the binary version and patch level in the directory $LSF\_SERVERDIR and $LSF\_BINDIR for all IBM Spectrum Computing software installed.

1. **Diagnose network system**

Diagnose TCP/UDP communication issues. It can run in either LSF-mode or standalone mode. In LSF mode, it runs as a client to connect to the server port and "ping" the daemon. It can check any communication-related LSF problems. In standalone mode, the program can run either in server mode or in client mode using either TCP or UDP. It can test and diagnose issues related to network connections, communication ports, data size, etc.

1. **Profile performance of a file system**

Check the performance of the file system that is used by LSF working directory.

1. **Profile performance of host name resolution**

Check DNS host name resolution performance in a production environment.

1. **Profile performance of user name resolution**

Check NIS user name resolution performance in a production environment.

1. **Analyze LSF event file**

Event file analysis includes the following functions:

* Generate a statistical report from the lsb.events file
* Generate resource requirements report from the lsb.events file
* Generate scheduler metrics report from the lsb.events file
* Check duplicated event records
* Parse an event
* Generate new clean\_event\_file file from an lsb.events file
* Print specific fields of a specific event
* Check missing records in an lsb.events file
* Generate an event file in a format that can be exported to Microsoft Excel

**3. How to use IBM Spectrum Computing Support Tools**

The support\_tools executable file can run in either interactive mode or command line mode. The Network testing function can only run in interactive mode.

**a) Interactive mode:**

At a command prompt, enter support\_tools and choose a tool. For example:

./support\_tools

Support Tool Suite v1.2 Linked with LSF 8.0.1, Sep 19 2011

Do you agree with license agreement and continue? [y/n]: y

Please choose one of the following tools:

1. LSF cluster health checking
2. Check LSF binary version

3) Diagnose network system

4) Profile performance of a file system

5) Profile performance of host name resolution

6) Profile performance of user name resolution

7) Analyze LSF event file

Which one do you want to run? ([1-7]): 1

Checking LSF cluster <LSF801\_2> as <lsfadmin>

......

**b) Command line mode:**

Usage: support\_tools [-O <logfile>] [-V | -C | -N [-S <datasize>] | -F <pathname>| -H <0|1> |   
 -U | -B <0|1>]

-V Output version and build information

-O <logfile> Output logfile

-C LSF cluster health checking

-N Network communication diagnosis and testing

-S <datasize> Use together with –N to specify communication data size

-F <pathname> Check file-system performance specified as “pathname”

-H <0|1> Check host name resolution performance

0: Check all LSF hosts

1: Check all hosts found in DNS repository

-U Check user name resolution performance

-B <0|1> Check all LSF binaries version and patch level

0: Un-shared installation

1: Shared installation

**4. How to configure the threshold value of LSF health checking?**

You can configure the threshold value of LSF health checking to determine whether the checked items are OK or not. You can set your preferred threshold values in the lsfsupporttool.conf file under the same folder as the LSF support tool. The default threshold values are set in the configuration file, and you can modify the values according to your cluster’s situation. The following threshold values are configurable.

INIT\_SIZE

Use to allocate the memory of some buffers. For example, the buffer to hold the pointers of each host of the cluster. Suggest set it to larger than the number of the hosts in the cluster and the default value.

Default value

50000

FILER\_THRESHOLD

Average time used to access a file (open/read/close). The unit is MS.

Default value

50

NAME\_SERVICE\_THRESHOLD

Average time used to resolve a host or a user name. The unit is MS.

Default value

20.0

NUM\_EVENT\_FILE\_THRESHOLD

The number of batch event files.

Default value

200

DISK\_FREE\_GB

The minimum available disk space. The unit is GB.

Default value

1.0

ACCT\_FILE\_SIZE

The lsb.acct file size. The unit is GB.

Default value

2.0

NUM\_CONN\_THRESHOLD

The number of TCP connections to a specific server port.

Default value

1024

LOGFILE\_SIZE\_THRESHOLD

The LSF daemon log file size. The unit is GB.

Default value

1.0

NUM\_UDP\_ERROR

The number of UDP error.

Default value

200

COMM\_SAMPLE\_PERIOD

The sample period of getting network connection information. The unit is seconds.

Default value

20

MAX\_FD\_THRESHOLD

The root file descriptors for MBD.

Default value

1024

CPU\_UT\_LIM

The CPU utilization percentage of LIM.

Default value

90

CPU\_UT\_PIM

The CPU utilization percentage of PIM.

Default value

90

CPU\_UT\_RES

The CPU utilization percentage of RES.

Default value

90

CPU\_UT\_SBATCHD

The CPU utilization percentage of SBATCHD.

Default value

90

CPU\_UT\_MBATCHD

The CPU utilization percentage of MBATCH.

Default value

90

CPU\_UT\_MBATCHD\_QUERY

The CPU utilization percentage of query MBATCHD.

Default value

90

CPU\_UT\_MBSCHD

The CPU utilization percentage of MBSCHD.

Default value

90

MEM\_US\_LIM

The memory usage of LIM. The unit is MB.

Default value

1000

MEM\_US\_PIM

The memory usage of PIM. The unit is MB.

Default value

1000

MEM\_US\_RES

The memory usage of RES. The unit is MB.

Default value

1000

MEM\_US\_SBATCHD

The memory usage of SBATCHD. The unit is MB.

Default value

1000

MEM\_US\_MBATCHD

The memory usage of MBATCHD. The unit is MB.

Default value

2048

MEM\_US\_MBSCH

The memory usage of MBSCHD. The unit is MB.

Default value

2048

UT\_CPUBINDING\_LIM

The UT percentage of LIM when daemon CPU binding is applied.

Default value

90

UT\_CPUBINDING\_MBATCHD

The UT percentage of MBATCHD when daemon CPU binding is applied.

Default value

90

UT\_CPUBINDING\_MBSCHD

The UT percentage of MBSCHD when daemon CPU binding is applied.

Default value

90

SEND\_Q\_LIM

The size of Send-Q length for LIM.

Default value

1000

RECV\_Q\_LIM

The size of Recv-Q length for LIM.

Default value

1000

NUM\_LIM\_TCP\_CONN

The number of LIM TCP connections.

Default value

100

NUM\_MBATCHD\_TCP\_CONN

The number of MBATCHD TCP connections.

Default value

3000

NUM\_MBD\_SBD\_TCP\_CONN

The number of MBATCHD to SBATCHD TCP connections.

Default value

3000

TOTAL\_MBATCHD\_SEND\_Q\_LEN

The total MBATCHD Send-Q length.

Default value

1000

TOTAL\_MBATCHD\_RECV\_Q\_LEN

The total MBATCHD Recv-Q length

Default value

1000

FREE\_SPACE\_SHAREDIR

The free disk space for LSB\_SHAREDIR. The unit is GB.

Default value

10

FREE\_SPACE\_LOGDIR

The free disk space for LSF\_LOGDIR. The unit is GB.

Default value

10

**5. Which user should I log in as to run the tools?**

Run as the primary LSF administrator or root for LSF cluster health checker. The LSF cluster health checker must run as "root" to check the following LSF functionality:

* OS resource limit for LSF daemons (running as root)
* The effectiveness of "suid root" LSF binaries

The above checking is silently skipped if you run the tools as a non-root user. Other checking is done running as any user.

**6. Which LSF versions does this tool suite support?**

The tool binaries linked with LSF 7.0.6 libraries can run on all LSF 7.0 Update clusters. The tool binaries linked with LSF8.0.1 libraries can run on LSF8.0.1 cluster.

**7. Limitations:**

The following functions are not available on Windows:

1. LSF cluster health checking
   * Check UDP errors on master host.
   * Check LIM UDP Send-Q
   * Check LIM UDP Recv-Q
   * Check File descriptor limit
2. Profile performance of host name resolution
3. Profile performance of user name resolution

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