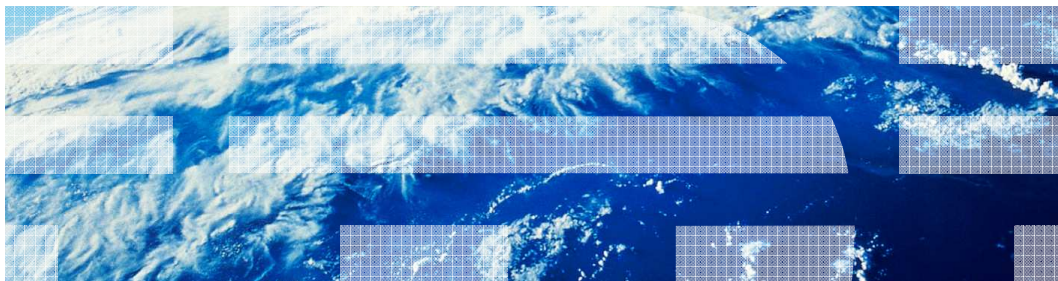


# IBM Tivoli Management Framework V4.3.1

## Gateway function debugging



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IBM Tivoli® Management Framework V4.3.1, Gateway function debugging.

## Assumptions

At lesson creation supported Tivoli Management Framework versions

- 4.1
- 4.1.1
- 4.3.1

When this lesson was created, the supported Tivoli Management Framework versions are 4.1, 4.1.1, and 4.3.1.

## Objectives

When you complete this module, you can perform these tasks in your IBM Tivoli Management Framework environment:

- Use the `wgateway fndebug_level` option
- Use the `wep describe` command
- Read and interpret the resulting debug data in the `gatelog`

When you complete this module, you can perform these tasks in your IBM Tivoli Management Framework environment:

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## Tivoli Management Framework gateway, wgateway fndebug

Per-endpoint or per-method debugging is available with Tivoli Management Framework version 4.3.1

To list all function names, type this command:

```
wgateway <gateway_label> get fndebug_level all
```

### Example

```
# wgateway frwaix07-gw get fndebug_level all
fndebug_level:
eplogin:1:0
upcall:2:0
upcall_proxy:3:0
cntl_ep2gw:4:0
dispatch:5:0
rpt:6:0
distribute:7:0
send:8:0
return_results:9:0
```

The **fndebug\_level** option can provide additional debugging data in the **\$DBDIR/gatelog** log file for several functions on a per-method or per-endpoint dispatcher basis. The available function data types are listed when you run the command, **wgateway <gateway\_label> get fndebug\_level all**.

## Environment

- Ensure root (or \$root\_user), and source the Tivoli environment:
  - UNIX: `. /etc/Tivoli/setup_env.sh`
  - Windows: `%SystemRoot%\system32\drivers\etc\Tivoli\setup_env.cmd`
- Use **wep ls -g <gateway\_label>** for targets

### Example

```
# wep ls -g frwaix07-gw
1254345603.2.522+#TMF_Endpoint::Endpoint# frylock
1254345603.3.522+#TMF_Endpoint::Endpoint#
  12vm02.tivlab.austin.ibm.com
1254345603.5.522+#TMF_Endpoint::Endpoint# josephine-ep
1254345603.6.522+#TMF_Endpoint::Endpoint# frwaix07-ep
```

To troubleshoot the Tivoli environment, you must log in as the Tivoli root administrator. The Tivoli environment must be sourced. The **fndebug\_level** option affects only the endpoints that are logged in to the gateway that is specified in the command. You can use the **wep ls -g <gateway\_label>** command to list the available target endpoints and ensure that the endpoint you are interested in is in the list.

## Setup

To check the endpoint status, run the **wepstatus** command

### Example

```
# wepstatus josephine-ep
Endpoint Label      : josephine-ep
Dispatcher Number   : 5
Gateway Label       : frwaix07-gw
Interp Type         : linux-ix86
Version             : 43100
IP Address           : <ipaddr>+9495
Current Status      : connected
Status error code(s):
Last Login Time     : 2011/08/23-09:08:11 [Passed]
Last Logout Time    : NOT_SET
Last Migration Time : 2011/05/31-13:24:49 [Passed]
Last Downcall Time  : 2012/05/10-17:04:24 [Passed]
Last Upcall Time    : NOT_SET
Last EP check Time  : 2012/05/11-15:01:55 [Passed]
```

To check the status of the endpoints that you are investigating, run the wepstatus command.

## Usage (1 of 2)

- \$ wgateway <gateway\_label> set fndebug\_level <function\_name:debug\_level>
- \$ wgateway <gateway\_label> set fndebug\_level <ep\_od\_number:debug\_level>
- \$ wgateway <gateway\_label> get fndebug\_level <function\_name | ep\_od | all>

where:

function\_name = elogin, upcall, upcall\_proxy, cntl\_ep2gw, dispatch, rpt, distribute, send,  
return\_results

ep\_od\_number = Endpoint dispatcher number

ep\_oid = endpoint ObjectID (Region#.dispatcher#.522+)

If any status in the previous `wepstatus` command output failed or you suspect a problem communicating with the endpoint, you can use function debugging to identify the issue. This slide shows the usage for the command. Note that the IBM Tivoli Management Framework Reference Guide incorrectly identifies the functions available. The function names listed on the slide are the correct identifiers.

## Usage (2 of 2)

### Debug\_level:

- 0 Errors
- 1 Errors and warnings
- 2 Harmless exceptions
- 3 Verbose communication information
- 5 Verbose boot, database check, and endpoint login information
- 6 Verbose upcall, downcall, and repeater information
- 7 Verbose job scheduler information
- 8 Verbose gateway cache information

**Note:** Level 4 does not exist

The **debug\_level** values are the same as on the **wgateway man** page.



## Per endpoint example

```
# wgateway frwaix07-gw get fndebug_level dispatch  
fndebug_level: 0
```

```
# wgateway frwaix07-gw set fndebug_level dispatch:5
```

```
# wgateway frwaix07-gw get fndebug_level dispatch  
fndebug_level: 5
```

```
(gatelog)
```

```
2012/05/24 16:13:54 0 3018a718: Set fndebug_level: FN=dispatch debug_level=5
```

Suppose you want to gather information about the endpoint dispatcher activity. You find what the current **fndebug\_level** for dispatch is by using the wgateway command phrase, get fndebug\_level dispatch.

Then, you set it to the required level by using a set command, and verify the result. The **gatelog** records the action.

## Feature, wep describe

- New in Tivoli Management Framework V4.3.1
  - Used to get endpoint data:
    - From EpMgr database
    - From endpoint by starting a downcall
    - From endpoint by using the HTTP interface
- Usage:

```
wep <endpoint_label> describe [-e | -h | -d]
```

  - -e Display the information stored in the endpoint manager database
  - -h Display the information collected from endpoint by using the HTTP interface (if the endpoint parameter "http\_disable" is not set to 2)
  - -d Display information collected from endpoint by starting a method call on the endpoint

Administrators can now choose the source of endpoint configuration data by using the `wep` command, `describe`. Three options are available for this command.

**-e** Display information stored in the endpoint manager database

**-h** Display information collected from the endpoint by using the endpoint HTTP interface (`http_disable!=2`)

**-d** Display information collected from the endpoint by invoking a method call on the endpoint

...

If no option flag is added, then the command performs all three options.

## wep describe example (1 of 2)

```
# wep frwaix07-ep describe -d
```

```
Endpoint Information from endpoint from a downcall:
```

```
-----  
machineid = 21C81158-1DD2-11B2-896D-9B09DBDB6D44  
interp = aix4-r1  
lcf_port = 9495  
gateway_port = 9494  
log_threshold = 1  
lcf_version = 41100  
logfile = /opt/Tivoli/lcf/dat/1/lcf.log  
config_path = /opt/Tivoli/lcf/dat/1/last.cfg  
run_dir = /opt/Tivoli/lcf/dat/1  
bin_dir = /opt/Tivoli/lcf/bin/aix4-r1/mrt  
stage_dir = /opt/Tivoli/lcf/bin/aix4-r1/mrt/upgrade  
upgrade_dir = /opt/Tivoli/lcf/bin/aix4-r1/mrt/upgrade  
lib_dir = /opt/Tivoli/lcf/lib/aix4-r1  
cache_loc = /opt/Tivoli/lcf/dat/1/cache  
cache_index = /opt/Tivoli/lcf/dat/1/cache/Index.v5  
cache_limit = 20480000  
log_size = 1024000  
log_queue_size = 1024
```

The option **-d** performs a downcall to the endpoint and reads the active configuration directly. This is a bonus troubleshooting aid because you can use this option to test the downcall function directly from Tivoli Management Framework.

## wep describe example (2 of 2)

```
(gatelog)
2012/06/05 11:20:57 5 30059818: sched: got a job
2012/06/05 11:20:57 6 3018a998: downcall: Method body /bin/aix4-r1/endpoint/adm
in found: ver=0x461e4970: ep_ver=41100
2012/06/05 11:20:57 6 3018a998: idmap: user ($root_user,aix4-r1) -> root
2012/06/05 11:20:57 3 3018a998: new_session: id=245529d0 addr=<ipaddr>+9495 od=6
2012/06/05 11:20:57 6 3018a998: net_rcv: invoking ipc_timed_rcv timeout:300
session=245529d0 od=6
2012/06/05 11:20:57 6 3018a998: net_rcv: ipc_timed_rcv invoked (timeout:300,
session:245529d0 od=6)
2012/06/05 11:20:57 3 3017b568: reader: call ipc_timed_rcv: timeout=300
2012/06/05 11:20:57 3 3017b568: reader: type=5 sess=245529d0 addr=<ipaddr>+9495
len=134
2012/06/05 11:20:57 6 3018a998: net_rcv: invoking ipc_timed_rcv timeout:300
session=245529d0 od=6
2012/06/05 11:20:57 6 3018a998: net_rcv: ipc_timed_rcv invoked (timeout:300,
session:245529d0 od=6)
2012/06/05 11:20:57 3 3018a998: destroy_session: 245529d0 od=6
```

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Gateway function debugging

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The gatelog records the downcall method call and session data.

## Function troubleshooting (1 of 2)

```
# wgateway frwaix07-gw set fndebug_level send:3 ←
# wgateway frwaix07-gw get fndebug_level send
fndebug_level: 3
# wgateway frwaix07-gw set fndebug_level upcall:6 ←
# wgateway frwaix07-gw get fndebug_level all
fndebug_level:
eplogin:1:0
upcall:2:6
upcall_proxy:3:0
cntl_ep2gw:4:0
dispatch:5:5
rpt:6:0
distribute:7:0
send:8:3
return_results:9:0
```

If an error is recorded for the downcall, you can narrow down the root cause by turning on specific function debug levels. In this example, the **send** function is set to be traced at **fndebug\_level 3** and the **upcall** function at **fndebug\_level 6**.

## Function troubleshooting (2 of 2)

(gatelog)



```
2012/06/05 11:51:52 0 3018a718: Set fndebug_level: FN=upcall debug_level=6
2012/06/05 11:57:37 5 30059818: sched: got a job
2012/06/05 11:57:37 6 3018a998: downcall: Method body /bin/aix4-r1/endpoint/admin found:
  ver=0x461e4970: ep_ver=41100
2012/06/05 11:57:37 6 3018a998: idmap: user ($root_user,aix4-r1) -> root
2012/06/05 11:57:37 3 3018a998: new_session: id=245529d3 addr=<ipaddr>+9495 od=6
2012/06/05 11:57:37 6 3018a998: net_rcv: invoking ipc_timed_rcv timeout:300
  session=245529d3 od=6
2012/06/05 11:57:38 6 3018a998: net_rcv: ipc_timed_rcv invoked (timeout:300,
  session:245529d3 od=6)
2012/06/05 11:57:38 3 3017b568: reader: call ipc_timed_rcv: timeout=300
2012/06/05 11:57:38 3 3017b568: reader: type=5 sess=245529d3 addr=<ipaddr>+9495
  len=134
2012/06/05 11:57:38 6 3018a998: net_rcv: invoking ipc_timed_rcv timeout:300
  session=245529d3 od=6
2012/06/05 11:57:38 6 3018a998: net_rcv: ipc_timed_rcv invoked (timeout:300,
  session:245529d3 od=6)
2012/06/05 11:57:38 3 3018a998: destroy_session: 245529d3 od=6
```

The resulting gatelog reflects a successful session.

## Additional resources

Additional information is available at these websites:

- [http://www.ibm.com/support/entry/myportal/troubleshooting/software/tivoli/tivoli\\_management\\_framework](http://www.ibm.com/support/entry/myportal/troubleshooting/software/tivoli/tivoli_management_framework)
- <http://www.redbooks.ibm.com/abstracts/SG246614.html?Open>
- <http://publib.boulder.ibm.com/infocenter/tivihelp/v3r1/index.jsp?toc=/com.ibm.tivoli.frmwrk.doc/toc.xml>

Additional information is available at the websites listed.

## Summary

Now that you completed this module, you can perform these tasks in your IBM Tivoli Management Framework environment:

- Use the `wgateway fndebug_level` option
- Use the `wep describe` command
- Read and interpret the resulting debug data in the `gatelog`

The features endpoint communications described in this lesson can assist you with troubleshooting gateway issues.

Now that you completed this module, you can perform these tasks in your IBM Tivoli Management Framework environment:

- Use the `wgateway fndebug_level` option
- Use the `wep describe` command
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