

License Management, Autonomous Mode Activated

Virtual Multimedia Resource Function

Operating Instructions

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2 Introduction

This document describes the License Management, Autonomous Mode Activated alarm and provides instructions for fault management.

2.1 License Management, Autonomous Mode Activated Alarm Description

The License Management, Autonomous Mode Activated alarm is raised when License Manager (LM) transitions to Autonomous mode in response to the Network License Server (NeLS) being unreachable.

The possible alarm causes and fault locations are explained in [Table 1](#).

Table 1 Alarm Causes

Alarm Cause	Description	Fault Reason	Fault Location	Impact
306	The configured license servers do not respond to the Managed Element (ME) attempt to refresh its license inventory. License information remains unreachable. The ME enters Autonomous mode.	NeLS is unreachable.	License servers	This fault leads to no service impact during the first 24 hours. If the fault duration exceeds 24 hours, the licensed services are affected (no availability or limited capacity) and the License Management, Key File Fault alarm is raised.
			Possible IP network issue	
			Domain Name System (DNS) server	
			Network interface	

Note: The alarm can be raised as a result of maintenance activities.

The alarm attributes are listed and explained in [Table 2](#).



Table 2 Alarm Attributes

Attribute Name	Attribute Value
Major Type	193
Minor Type	393218
Managed Object Class	Lm
Managed Object Instance	ManagedElement=<node_name>,SystemFunctions=1,Lm=1
Specific Problem	License Management, Autonomous Mode Activated
Event Type	qualityOfServiceAlarm (3)
Probable Cause	x733CommunicationsSubsystemFailure (306)
Additional Text	Autonomous Mode has been activated
Perceived Severity	minor (5)



3 Procedure

The following procedure describes how to cease a License Management, Autonomous Mode Activated alarm.

3.1 Prerequisites

This section provides information on the documents, tools, and conditions that apply to the procedures in this document.

3.1.1 Documents

Before starting this procedure, ensure that the following documents are available:

- Activate Emergency Unlock Mode
- Data Collection Guideline for vMRF
- License Management, Key File Fault

3.1.2 Conditions

Before starting this procedure, ensure that the following conditions are met:

- A License Management, Autonomous Mode Activated alarm is raised.
- No ongoing maintenance activities are affecting the network or network elements.
- The host address and port number of the NeLS are known.
- The user ceasing the alarm has access to the Secure Sockets Layer (SSL) certificates of the network operator for the optional NeLS customer security layer.
- The user ceasing the alarm has proper authority to handle configuration management of the network elements.
- Linux® shell access to the System Controllers (SCs) is available.
- An Ericsson Command-Line Interface (ECLI) session in Exec mode is in progress.



3.2 Cease the License Management, Autonomous Mode Activated Alarm

1. See details for the alarm License Management, Autonomous Mode Activated.
 - If the alarm is related to NeLS configuration issues, continue to [Correct NeLS Configuration Issues](#) on page 5.
 - If the alarm is related to SSL certificate issues, continue to [SSL Certificate Issues](#) on page 8.

3.2.1 Correct NeLS Configuration Issues

The NeLS server address and port number are configured using `NeLSConfiguration.host` and `NeLSConfiguration.port` attributes. A faulty configuration can lead to connectivity issues.

Steps

1. Ensure that the network infrastructure (physical connections, firewalls, routers, and so on) allows communication between LM and NeLS.
2. Use `ssh` to connect to the COM CLI Management System server port where the active COM CLI is running:

```
ssh <username>@<blade_IP_address> -p 22 -t -s cli
```

Note: The default COM CLI Management System server port is 22.

3. Check the NeLS connection status:

```
show
ManagedElement=1, SystemFunctions=1, Lm=1, NeLSConfiguration=1,
connectionStatus
```

`connectionStatus=UNDEFINED` indicates that LM has not made an initial connection attempt to NeLS.

`connectionStatus=CONNECTED` indicates that a connection to NeLS is established.

`connectionStatus=NOT_CONNECTED` indicates that the NeLS connection is down.

- If the connection status is `UNDEFINED`, continue with [Step 4](#).
 - If the connection status is either `CONNECTED` or `NOT_CONNECTED`, continue with [Step 5](#).
4. Check the alarms status.



If the alarm is still active, consult the next level of maintenance support. Further actions are outside the scope of this instruction.

5. Verify that NeLSConfiguration points to the correct host address and port number:

```
show
ManagedElement=1, SystemFunctions=1, Lm=1, NeLSConfiguration=1,
host
```

```
show
ManagedElement=1, SystemFunctions=1, Lm=1, NeLSConfiguration=1,
port
```

6. If required, update the NeLS configuration by executing the following commands in the COM CLI:

```
configure

ManagedElement=1, SystemFunctions=1, Lm=1, NeLSConfiguration=1

host=<IP_Address_or_FQDN>

port=<Port_Number>

commit
```

The connection to NeLS has been configured. After committing the configuration changes, LM attempts to reconnect using the updated configuration settings.

7. Check the NeLS connection status:

```
show
ManagedElement=1, SystemFunctions=1, Lm=1, NeLSConfiguration=1,
connectionStatus
```

- If connectionStatus=CONNECTED, the NeLS connection has been restored.
- If connectionStatus=NOT_CONNECTED, continue with the next step.

8. Use Telnet to attempt to reach NeLS from the SC where LM is running.

```
telnet <NeLS_IP_Address:Port>
```

The following output shows that the NeLS is down:

```
Trying <NeLS_IP_Address>...
telnet: connect to address <IP_Address>: No route to host
```



- If the NeLS is down, wait five minutes and retry the command. If the output is the same, consult the next level of maintenance support. Further actions are outside the scope of this instruction.
 - If the NeLS is reachable, continue with the next step.
9. Check the NeLS connection retry interval through the COM CLI, and take note of the setting:

```
show  
ManagedElement=1, SystemFunctions=1, Lm=1, NeLSConfiguration=1,  
retryInterval
```

10. Wait for the retry interval to elapse. If required, update the attribute to a shorter interval with the following commands:

```
configure  
  
ManagedElement=1, SystemFunctions=1, Lm=1, NeLSConfiguration=1  
  
retryInterval=<new_retry_interval_in_seconds>  
  
commit
```

11. After the retry interval and a short grace period have elapsed, check the connection status:

```
show  
ManagedElement=1, SystemFunctions=1, Lm=1, NeLSConfiguration=1,  
connectionStatus
```

Note: If `retryInterval` was modified, the change may need to be reverted. To reset the `retryInterval`, execute the following command:

```
configure ManagedElement=1, SystemFunctions=1, Lm=1,  
NeLSConfiguration=1 retryInterval=commit
```

- If the connection status is `NOT_CONNECTED`, investigate possible certificate issues by following the steps in [SSL Certificate Issues](#) on page 8.
 - If the connection status is `UNDEFINED`, continue with the next step.
12. Check the alarms status.

If the alarm is still active, consult the next level of maintenance support. Further actions are outside the scope of this instruction.



Note: If resolving the issue is expected to take more than 24 hours, Emergency Unlock can be used to prevent the system from entering Locked Mode. For more information on Emergency Unlock, refer to License Management.

3.2.2 SSL Certificate Issues

Communication between LM and NeLS requires SSL. This network connection can be secured by two layers of encryption, as follows:

- Ericsson security layer
- Customer security layer

The NeLS connection must always be encrypted using SSL certificates provided by Ericsson. Optionally, a second security layer, using the SSL certificates of the network operator, is available. A faulty SSL setup can lead to connectivity issues.

3.2.2.1 Correct Issues When the Customer Security Layer is Disabled

When the optional customer security layer is disabled, all configuration values must be removed from `/storage/system/config/lm-apr9010503/certs/certificate_config.xml`.

Steps

1. From a terminal window, use SSH to connect to the System Controller (SC) where LM is active.

Note: To identify the SC where LM is active, execute the following command from any SC: `cmw-status -v siass | grep -A 1 LmSa`.

`safSISU=safSu=LmSa-Su-0\,.... HASstate=ACTIVE(1)` indicates that LM is active in SC-1.

2. Verify that `/storage/system/config/lm-apr9010503/certs/certificate_config.xml` has empty values for all SSL file names.

Example

The following example shows the structure of `certificate_config.xml` when the customer security layer is properly disabled:

```
<?xml version="1.0" encoding="utf-8"?>
<nels-ssl-config>
  <certificate-authority>
    <path></path>
  </certificate-authority>
  <client-certificate>
    <path></path>
```



```
</client-certificate>
<client-private-key>
  <path></path>
</client-private-key>
</nels-ssl-config>
```

3. If required, update `certificate_config.xml` to remove the file names.

30 seconds after updating `certificate_config.xml`, LM automatically reloads the SSL configuration settings and attempts to reestablish communication with NeLS.

4. If `certificate_config.xml` is missing, recreate it from the original template:

```
cp /opt/lm/etc/certificate_config_template.xml ⇒ /storage/
system/config/lm-apr9010503/certs/certificate_config.xml
```

After recreating the file, update it as required.

30 seconds after recreating `certificate_config.xml`, LM automatically reloads the SSL configuration settings and attempts to reestablish communication with NeLS.

5. If the NeLS and SSL configurations are valid and `connectionStatus=NOT_CONNECTED`, consult the next level of maintenance support. Further actions are outside the scope of this instruction.

Note: If resolving the issue is expected to take more than 24 hours, Emergency Unlock can be used to prevent the system from entering Locked Mode. For more information on Emergency Unlock, refer to [License Management](#).

After This Task

After successfully configuring the SSL connection, it is highly recommended to perform a system backup with the Backup and Restore Framework (BRF).

3.2.2.2

Correct Issues with the Customer Security Layer

The optional customer encryption layer between LM and NeLS requires the network SSL certificates of the operator and updates to the `/storage/system/config/lm-apr9010503/certs/certificate_config.xml` file.

Steps

1. From a terminal window, use `ssh` to connect to the System Controller (SC) where LM is active.



Note: To identify the SC where LM is active, execute the following command from any SC: `cmw-status -v siass | grep -A 1 LmSa`.

2. Ensure that the following SSL files are located in `/storage/system/config/lm-apr9010503/certs`:
 - The Certificate Authority (CA) file
 - The Client Certificate file
 - The Client Private Key file

If any of these files are missing, or if new files are required, follow your internal processes to obtain replacements and store them in `/storage/system/config/lm-apr9010503/certs/`.

Note: If multiple Certificate Authorities are required, all CAs must be defined in a single CA file. At least one CA must be valid for a successful NeLS connection.

30 seconds after changing any files in `/storage/system/config/lm-apr9010503/certs` from the SC where LM is active, LM attempts to connect to NeLS using the SSL configuration settings stored in `/storage/system/config/lm-apr9010503/certs/certificate_config.xml`.

3. Verify that `certificate_config.xml` references the correct SSL file names.

Example

The following example shows the structure of `certificate_config.xml`:

```
<?xml version="1.0" encoding="utf-8"?>
<nels-ssl-config>
  <certificate-authority>
    <path>certificate-authority-file-name</path>
  </certificate-authority>
  <client-certificate>
    <path>client-certificate-file-name</path>
  </client-certificate>
  <client-private-key>
    <path>client-private-key-file-name</path>
  </client-private-key>
</nels-ssl-config>
```

- Note:**
- `<certificate-authority>` is the certificate authority file name. The file must contain all certificates in the certificate chain.
 - `<client-certificate>` is the client certificate file name.
 - `<client-private-key>` is the client private key file name.



4. If required, update `certificate_config.xml` to remove the file names.

30 seconds after updating `certificate_config.xml`, LM automatically reloads the SSL configuration settings and attempts to reestablish communication with NeLS.

5. If `certificate_config.xml` is missing, recreate it from the original template:

```
cp /opt/lm/etc/certificate_config_template.xml ⇒ /storage/  
system/config/lm-apr9010503/certs/certificate_config.xml
```

After recreating the file, update it as required.

30 seconds after recreating `certificate_config.xml`, LM automatically reloads the SSL configuration settings and attempts to reestablish communication with NeLS.

6. If the NeLS and SSL configurations are valid and `connectionStatus=NOT_CONNECTED`, consult the next level of maintenance support. Further actions are outside the scope of this instruction.

Note: If resolving the issue is expected to take more than 24 hours, Emergency Unlock can be used to prevent the system from entering Locked Mode. For more information on Emergency Unlock, refer to [License Management](#).

After This Task

After successfully configuring the SSL connection, it is highly recommended to perform a system backup with the BRF.