

IBM Spectrum LSF
Version 10 Release 1

Readme



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Note

Before using this information and the product it supports, read the information in "Notices" on page 15.

This edition applies to version 10, release 1 of IBM Spectrum LSF (product number 5725G82) and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

	iii	LSF_ANNOUNCE_MASTER_TCP_WAITTIME	9
Chapter 1. Interactive logon	1	Chapter 5. Enhance LSF security with	
About interactive logon.	1	eauth.cve.	11
Scope.	1	Chapter 6. Configure LSF to use	
LSB_LOGON_INTERACTIVE.	1	Amazon Web Server (AWS) as a	
Enable interactive logon	2	resource provider	13
Chapter 2. Automatically create the LSF		Notices	15
hosts file on Linux/UNIX.	3	Trademarks	17
hostsfilesetup	3		
Chapter 3. Use lsreghost instead of			
lsreglocalhost	7		
Chapter 4. Configure LSF to use TCP for			
communication	9		
LSF_CALL_LIM_WITH_TCP	9		

Chapter 1. Interactive logon

Use the interactive logon option to modify the Windows Logon Type on the execution host (the host running the job) from **logon as a batch job** to **logon interactively** when jobs are run on the execution host.

About interactive logon

In order for jobs to run, the Windows user account privilege **logon as a batch job** must be set on all Windows hosts that can run jobs for Windows submission user accounts. A job fails if the submitting Windows user account does not have this privilege on the execution host.

Enabling interactive logon is an alternative to setting the **logon as a batch job** privilege for all users running work on Windows hosts.

In environments where it is not desirable to assign a **logon as a batch job** privilege to all Windows user accounts, you can enable the interactive logon option and assign the **logon interactively** privilege to all Windows user accounts instead. LSF uses **logon interactively** instead of **logon as a batch job** when running jobs.

Scope

Operating system	<ul style="list-style-type: none">Windows hosts (all supported Platforms).
Not required for	<ul style="list-style-type: none">UNIX execution hosts.User account mapping UNIX hosts.
Application	<ul style="list-style-type: none">This option applies to Windows execution hosts.
Dependencies	<ul style="list-style-type: none">On Windows hosts that may run work, you must grant the logon interactively privilege to Windows user accounts.
Limitations	<ul style="list-style-type: none">You can configure this option and use logon interactively or use logon as a batch job. You cannot use both at the same time.

LSB_LOGON_INTERACTIVE

Syntax

LSB_LOGON_INTERACTIVE=Y|y|N|n

Description

If LSB_LOGON_INTERACTIVE is set to Y or y in `lsf.conf`, LSF executes jobs on the Windows host with the **logon interactively** Windows Logon Type.

If LSB_LOGON_INTERACTIVE is set to N, n, or any other value in `lsf.conf`, LSF executes jobs on the Windows host with the **logon as a batch job** Windows Logon Type.

If `LSB_LOGON_INTERACTIVE` is not set in `lsf.conf`, LSF executes jobs on the Windows host:

- With the **logon as a batch job** Windows Logon Type when the operating system on the Windows execution host is earlier than Vista.
- With the **logon interactively** Windows Logon Type when the operating system on the Windows execution host is Vista or later.

Default

`LSB_LOGON_INTERACTIVE=N`, LSF executes jobs on the Windows host with the **logon as a batch job** Windows Logon Type.

Enable interactive logon

Before you begin

Prerequisites:

Set the **logon interactively** privilege for submission Windows user accounts on all hosts where a job submitted by these Windows users could run.

Procedure

1. As the LSF administrator, set `LSB_LOGON_INTERACTIVE=Y` in `lsf.conf`.
This setting authorizes Windows user accounts that have the **logon interactively** privilege set in the local security policy on the host that runs the job.

Important:

The job will fail if the submission user account does not have the **logon interactively** privilege on the Windows execution host.

2. Run **badadmin reconfig**.

Chapter 2. Automatically create the LSF hosts file on Linux/UNIX

About this task

The LSF hosts file located in `$LSF_CONFDIR` associates host names and IP addresses in LSF. This is useful for hosts with multiple IP addresses and different official host names configured at the system level. You can use the command **hostsfilesetup** to automatically create the LSF hosts file for all hosts in your cluster, and to update the LSF hosts file.

Procedure

1. Install LSF and set up the `lsf.cluster.cluster_name` file with the official name of hosts.
2. As root or the LSF primary administrator, log on to one of the master candidate hosts and use **hostsfilesetup** to automatically create the `$LSF_CONFDIR/hosts` file.

```
$ hostsfilesetup
```

Note: The LSF primary administrator or root must be able to access all UNIX/Linux hosts in the cluster with password-less rsh or ssh from the host on which this command is run. If password-less rsh is not configured, access to remote hosts fails. If password-less ssh is not configured, the user account running this command is prompted for a password.

hostsfilesetup

Synopsis

```
hostsfilesetup [ -m host_name [ , host_name , ... ] | -m all ] [ -v ipv4 | -v ipv6 ] [ -r rsh | -r ssh ]
```

```
hostsfilesetup -h | -V
```

Description

You must be root or the primary LSF administrator to run this command have access to all UNIX/Linux hosts in the cluster with password-less rsh or ssh from the host on which this command is run. If password-less rsh is not configured, access to remote hosts fails. If password-less ssh is not configured, the user account running this command is prompted for a password.

This command is only available on Linux/UNIX from LSF server hosts that have access to the `lsf.cluster.cluster_name` file, and from LSF master candidate hosts.

By default, when no options are used, creates the LSF hosts file(`$LSF_CONFDIR/hosts`) and maps host names to IP addresses and host aliases, for all hosts in the cluster defined in the `lsf.cluster.cluster_name` file. By default, uses the shell defined by the parameter `LSF_RSH` in the `lsf.conf` file to log in to each host to

discover IP address and alias information. If LSF_RSH is not defined and a shell is not specified, rsh is used. IP addresses are written in dotted quad notation(IPv4) in the \$LSF_CONFDIR/hosts file.

The \$LSF_CONFDIR/hosts file has the following format:

```
ip_address official_host_name [alias [alias ...]]
```

For example, host1.example.com has two network interfaces and would be listed in the hosts file as:

```
190.123.55.77 host1.example.com alias-AA  
190.123.55.88 host1.example.com alias-BB
```

Note: In certain cases, **hostsfilesetup** may not be able to retrieve all aliases for a host. If any host aliases are missing, you manually add them to the hosts file.

When a new file is created, the file is owned by the primary LSF administrator. If the hosts file exists, original file ownership permissions are maintained.

Options

-m host_name [, host_name , ...]-m all

Updates the \$LSF_CONFDIR/hosts file and adds entries to map IP addresses to host names and aliases for the specified hosts. The host names that you specify must be the same names as listed in the `lsf.cluster.cluster_name` file.

If the keyword all is used, updates entries for all hosts in the `lsf.cluster.cluster_name` file.

-v ipv4 | -v ipv6

Specifies whether entries in the hosts file are written in a dotted quad notation (IPv4) or IP Next Generation (IPv6) format.

If you specify ipv6, ensure LSF_ENABLE_SUPPORT_IPV6=y in the configuration file `lsf.conf`.

-r rsh | -r ssh

Indicates whether to use rsh or ssh to log on to the specified hosts to discover host IP and alias information.

-h

Prints the command usage to stderr and exits.

-v

Prints the product release version to stderr and exits.

Examples

Create the \$LSF_CONFDIR/hosts file, include all hosts in the cluster, and use IPv4 format to write to the file and rsh to log in to each host to discover IP address and aliases:

```
$ hostsfilesetup -r rsh
```

Update the \$LSF_CONFDIR/hosts file: hosts host1.example.com,host2example.com, IPv4 format to write to the file, rsh to log in to each host to discover IP address and aliases:

```
$ hostsfilesetup -m host1.example.com,host2.example.com -r rsh
```

Update the entire `$LSF_CONFDIR/hosts` file, include all hosts in the cluster, and use IPv4 format and ssh:

```
$ hostsfilesetup -m all -r ssh
```

Overwrite the existing `$LSF_CONFDIR/hosts` file, include all hosts in the cluster, and use IPv6 format and ssh:

```
$ hostsfilesetup -v ipv6 -r ssh
```

Chapter 3. Use **lsreghost** instead of **lsreglocalhost**

In version 10.1, IBM Spectrum LSF introduced the command **lsreghost**. This command directly registers LSF host names and IP addresses with LSF servers so that LSF servers can internally resolve these hosts without requiring a DNS server.

As a result, the command **lsreglocalhost** is now deprecated. Use **lsreghost** instead. The **lsreghost** command resolves security vulnerabilities in **lsreglocalhost**. The **lsreglocalhost** command allows non LSF hosts to register as valid client hosts due to the fact that the command can be run by anyone on any client host when the IP range is matched.

Chapter 4. Configure LSF to use TCP for communication

LSF uses a mix of UDP and TCP calls for communication. If UDP is not reliable in your environment, configure LSF to use only TCP to communicate. Configure the parameters `LSF_CALL_LIM_WITH_TCP` and `LSF_ANNOUNCE_MASTER_TCP_WAITTIME` in the configuration file `lsf.conf`.

LSF_CALL_LIM_WITH_TCP

Syntax

`LSF_CALL_LIM_WITH_TCP=Y|y|N|n`

Description

Use this parameter when UDP is not reliable in your environment. Defines whether LSF uses TCP or UDP to communicate with lims in the cluster.

When set to `y`, LSF uses only TCP to communicate with lims in the cluster.

When set to `n`, LSF uses UDP to communicate with lims in the cluster.

Note: Clients and daemons may still use TCP to communicate with the master lim when `LSF_CALL_LIM_WITH_TCP=n`, as LSF uses a mix of TCP and UDP calls to communicate.

If you are using resource connector to borrow hosts from Amazon Web Services(AWS), set `LSF_CALL_LIM_WITH_TCP=y` to provide a reliable protocol for dynamic hosts to connect to LSF.

If you are using LSF with a non-shared file system and the parameter `LSF_GET_CONF=lim` in the configuration file `lsf.conf`, you must add `LSF_CALL_LIM_WITH_TCP=y` in the slave `lsf.conf` file so that the client also uses TCP when communicating with lim.

Default

Undefined or `n`: LSF uses UDP to communicate with lims in the cluster.

See also

`LSF_ANNOUNCE_MASTER_TCP_WAITTIME`

LSF_ANNOUNCE_MASTER_TCP_WAITTIME

Syntax

`LSF_ANNOUNCE_MASTER_TCP_WAITTIME=seconds`

Description

Affects communication between the lim on the master host and slave lims. Defines how long a slave lim waits for the master lim to initiate communication. If after

startup the slave lim does not receive any announcement from the master lim within the configured time period, the slave lim sends a request to the master lim.

Important: This parameter can affect performance. Do not use this parameter for large clusters.

Default

60 seconds

Chapter 5. Enhance LSF security with **eauth.cve**

In LSF, authentication can come by means of external authentication using the LSF **eauth** executable, or by means of identification daemons (**identd**). External authentication provides the highest level of security and is the default method of authentication in LSF. It is installed in the directory specified by the **LSF_SERVERDIR** parameter in the **lsf.conf** file.

By default, **eauth** uses an internal key to encrypt authentication data, but you may use a customized external key to improve security. You can also write your own **eauth** executable to meet the security requirements of your cluster, using the default **eauth** as a demonstration of the **eauth** protocol.

Update the **eauth** executable file

You can also replace the default **eauth** executable file with the **eauth.cve** executable file, which automatically generates a site-specific internal key by using 128-bit AES encryption. Rename or move the original **eauth** executable file, then rename the **eauth.cve** executable file to **eauth**.

In Windows hosts, replace the **eauth.exe** executable file with **eauth.cve.exe**

The new **eauth** command rejects LSF requests from hosts with a UTC time offset of more than five minutes compared to the LSF server host.

If you are using IBM Spectrum LSF RTM, you must also update to the corresponding new **eauth** executable file for IBM Spectrum LSF RTM.

Note: You must replace the executable file on all LSF hosts in the LSF cluster to work together. Otherwise, LSF commands that run on the hosts without the new **eauth** executable file will encounter authentication problems.

Chapter 6. Configure LSF to use Amazon Web Server (AWS) as a resource provider

Use the `aws_enable.sh` script and the `aws_enable.config` file in `$LSF_TOP/10.1/install` to configure LSF to use Amazon Web Server (AWS) as a resource provider through LSF resource connector. You can find instructions for using the script in the `aws_enable.sh` file.

For detailed steps for enabling AWS in LSF resource connector, see the LSF Knowledge Center: https://www.ibm.com/support/knowledgecenter/SSWRJV_10.1.0/lsf_resource_connector/lsf_rc_update_lsfconfig.html

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