

## Tracing Mobile IP Operations

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Mobile IP supports tracing operations. Mobile IP tracing operations track Mobile IP operations and record them in a log file. The error descriptions captured in the log file provide detailed information to help you solve problems.

Trace-related configurations are independent for each logical system and routing instance in which Mobile IP is configured. Mobile IP can generate two types of log messages:

- Trace messages common to all logical systems and routing instances in which Mobile IP is configured. Examples of this global message type are the messages generated by Mobile IP during initialization after it starts up. These trace messages are stored in the default trace file, `/var/log/mipd`. You cannot configure Mobile IP to save global messages in a different file. Mobile IP traces global messages by default.
- Trace messages specific to a logical system or routing instance in which Mobile IP is configured. An example of this message type is the message generated by Mobile IP when it receives a registration request. These trace messages are stored in the trace file configured for that logical system or routing instance. These messages cannot be saved in `/var/log/mipd`.

Tracing operations take place as follows:

1. Global messages are logged in the `/var/log/mipd` file. Logical system or routing instance messages are logged in a file that you must configure, also located in the `/var/log` directory. You cannot change the directory (`/var/log`) in which trace files are located.
2. When the file reaches 128 kilobytes (KB), it is renamed until there are three trace files. For example, `mipd` becomes `mipd.0`, then `mipd.1`, and then `mipd.2`. Then the oldest trace file (`mipd.2`) is overwritten.

You can optionally configure the maximum file size to be from 10 KB through 1 gigabyte (GB). You can also specify the number of trace files to be from 2 through 1000. (For more information about how log files are created, see the *JUNOS System Log Messages Reference*.)

By default, only the user who configures the tracing operation can access log files. You can optionally configure read-only access for other users.

To configure Mobile IP tracing operations:

1. Specify that you want to configure tracing options.

```
[edit services mobile-ip]
user@host# edit traceoptions
```

2. (Optional) Configure the name for the file used for the trace output.  
See “Configuring the Mobile IP Trace Log Filename” on page 2.
3. (Optional) Configure the number and size of the log files.

See “Configuring the Number and Size of Mobile IP Log Files” on page 2.

4. (Optional) Configure access to the log file.  
See “Configuring Access to the Mobile IP Log File” on page 3.
5. (Optional) Configure a regular expression to filter logging events.  
See “Configuring a Regular Expression for Mobile IP Lines to Be Logged” on page 3.
6. (Optional) Configure flags to filter the operations to be logged.  
See “Configuring the Mobile IP Tracing Flags” on page 4.

The Mobile IP traceoptions operations are described in the following sections:

- Configuring the Mobile IP Trace Log Filename on page 2
- Configuring the Number and Size of Mobile IP Log Files on page 2
- Configuring Access to the Mobile IP Log File on page 3
- Configuring a Regular Expression for Mobile IP Lines to Be Logged on page 3
- Configuring the Mobile IP Tracing Flags on page 4

## **Configuring the Mobile IP Trace Log Filename**

Global messages common to all Mobile IP logical systems and routing instances are recorded only in `/var/log/mipd`. Mobile IP automatically creates this file if it is not present when Mobile IP starts. You cannot configure global messages to be recorded in any other file.

You must specify a different name with the `file` option for messages that are specific to a logical system or routing instance in which Mobile IP is configured. Ensure that filenames are unique for each logical system or routing instance in which Mobile IP is configured. If you do not configure a trace filename for a logical system or routing instance, then nothing is traced for that entity.

To configure the filename for Mobile IP tracing operations for a logical system or routing instance:

- Specify the name of the file used for the trace output.

```
[edit logical-systems lr1 services mobile-ip traceoptions]  
user@host# set file mip-lr1_1
```

## **Configuring the Number and Size of Mobile IP Log Files**

By default, when the trace file reaches 128 kilobytes (KB) in size, it is renamed `filename.0`, then `filename.1`, and so on, until there are three trace files. Then the oldest trace file (`filename.2`) is overwritten.

You can optionally configure the maximum file size to be from 10 KB through 1 gigabyte (GB). You can also specify the number of trace files to be from 2 through 1000.

For example, you can set the maximum file size to 2 MB, and the maximum number of files to 20. When the file that receives the output of the tracing operation (*filename*) reaches 2 MB, *filename* is renamed *filename.0*, and a new file called *filename* is created. When the new *filename* reaches 2 MB, *filename.0* is renamed *filename.1* and *filename* is renamed *filename.0*. This process repeats until there are 20 trace files. Then the oldest file (*filename.19*) is overwritten by the newest file (*filename.0*).

To configure the number and size of trace files:

- Specify the name, number, and size of the file used for the trace output. (Mobile IP supports the `files` and `size` options for the `traceoptions` statement.)

```
[edit services mobile-ip traceoptions]
user@host# set file mip_1 _logfile_1 files 20 size 2097152
```

### **Configuring Access to the Mobile IP Log File**

By default, only the user who configures the tracing operation can access the log files. You can enable all users to read the log file and you can explicitly set the default behavior of the log file.

To specify that all users can read the log file:

- Configure the log file to be world-readable.

```
[edit services mobile-ip traceoptions]
user@host# set file mip_1 _logfile_1 world-readable
```

To explicitly set the default behavior, only the user who configured tracing can read the log file:

- Configure the log file to be no-world-readable.

```
[edit services mobile-ip traceoptions]
user@host# set file mip_1 _logfile_1 no-world-readable
```

### **Configuring a Regular Expression for Mobile IP Lines to Be Logged**

By default, the trace operation output includes all lines relevant to the logged events.

You can refine the output by including regular expressions that will be matched.

To configure regular expressions to be matched:

- Configure the regular expression.

```
[edit services mobile-ip traceoptions]
user@host# set file mip_1 _logfile_1 match regex
```

## Configuring the Mobile IP Tracing Flags

By default, only important events are logged. You can specify which trace operations are logged by including specific tracing flags. The following table describes the flags that you can include.

Flag	Description
all	Trace all operations
authentication	Trace authentication operations
binding	Trace bindings
event	Trace events
home-agent	Trace home agent operations
interface-database	Trace interface database operations
packet	Trace packet decoding operations
protocol	Trace protocol operations
rtsock	Trace routing socket operations
session-db	Trace session database events
signal	Trace signal operations
subscriber	Trace subscriber events
trace	Trace changes in tracing
tunnel	Trace tunneling operations
user-interface	Trace user interface operations

To configure the flags for the events to be logged:

- Configure the flags.

```
[edit services mobile-ip traceoptions]  
user@host# set flag home-agent
```

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Published: 2010-04-15