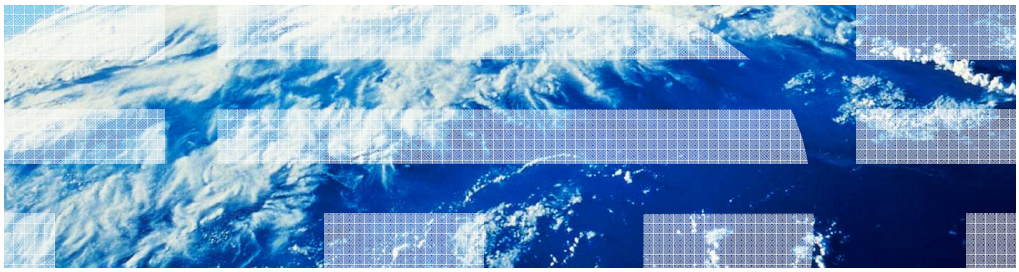
IBM Tivoli Netcool Performance Manager, wireless component V1.3

Daily loader administrative tasks and basic troubleshooting



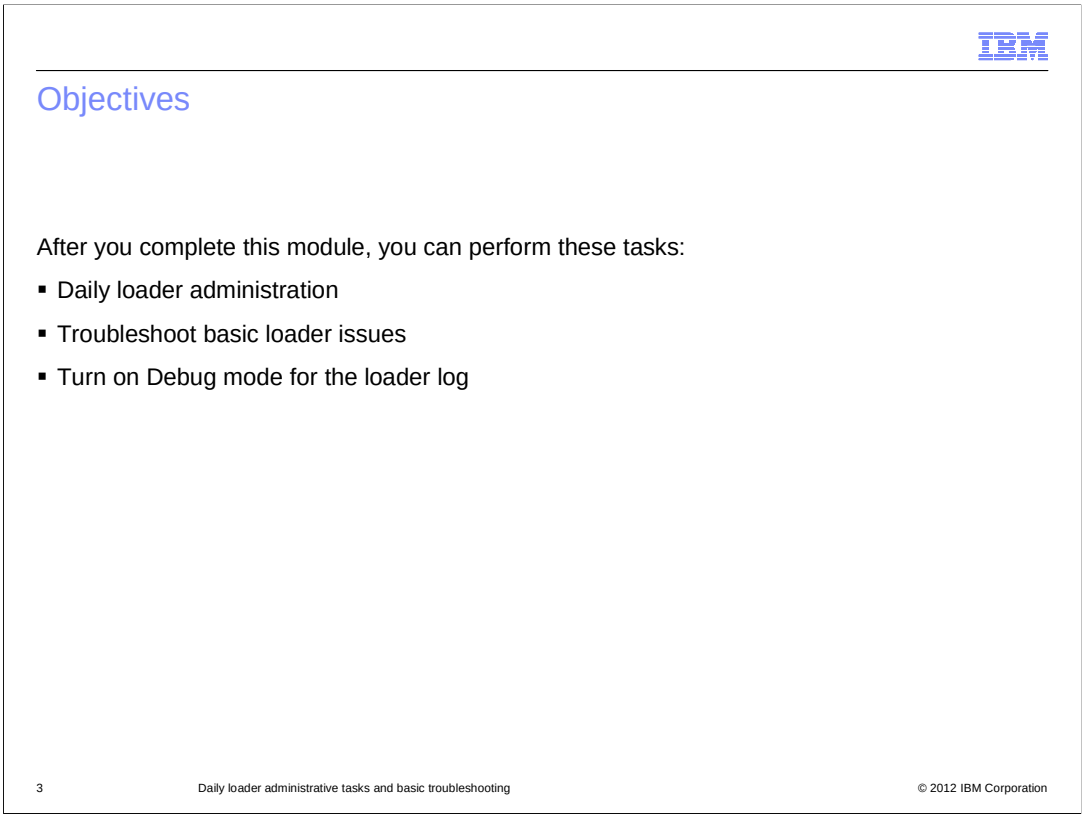
IBM Tivoli® Netcool® Performance Manager, wireless component V1.3, Daily loader administrative tasks and basic troubleshooting

Assumptions

Assumptions include that you have the following knowledge of IBM Tivoli Netcool Performance Manager, wireless component:

- Loader function
- Loader configuration and directories

For this module, the assumptions are that you know the loader function, configuration, and relevant directories in *IBM Tivoli Netcool Performance Manager, wireless component* software.



Objectives.

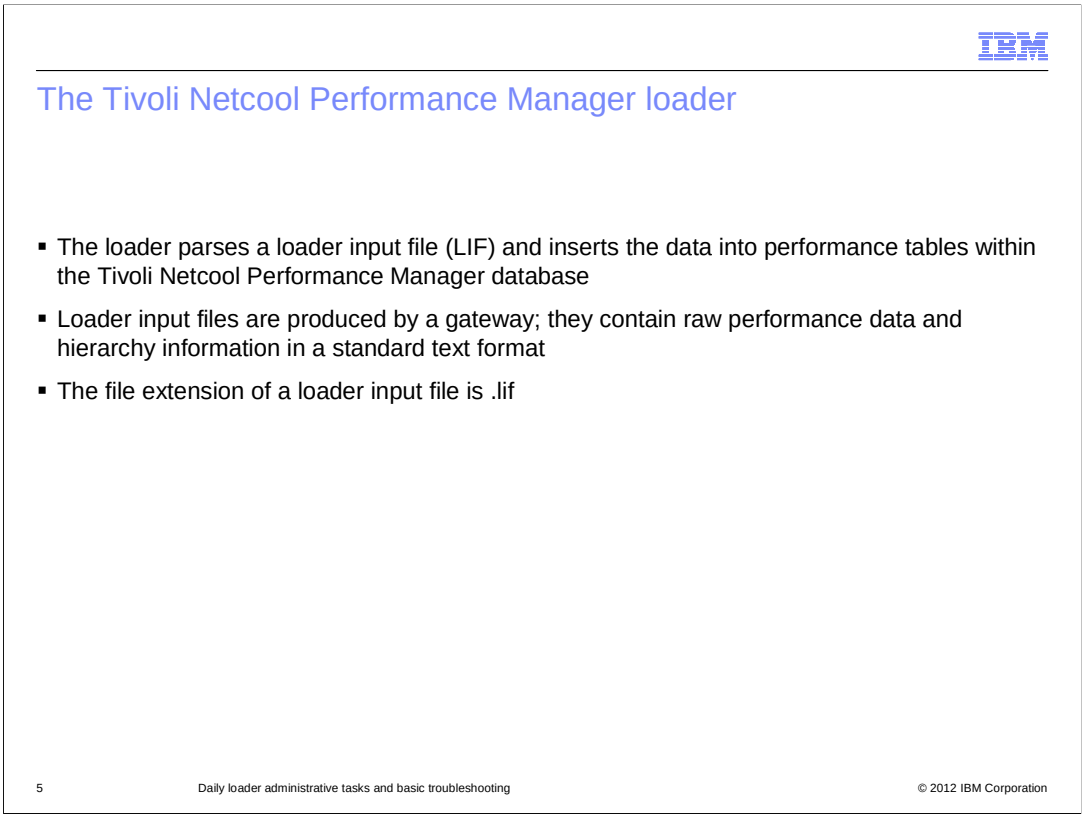
After you complete this module, you can perform these tasks:

- Daily loader administration
- Troubleshoot basic loader issues
- Turn on Debug mode for the loader log

Overview

- Overview
  - The Tivoli Netcool Performance Manager Loader
- Daily administrative tasks
  - Checking loader health
  - Checking for bad files
  - Housekeeping
- Troubleshooting
  - The loader log
  - Turning on Debug mode for the loader log

This module describes the daily administrative tasks involved and basic troubleshooting steps for the loader component in the IBM Tivoli Netcool Performance Manager, wireless component V1.3.



Essentially, loaders manage the loading of data into the Tivoli Netcool Performance Manager database, which is the Oracle database. The Tivoli Netcool Performance Manager functions with a diverse range of network technologies, and therefore a wide range of network element types. Data from these diverse sources is applied in a range of formats.

Before the data can be loaded into the Oracle database, it must be reformatted into a standard format that the loader processes recognizes. The standard text format is contained in a file called the LIF, or the loader input files, and is produced by the gateway.

The file extension of a LIF is .lif.

Checking loader status, step 1

- Execute the command as user `virtuo`:

```
unix >sap disp
```

- Output will be displayed listing the loaders that are started and loaders that are stopped. For example

```
[virtuo]sap disp
NAME STATE SINCE
as STARTED Feb 14, 2012
load_ericssongsmbssneutral STARTED Feb 14, 2012
load_ericssongsmbss STARTED Feb 14, 2012
load_nokiagsmbssneutral STARTED Feb 14, 2012
load_nokiagsmbss STARTED Feb 14, 2012
load_motorolagsmbss stopped -
load_motorolagsmbssneutral stopped -
load_motorolaumtsutran stopped -
```


In a Tivoli Netcool Performance Manager system there may be a number of loaders running for a number of technologies. The loader process runs constantly taking data from the loader spool directories and loading it into the performance database. The loader process is critical to the functioning of the Tivoli Netcool Performance Manager. Thus, it is also critical for an administrator to ensure that their loader processes are up and running.

The first step to do this is to use the ‘sap disp’ command as user virtuo.

By executing this command, the output will display a list of processes, including loaders that are started and loaders that are stopped.

This command lists the name, state and the date of when the processes were launched. You can tell it is a ‘loader’ process by looking at the word ‘load’ in the beginning of each process name. This is followed by the name of the technology, such as the ericsson gsm bss neutral and ericsson gsm bss vendor technology which you can see at the top two of the output list. A loader is running if the state displays ‘STARTED’, and ‘STOPPED’ if it has been stopped. At times, some loaders are stopped on purpose as they may not be in use by the user.

The dates on the far side indicate the date the current running loader was started. As indicated in the output, the loaders that are running were launched on February 14.

Checking loader status, step 2

- Ensure the loaders are started correctly
- A process should exist for each loader configured and running
- Run the command **`sap disp -l`** to list the loader PID

Name	PID
huawei gsm bss v300 r7	23754

```
virtuo: sap disp -l
NAME                                STATE     SINCE          HOST       GROUP                STIME          PID
As                                  STARTED   Feb 10, 2012   pmwhos     asgroup              Feb 10, 2012   10496
load_huaweigsmbssv900_v900r008      STARTED   Feb 11, 2012   pmwhost    Huawei GSM BSS V900  Feb 11, 2012   23754
load_hierarchycsv                   STARTED   Feb 10, 2012   pmwhost    Hierarchy CSV        Feb 10, 2012   14381
load_huaweigsmbss_v300r007          stopped   -              pmwhost    Huawei GSM BSS       -              -
load_ericssongsmbss_r1207b          stopped   -              pmwhost    Ericsson GSM BSS     -              -
load_siemensgsmbss_br10             stopped   -              pmwhost    Siemens GSM BSS      -              -
```

- When the PID is identified, run the command **`ps –ef | grep <PID>`** to ensure loader process is running.

```
[pmwhost:virtuo]ps -ef | grep 23754
virtuo 23754 9669 0 Feb 10 ? 352:48 /appl/virtuo/bin/na_loader -foreground -name Huawei GSM BSS V300 -version
```

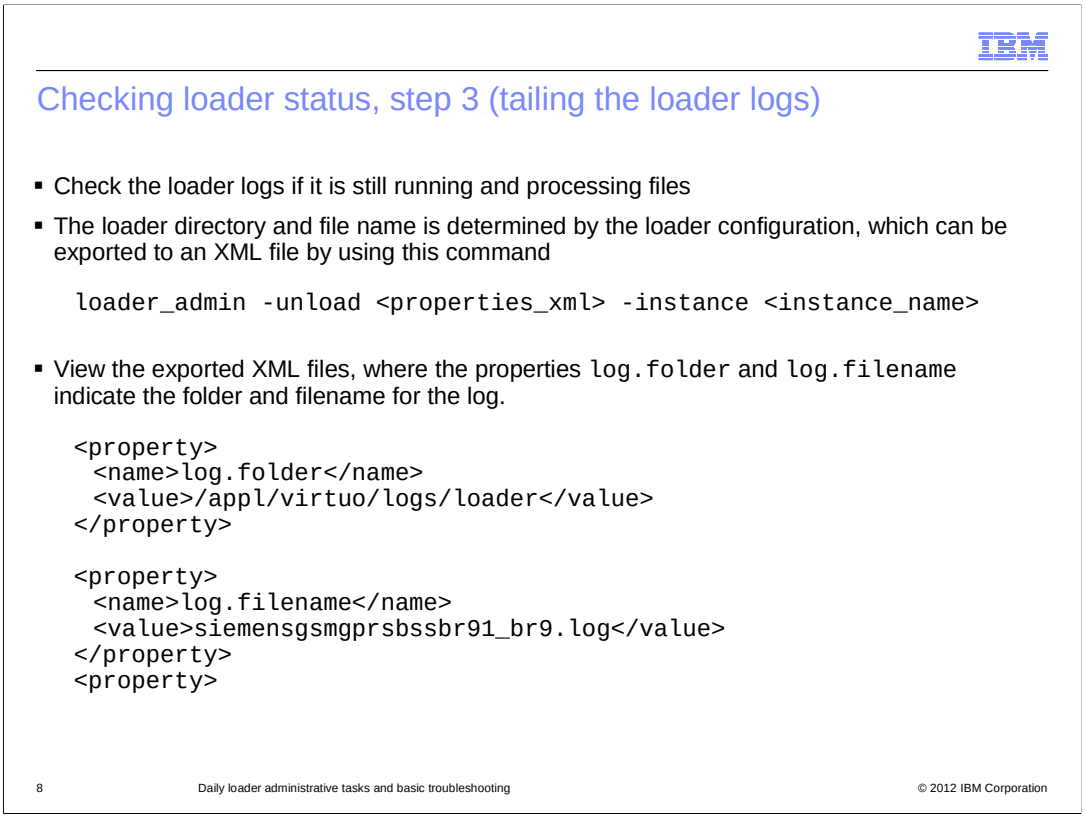

Now that the **sap disp** command shows that the loaders are running, step 2 is to reconfirm this by looking for the UNIX process ID. A process should exist for each loader configured and running.

When you run the command **sap disp -l**, the software lists the loaders and their respective process ID or PID as indicated in the slide.

For instance, in the example, the process ID for the huawei gsm bss v300 r7 is 23754.

After the PID is identified, to ensure loader process is running, run the command **ps –ef | grep <PID>**.

The example shows that, according to the UNIX system, the huawei gsm bss v300 appears to be running.



The third step to ensure that the loaders are running and processing files is to check the loader logs.

How do you know which loader log file to look at?

The loader directory and file name can be determined by exporting the loader configuration to an XML file with this command.

loader_admin -unload <properties_xml> -instance <instance_name>

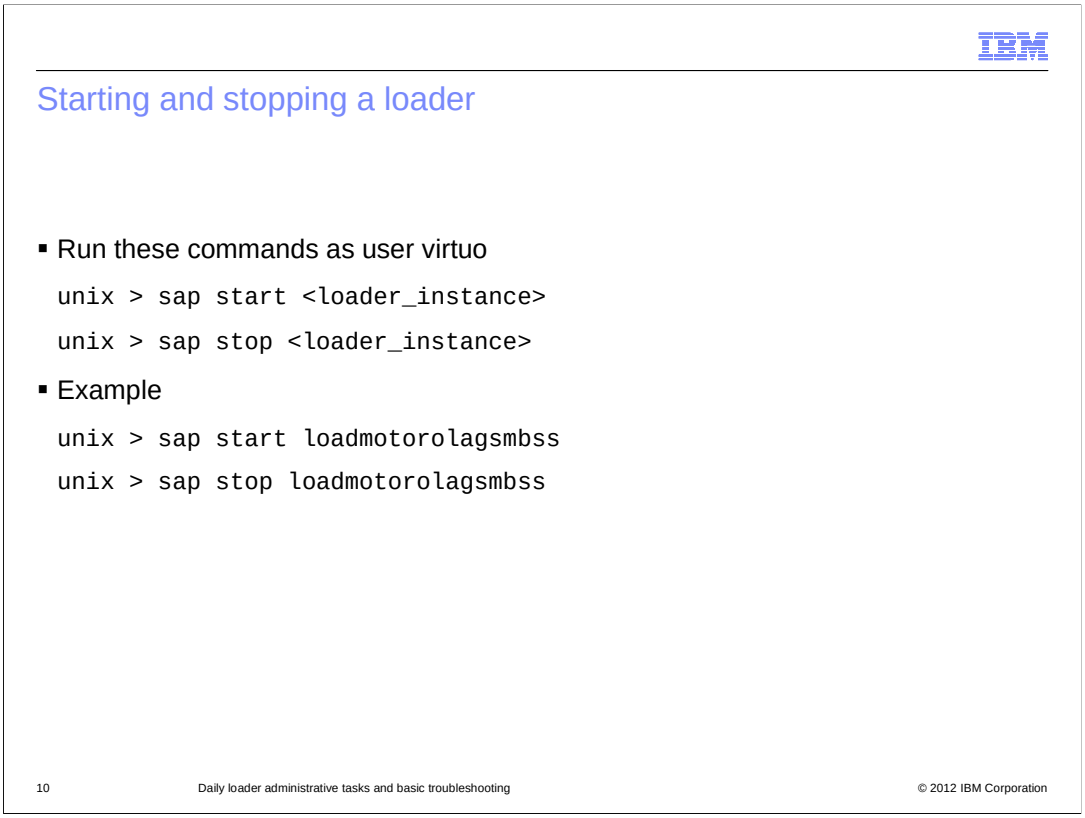
View the unloaded XML file and, by searching for the properties log folder, you can tell that from the example the log folder is **/appl/virtuo/logs/loader**. Also from the same example, the log.filename property indicates that the log file name is **siemensgsmgprsbssbr91_br9.log**.

Checking loader status, tail loader log

```
virtuo> tail –f siemensgsmgprsbssbr91_br9.log
   Thu Feb 8 16:45:41 2012 MAP AUDIT (19480):
    FILE_PROCESSING_SUCCESSFULLY_6: "File
   <MSC_2-#-P_NBSC_RES_ACCESS-#-BSS4.20060217.07.45.1-2-1.lif> has
    been processed.
   Blocks loaded: <30>. Loading started: <Thu Feb 8 16:45:41 2012>
    and finished: <Thu
   Feb 8 16:45:41 2012> . Elapsed Time: <0> second(s). Performance
    alarm messages
   generated: <0>, data loaded events generated: <0>."
   Thu Feb 8 16:45:41 2012 PDO INFO (19480):
    PDO_LOAD_SUCCESS_PDO_FILE: "Successfully
   loaded PDO file <PDO_DAAylaadM> into table <vnl_cell_access_tab>.
    Return
   Code is <SUCCESS> , Return message is <>. "
   Thu Feb 8 16:45:41 2012 PDO AUDIT (19480): PDO_LOAD_FILES_TIME: "
    The Elapsed time
   for loading the PDO files is <0> seconds. "
   Thu Feb 8 16:45:41 2012 ISI AUDIT (19480): ISI_MSG_OPEN_FOUND_IS:
    "The input
   source file
    </appl/virtuo/var/loader/spool/nokiagsmbssneutral1/10000/>
```


Now that you know the loader log file name, you can *tail* it. The loader log details all the activities the loader is performing, such as stating whether a LIF file has been processed successfully or not. Each loader log line starts with a date and a timestamp of an activity. Thus, the administrator should ensure that the time is recent, and see if further lines are being written to the log. If the timestamp falls several hours behind, and there are LIF files to be processed, this can be a bad sign, and the loader might not be running.

Also note that each line in the loader log also depicts the process ID for the loader, which is highlighted in bold in this slide and shows the process ID of 19480. You can **grep** for this process ID with the UNIX **ps** command discussed earlier to verify if the loader is running as well.



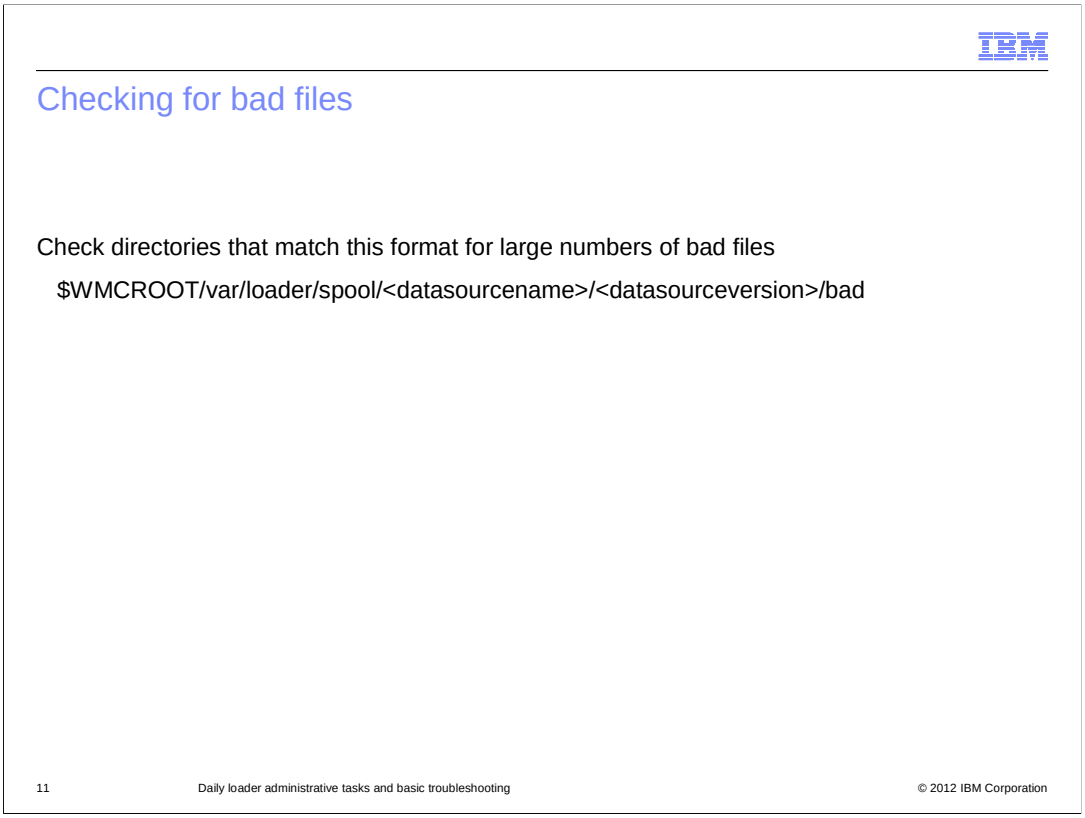
If your loader is not running, run these two commands to start and stop a loader.

As user virtuo, to start the loader, run this command:

sap start <loader_instance>

To stop the loader, run this command:

sap stop <loader_instance>



Now that you have ensured that the loader is running, check for bad files. Bad files are typically produced when the loader encountered errors or failures when it attempted to process LIF files.

Check the directories matching this format for large numbers of bad files:

$WMCROOT/var/loader/spool/<datasourcename>/<datasourceversion>/bad

The details on how to troubleshoot bad files are described in later in this module.

Checking the number of LIF files and timestamp

```
[pm:virtuo]ls | wc -l
   189
[pm:virtuo]ls -lrt | head
total 194712
drwxr-x---+  2 virtuo   virtuo     19968 Feb  4 02:01 bad
-rw-r--r--   2 virtuo   virtuo     10362 Feb  9
  10:26 PMMOResult_L3Reloc_v2-#-etlexpmx_RNC_20120209100553_103-#-#-I-#-
  CE-#-PMMOResult_L3Reloc-#-A.lif
-rw-r--r--   2 virtuo   virtuo     10362 Feb  9
  10:26 INUSE.PMMOResult_L3Reloc_v2-#-etlexpmx_RNC_20120209100553_103-#-#-
  I-#-CE-#-PMMOResult_L3Reloc-#-A.lif
-rw-r--r--   1 virtuo   virtuo     16370 Feb  9 10:26 PMMOResult_STM_1_IF-
  #-etlexpmx_RNC_20120209100555_115-#-#-I-#-CE-#-P.lif
-rw-r--r--   1 virtuo   virtuo     16397 Feb  9 10:26 PMMOResult_STM_1_IF-
  #-etlexpmx_RNC_20120209100551_185-#-#-I-#-CE-#-P.lif
-rw-r--r--   1 virtuo   virtuo     11123 Feb  9 10:26 PMMOResult_STM_1_IF-
  #-etlexpmx_RNC_20120209100605_174-#-#-I-#-CE-#-P.lif
-rw-r--r--   1 virtuo   virtuo     43792 Feb  9
  10:26 PMMOResult_Unit_Load-#-etlexpmx_RNC_20120209100554_112-#-#-I-#-CE-
  #-P.lif
[pm:virtuo]date
Tue Feb  9 10:33:42 EET 2012
```


A system administrator can constantly monitor the number of LIF files and their timestamp. This action ensures that no LIF file backlogs are building up, and loaders are processing the LIF files. This slide shows the steps to do this.

You can list the number of files in the loader directory by running the UNIX command **ls | wc -l**.

There is no specific number on how many LIF files should be in the **lif** directory at any one time, but with experience the administrator learns what should be the healthy number by constantly monitoring the **lif** folder. If the administrator notices a progressively large increase in the number of files, something is wrong.

Also, monitor the timestamp on the files to ensure that the files are recent. Run the UNIX command **ls -lrt | head** to view the timestamp of when the LIF file was created.

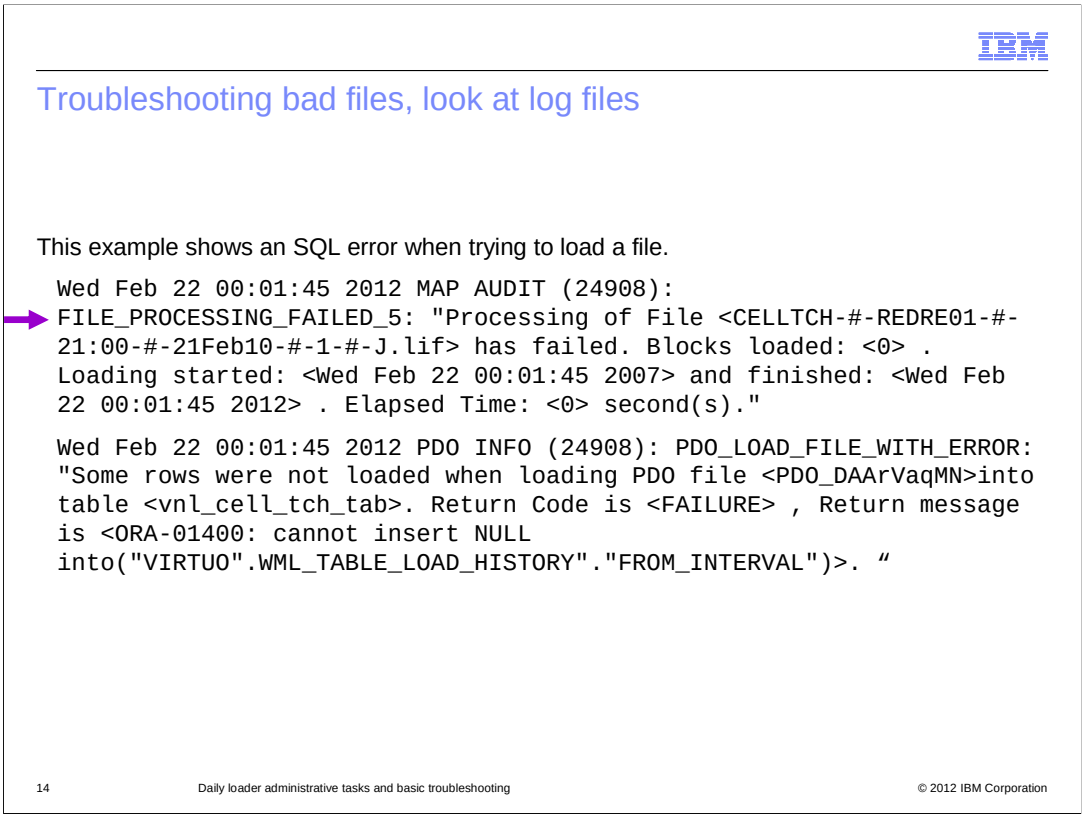
Troubleshooting, bad files

Files in the **bad** directory

```
[kl-l2s01z1:virtuo]pwd
/appl/virtuo/var/loader/spool/siemensgsmgprsbssbr91_br9/BR9/bad
[kl-l2s01z1:virtuo]ls
CELLTCH-#-REDRE01-#-21:00-#-21Feb12-#-1-#-J.lif
```


Assume you have a bad file as depicted in this screen capture.

It lists one bad file in the loader **…/bad** directory. How do you determine what caused the bad file? The next slide describes how to debug a bad file from the loader log.



If the loader is sending LIF files to the **bad** directory, several SQL error messages might be generated. The example shows some of these errors in a loader log file.

The loader log shows a FILE_PROCESSING_FAILED, as indicated by the arrow on the slide. The file name is listed in the log, is the same file name in the **bad** directory as shown on the previous slide.

The next line shows a SQL error that was related to the previous file. It also shows an Oracle error code, which is ORA-01400.

You can pause the presentation to review the log file.

Increasing loader log level

The loader log levels

Logging Level	Description
DEBUG	This level indicates low level messages that can be used to analyze component processing data.
INFO	This level indicates activity in the system at certain points in the operation, such as starting up or shutting down. It shows whether a LIF file was successfully processed or not, and which traffic tables were updated.
ERROR	This level indicates errors that can be recovered from. This is true for almost all error handling.

Sometimes LIF files go to the **bad** directory and there is very little information in the error logs to track the problem. In such cases, the log level can be set to a higher level to produce logs with more information.

The loader log has several levels of logging.

The **DEBUG** level indicates low level messages that can be used to analyze component processing data.

The **INFO** level indicates activity in the system at certain points in the operation, such as starting up or shutting down. It shows whether a LIF file was successfully processed or not, and which traffic tables were updated.

The **ERROR** level indicates errors that can be recovered from. This is true for almost all error handling.

The debug log level prints the most messages to the server logs. Because the logs generated can be very large, it is advisable to only run the loader at debug level for short periods of time. Running with the debug log level can adversely impact performance. For normal operation or by default, the log level should be set to INFO.

Increasing the log level (1 of 2)

Identify the loader instance you want to change by running the command listed

```
sap disp –l
```

```
virtuo: sap disp -l

NAME                              STATE    SINCE         HOST     GROUP                STIME          PID
as                                STARTED  Feb 10, 2012  pmwhost  asgroup              Feb 10, 2012  10496
load_huaweigprscnsgsn_r007c01b022 stopped  -             pmwhost  Huawei GPRS CN-SGSN  -             -
load_huaweigprsggsn_r006          stopped  -             pmwhost  Huawei GPRS GGSN     -             -
load_huaweigsmbssv900_v900r008    STARTED  Feb 11, 2012  pmwhost  Huawei GSM BSS V900  Feb 11, 2012  23754
load_hierarchycsv                 STARTED  Feb 10, 2012  pmwhost  Hierarchy CSV        Feb 10, 2012  14381
load_huaweigsmbss_v300r007        stopped  -             pmwhost  Huawei GSM BSS       -             -
load_ericssongsmbss_r1207b        stopped  -             pmwhost  Ericsson GSM BSS     -             -
load_siemensgsmbss_br10           stopped  -             pmwhost  Siemens GSM BSS      -             -
```

load_huaweigsmbssv900_v900r008 STARTED…
load_hierarchycsv STARTED…

You can increase the loader log level in two steps.

The first step is to find the process identifier of the loader you want to change by running the command **sap disp –l**.

In this example, the two loaders running are **huaweigsmbssv900_v900r008** and **hierarchycsv**.

Increasing the log level (2 of 2)

- Change the log level of the applicable loader by running the command listed

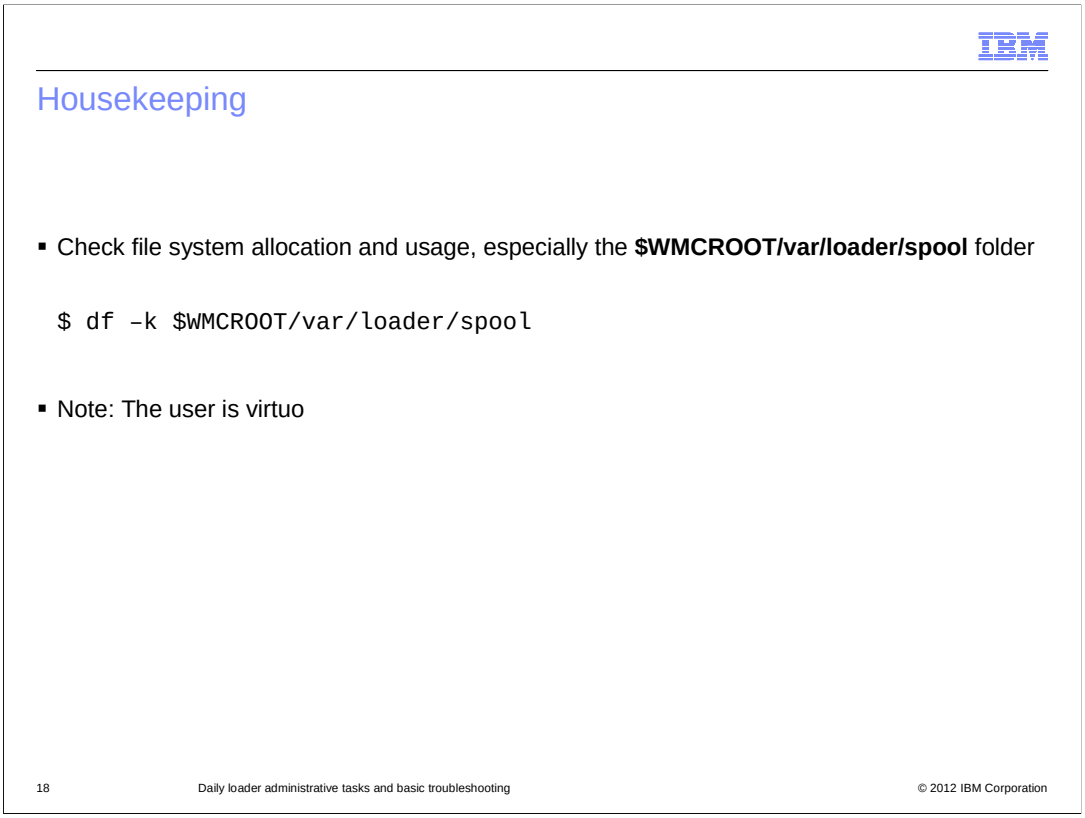
```
loader_admin -loglevel <loglevel> -instance <instance_name>
```

- Example

```
virtuo] loader_admin -loglevel DEBUG -instance hierarchycsv
```

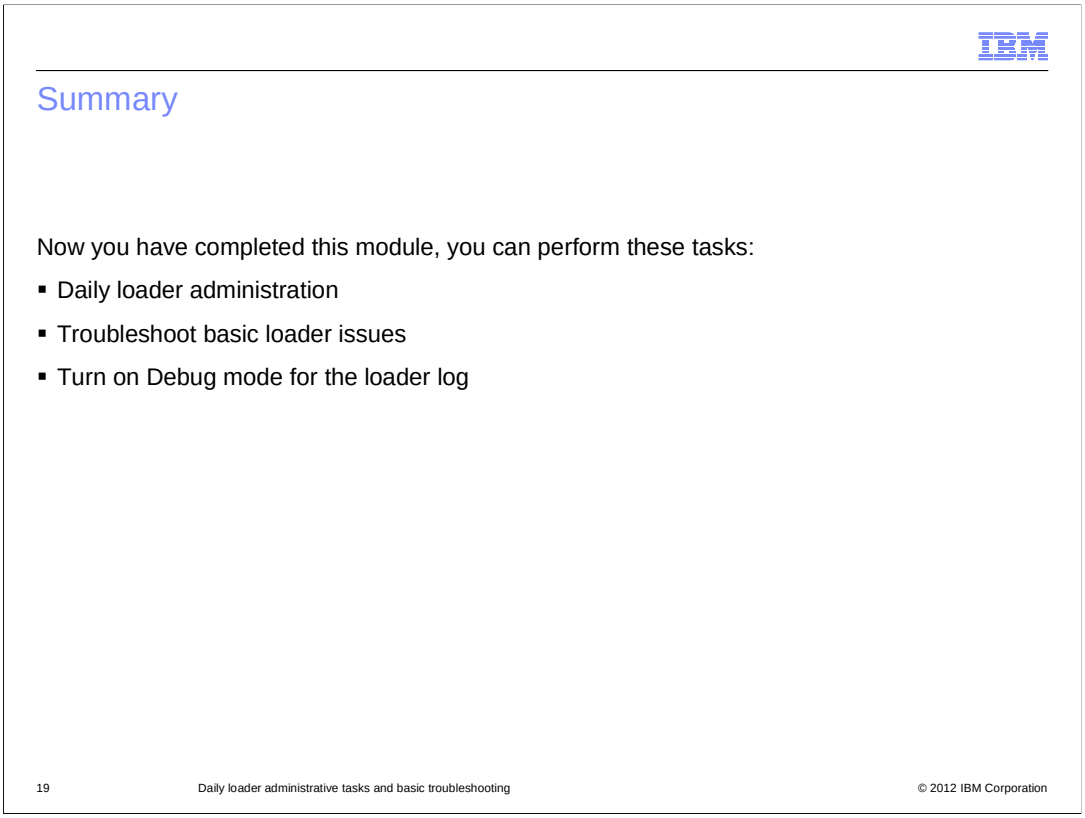

Step two in changing the loader log level is to run the **loader_admin** command.

The example shows the command to change the loader log level to debug for the instance **hierarchycsv**.



Some housekeeping is needed for the loaders. LIF files are constantly being parsed, loaded, and moved to either **good** or **bad** directories. If a problem occurs, LIF files might be parsed but not loaded. This action might cause the loader spool file system to fill up, preventing any new files from being created.

To check file system allocation and usage (in particular for **/spool**), as user virtuo, run the command **df -k**.



Summary.

Now you have completed this module, you can perform these tasks:

- Daily loader administration

- Troubleshoot basic loader issues

- Turn on Debug mode for the loader log

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