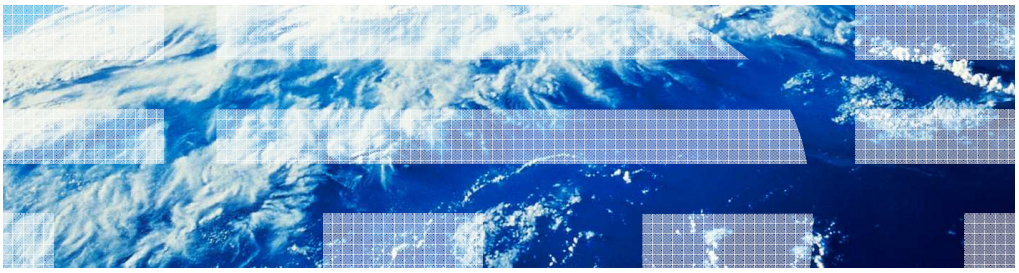
IBM Tivoli Netcool Performance Manager, Wireless Component V1.3

Determining and resolving flapping issues



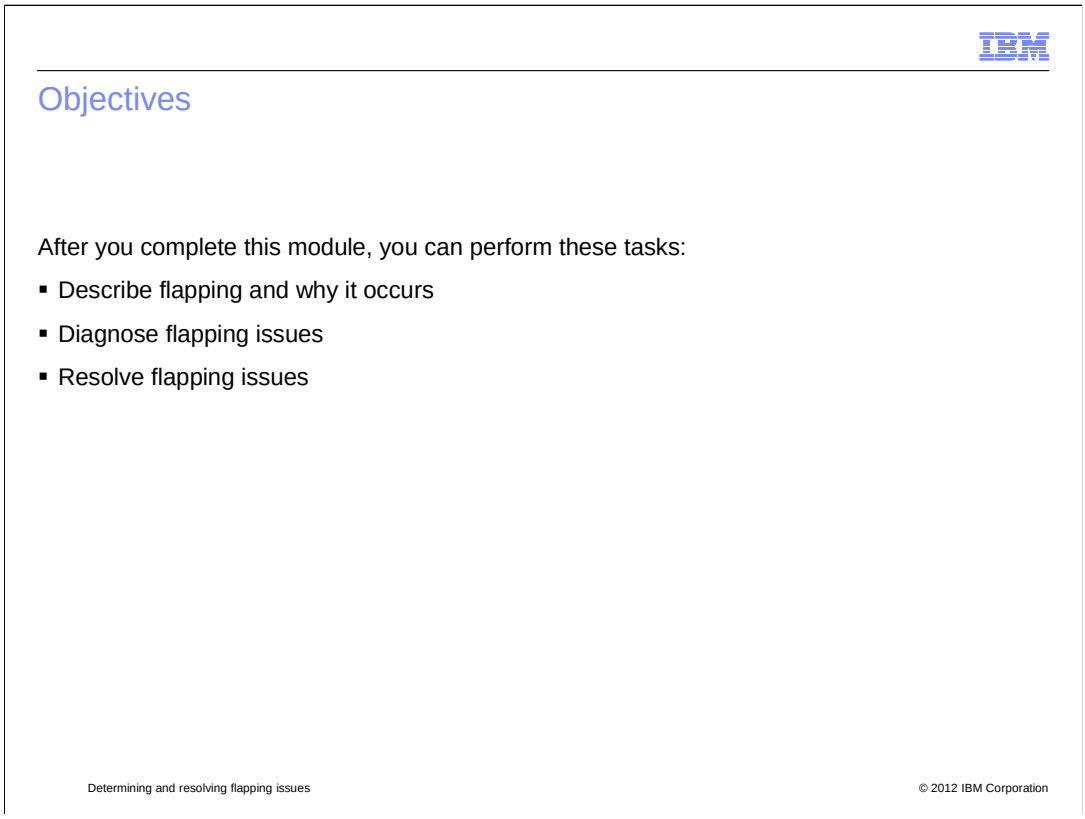
IBM Tivoli® Netcool® Performance Manager V1.3 wireless component, Determining and resolving flapping issues.

Assumptions

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

- Basic administration functions
- Network architecture
- Rehoming
- Loader function

For this module, the assumptions are that you know the basic administration functions, network architecture, how rehoming entities functions, and loader function in *IBM Tivoli Netcool Performance Manager, wireless component* software.



Objectives.

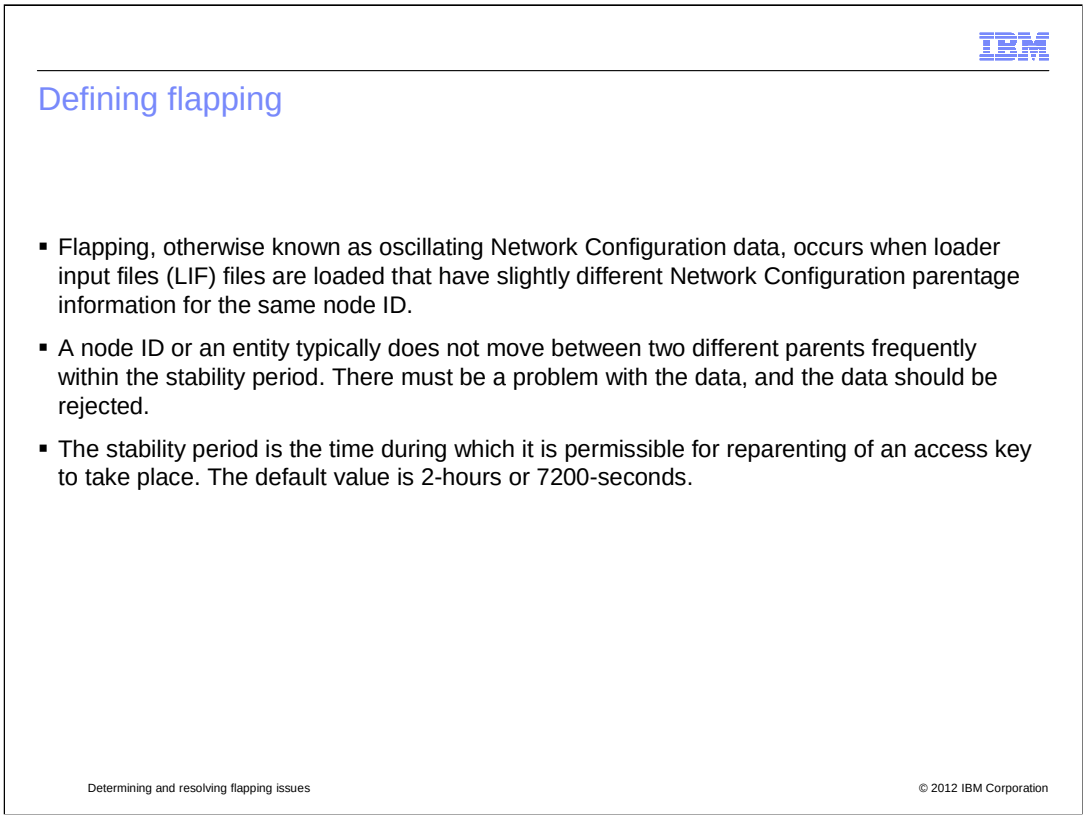
After you complete this module, you can perform these tasks:

- Describe flapping and why it occurs
- Diagnose flapping issues
- Resolve flapping issues

Overview

- Defining flapping
  - Explain flapping
  - Stability time period
- Diagnosing flapping issues
  - Look at error messages
  - Look at network configuration (NC) tables in the database
- Resolving flapping issues
  - Action is required
  - Workaround

This module describes what flapping is and the steps to determine and resolve flapping issues observed in the IBM Tivoli Netcool Performance Manager for Wireless architecture V9.2.1. This product is also known as Tivoli Netcool Performance Manager V1.3



Flapping is defined in the *Administration Guide for Tivoli Netcool Performance Manager, Wireless Component*. Flapping occurs when loader input files (LIF) are loaded that have slightly different Network Configuration parentage information for the same node ID. Another name for flapping is oscillating Network Configuration data.

The concept of flapping, is that a node ID or an entity does not typically change between two different parents frequently within the stability period. Changing between two different parents can occur during ***rehoming*** or ***reparenting***. It is possible for the software to detect that a node ID has two different parents. If the node ID changes between two different parents frequently within the stability period, then there must be a problem with the data and the data should be rejected. When the data is rejected as described, then flapping has occurred.

As more rehoming occurs, the NC table grows larger, and eventually it starts to affect reporting, summary, and stored busy hour performance. Seeing an entity rehome more than ten times over its total life is unusual.

The ***stability period*** is the time when it is permissible for access key reparenting to occur. Normally during reparenting, the stability period allows for network changes to consolidate, when network engineers are actively moving resources. If real changes are being made, the network typically settles down. However, if a resource continues to change parents during the stability period, then the software treats data with changing parents as a data problem.

Configuring the loader stability period

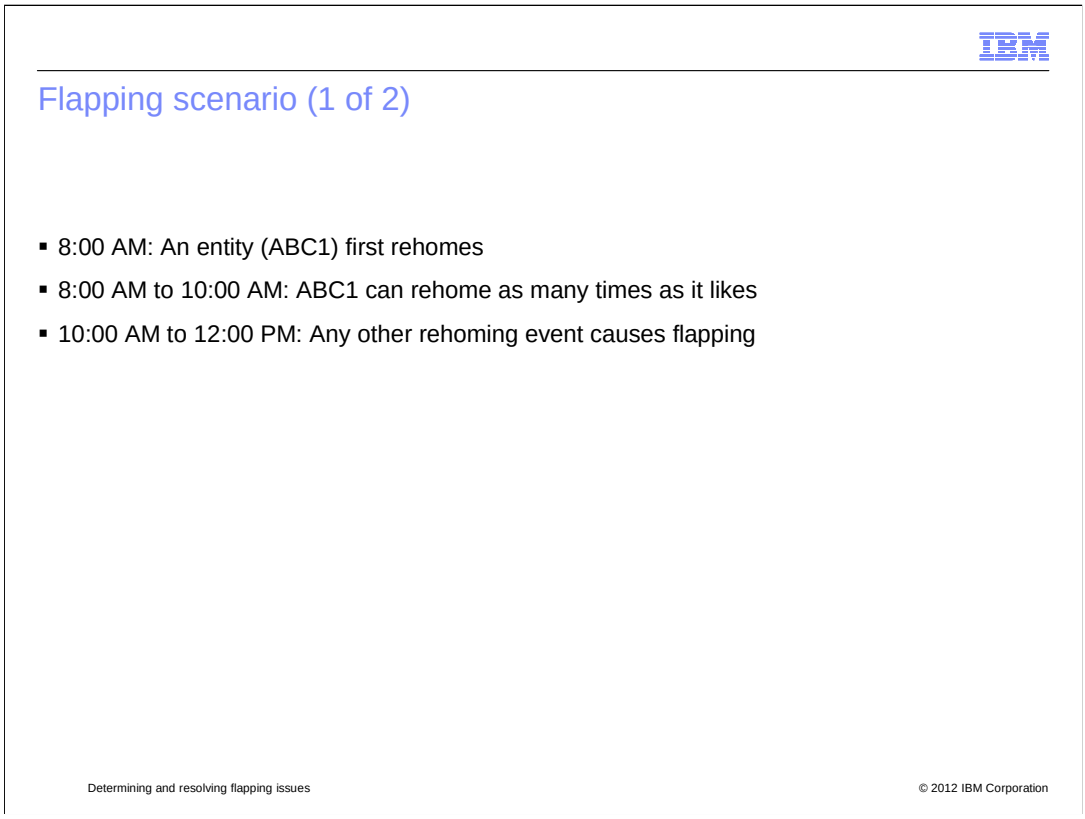
- The default value of 7200-seconds, is set in the loader properties in the database. It is 2-hours. The property name is **rehoming.allow.all**.

```
<property>
<name>rehoming.allow.all</name>
<value>7200</value>
</property>
```

- It can be changed by performing the following steps:
  1. Unload the **properties_xml** file.
     `loader_admin -unload <properties_xml> -instance <instance_name>`
  2. Edit the **properties_xml** file and make the necessary changes to <value>.
  3. Reload the new configuration.
     `loader_admin -load <properties_xml> -instance <instance_name>`
  4. Restart the loader
     `sap stop <instance_name>`
     `sap start <instance_name>`

Determining and resolving flapping issues

The stability period is configured in the loader with the default value of **7200** set in the loader properties in the database. The value 7200-seconds is 2-hours. The property name is **rehoming.allow.all**. This property can be changed using the **loader_admin** tool. You dump the loader configuration xml file and edit the required value. After saving the file, reload the configuration using the **loader_admin** tool with the **load** option. Finally, restart the loader using the **sap stop** and **sap start** commands. The syntax is shown in the slide.



Imagine this flapping scenario and how the stability period influences flapping. Imagine a node entity is called ABC1. At 8:00 AM, the entity ABC1 first rehomes. Because the stability period is set to two hours, entity ABC1 can rehome as often as required between 8:00 AM to 10:00 AM. The stability period is between 10:00 AM and 12:00 PM. If a rehoming event occurs during this period, it causes flapping.

Flapping scenario (2 of 2)

TIME	ENTITY	BSC
7:00AM	ABC1	BSC01
7:30AM	ABC1	BSC01
8:00AM	ABC1	BSC02
8:30AM	ABC1	BSC02
9:00AM	ABC1	BSC01
9.30AM	ABC1	BSC02
10:00AM	ABC1	BSC02
10.30AM	ABC1	BSC02
11:00AM	ABC1	BSC02
11.30AM	ABC1	BSC01
12:00PM	ABC1	BSC01

Stability period = 2-hours

← First rehoming occurs at 8:00 AM

← Between 8:00 AM to 10:00 AM, the entity ABC1 can rehome as often as required (This is the 7200 second stability period)

← 10:00 AM to 12:00 PM, further rehoming causes flapping

← Flapping occurs at 11:30 AM

Determining and resolving flapping issues

Continuing the scenario description with a stability period of 2-hours, the image displays data arriving at 30 minute intervals.

The table has the three columns representing the time, the entity, and the parent entity, BSC.

At the beginning, 7:00 AM, the entity ABC1 is under BSC01. At 8:00 AM, the first rehoming occurs, entity ABC1 moves from parent entity BSC01 to BSC02.

Because the default stability period is 2-hours, between 8:00 AM to 10:00 AM, the entity ABC1 can rehome as often as required. In the table, you can see it rehomes at 9:00 AM.

After 10:00 AM, if there is another rehoming event during the next 2-hours, flapping can occur.

You can see in this case, flapping did occur, because ABC1 rehomed again at 11.30 AM.

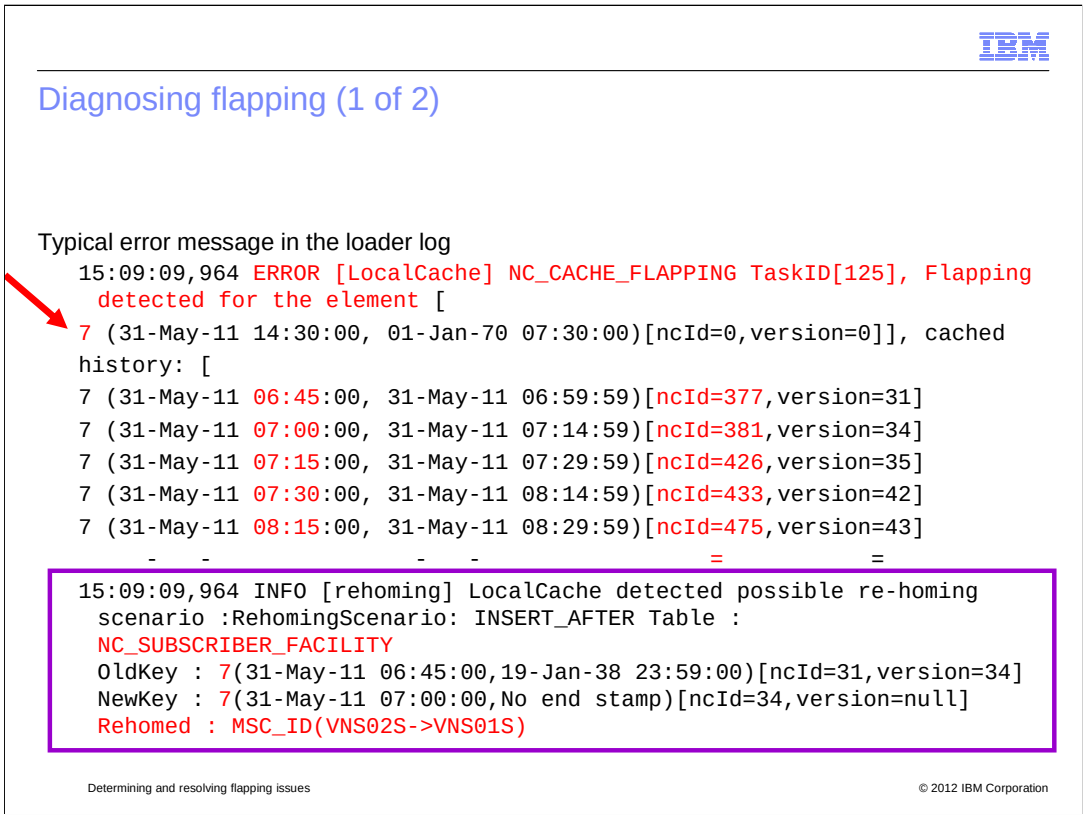
What happens during flapping

Three things occur when the software detects flapping:

1. An error message is logged in the loader log file
2. The LIF file status turns to bad
3. Data is not loaded, so users see a loss of data

When the software detects flapping, an error message is logged in the loader file, the LIF file status is set to bad, and data is not loaded. Users see a loss of data.

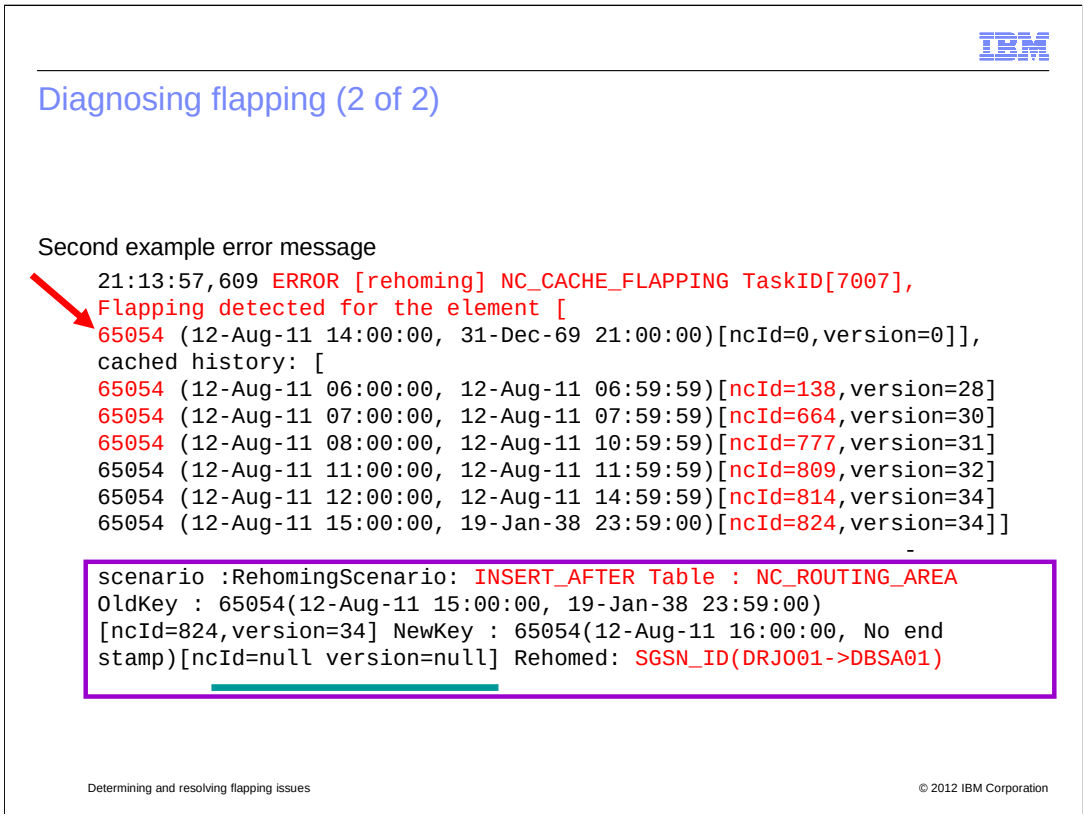
It is common for a user to call support to open a ticket for flapping, because they see flapping error messages in the loader log, or users complain about missing data in reports.



Diagnosing flapping.

This is a typical error message seen in the loader log when flapping has occurred. Notice the message **ERROR…flapping detected for the element**. In this case, the error is for the element 7 (arrow).

If you look at this error message for the element 7 (box), the MSC_ID is being rehomed from VNS02S to VNS01S. This action is happening for the NC table nc_subscriber_facility, and if you look here, the nc_id is created at 15 minute intervals, switching from 377 to 381, to 426, and so on.

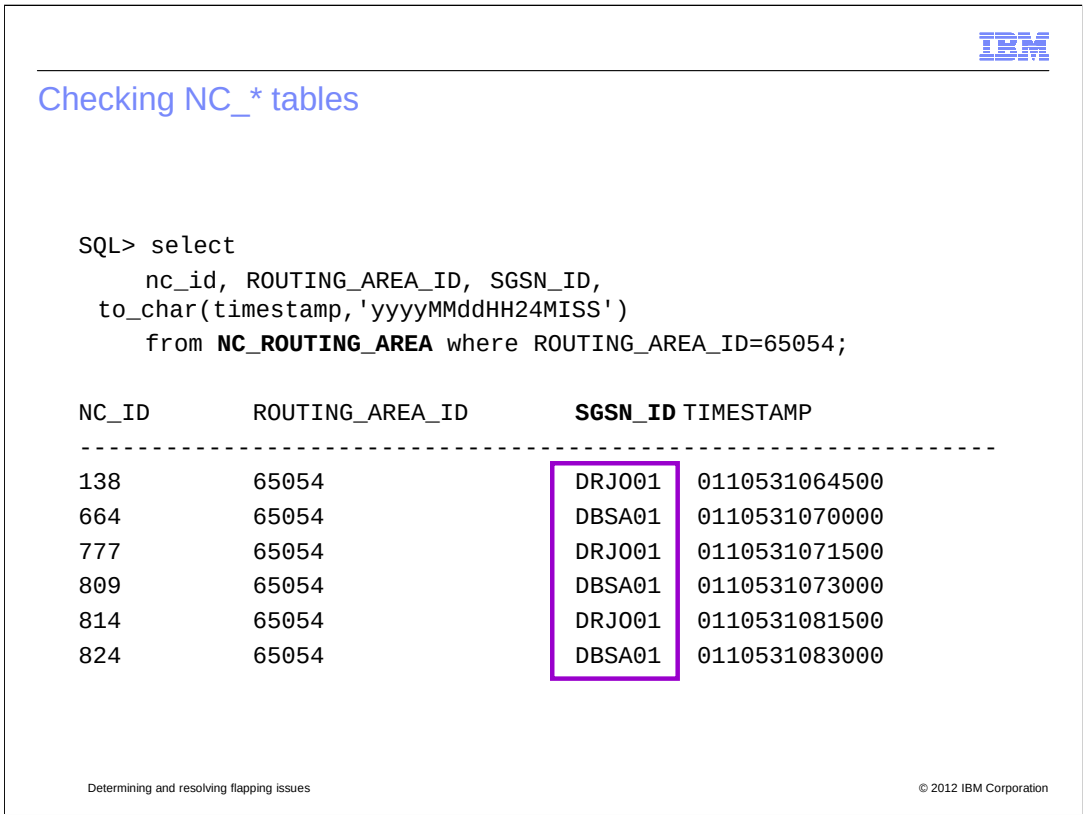


This is a second example of a flapping error message.

In this example, you can see from this error message, the parent, SGSN_ID, for the element 65054 (arrow), is being rehomed from DRJ001 to DBSA01 (box). This action is happening for the NC table, nc_routing_area. The nc_ID is being switched from 138, to 664, to 777, and so on.

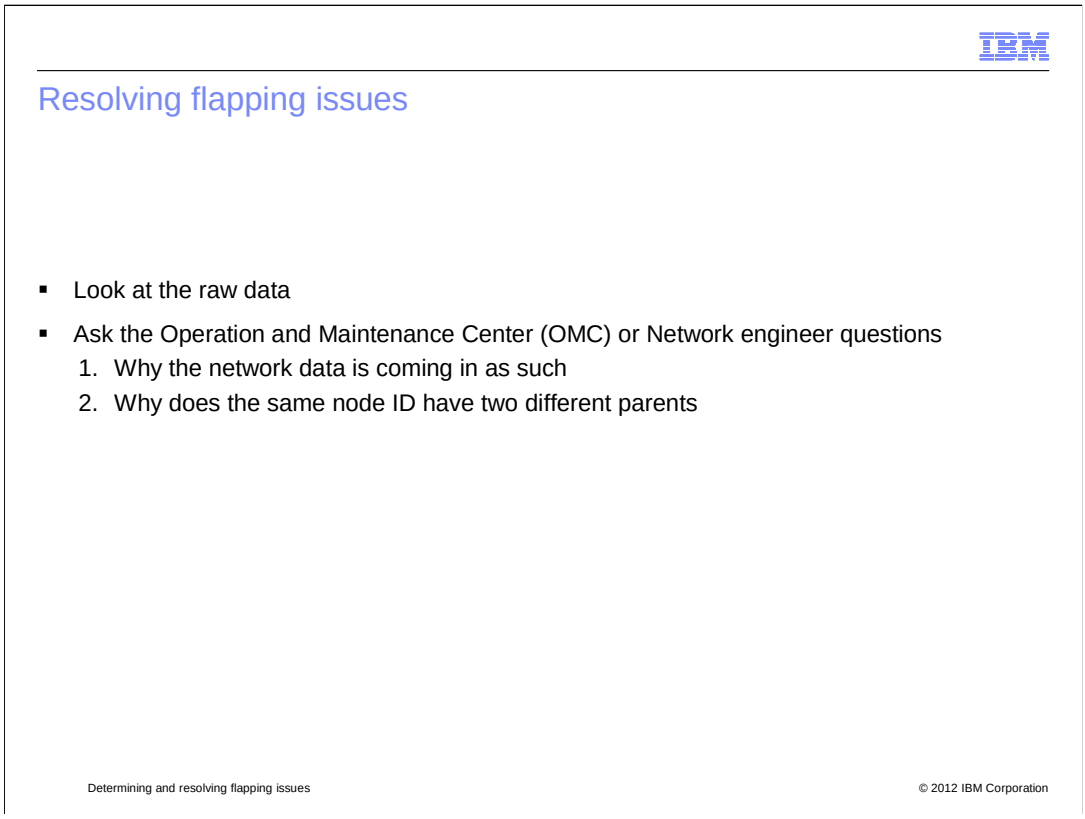
The information from this slide is used in the next few slides to diagnose and provide a possible workaround. The three things you need to remember are:

1. Element ID: 65054
2. The SGSN_ID: DRJ001 and DBSA01
3. NC table: nc_routing_area



You can diagnose flapping by looking at the NC table. Previously, you saw that there was an issue for the element **65054** under the table **NC_ROUTING_AREA**.

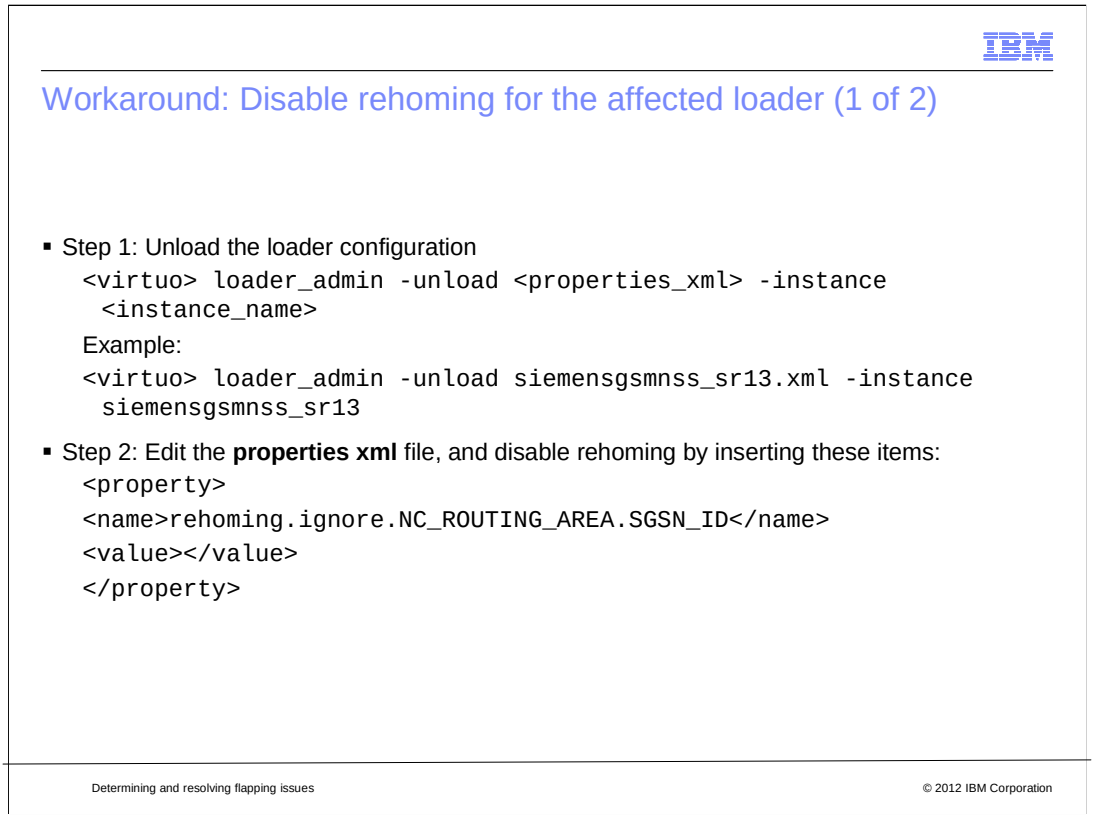
If you perform a select on the **nc_id**, the **routing_area_id**, which also corresponds to the element ID, the **sgsn_id**, and timestamp, you can see that the entity 65054 is constantly switching between the SGSN_ID DRJ001 and DBSA01 (box). Even the NC_ID table is being updated. Each time element 65054 loads, it increases the number data being tracked in the **nc_routing_area** table. It also increases the **nc_routing_area** table size in the database by adding another row.



To resolve flapping, you must look at the raw data. If the raw data contains a node ID with two different parents, you must to go to the Operation and Maintenance Center (OMC) or Network engineer and verify the data. Ask two questions.

1. Why is the network data coming in as such?

2. Why does the same node ID have two different parents?



Some customers or operators request that the data be allowed to load even if the node ID has two different parents. In some systems, an entity can have two different parents; the data is correct and should not be rejected. There are some systems where the hierarchy information for an entity changes several times a day, but the value at any moment is probably not relevant to the operator. For this situation, you can turn off rehoming rather than try to accommodate the hierarchy changes by adding more rows into the database.

The crucial question is whether the operator cares about the history of the hierarchy information for the entity. If the operator wants to allow the data to load, there is a workaround to turn off rehoming in the configuration for the affected loader. Here is an example of how you can do this.

This example uses the error when the node 65054 constantly switched its SGSN ID, causing the data to be rejected from loading into the database. For this workaround, you configure the system to allow the sgsn_id to flip back and forward, and do not reject the files.

Step 1. Disable rehoming by unloading the loader configuration by using the **loader_admin** command line tool.

As user **virtuo**, run **loader_admin** with the **unload** option to unload the configuration.

In this example, **Siemens gsm nss sr13** is the affected loader, so unload its configuration.

Step 2. Edit the **properties xml** file, and disable rehoming by inserting the ignore property. **Rehoming.ignore** the **nc_table nc_routing_area**, and the parent information which is the SGSN ID. Save the file.

Workaround: Disable rehoming for affected loader (2 of 2)

Step 3: Load the loader configuration

```
virtuo> loader_admin -load <properties_xml> -instance
  <instance_name>
```

Example:

```
virtuo> loader_admin -load siemensgsmnss_sr13.xml -instance
  siemensgsmnss_sr13
```

Step 4: Restart the loader

```
virtuo> sap stop <loader_instance>
virtuo> sap start <loader_instance>
```

Example:

```
virtuo> sap stop siemensgsmnss_sr13
virtuo> sap start siemensgsmnss_sr13
```

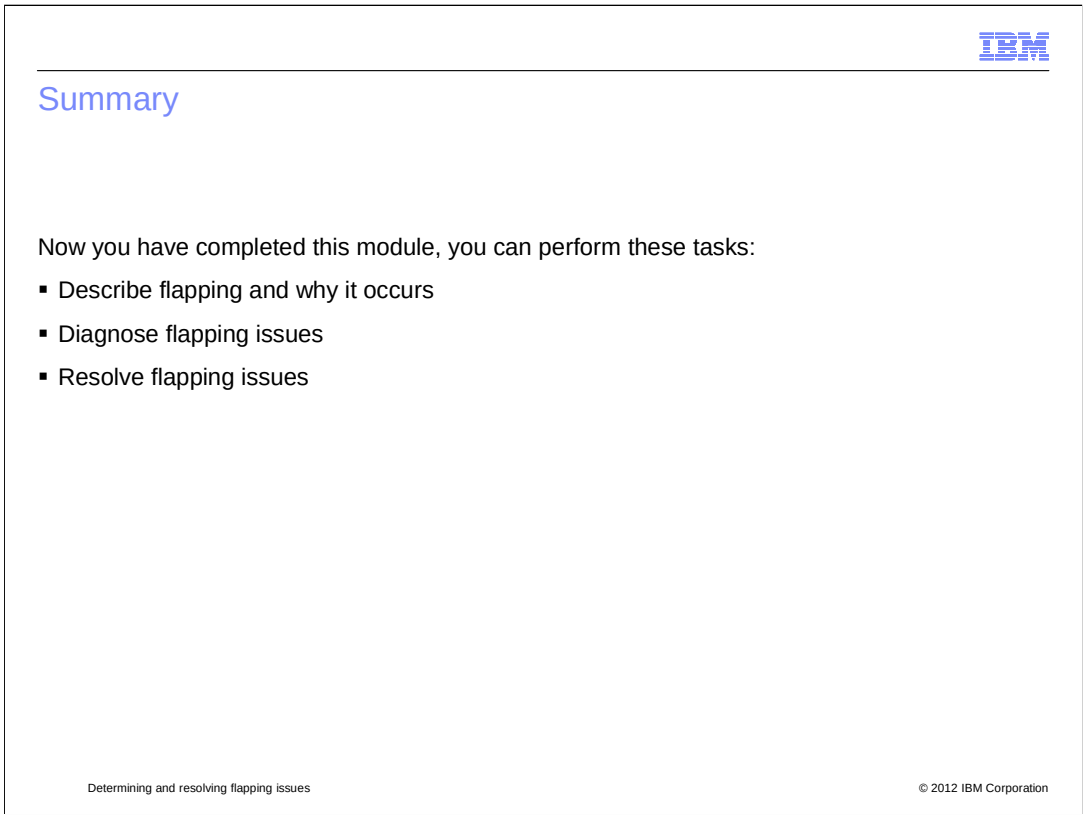
Step 5: Monitor the loader logs and confirm there are no **bad** files

Determining and resolving flapping issues

Step 3. Reload the loader configuration using the **loader_admin** tool with the **load** option.

Step 4. Stop and start the loader using the **sap stop** and **sap start** commands.

Step 5. Monitor the loader logs to ensure flapping stops and confirm there are no bad files.



Summary.

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

- Describe flapping and why it occurs
- Diagnose flapping issues
- Resolve flapping issues

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