

# Storage Server, MySQL Cluster Node Unreachable

## IPWorks

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### OPERATING INSTRUCTIONS

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Storage Server, MySQL Cluster Node Unreachable



# 1 Introduction

This instruction concerns alarm handling.

## 1.1 Alarm Description

The IPWorks Storage Server periodically monitors the status of all the NDB nodes, once it detects any node is unreachable, it reports an alarm.

**Note:**

- The Storage Server detects status of Data Node and SQL Node through both activated Management Nodes.
- If both Management Nodes are offline, the Storage Server is unable to detect status of Data Node and SQL Node.

The possible alarm causes and the corresponding fault reasons, fault locations, and impacts are described in Table 1.

*Table 1 Alarm Causes*

Alarm Cause	Description	Fault Reason	Fault Location	Solution
Management Node Issue	Management Node is down.	Management Node is down by maintenance activity or any error.	NDB cluster	See Section 2.2 on page 5



Table 1 Alarm Causes

Alarm Cause	Description	Fault Reason	Fault Location	Solution
Data Node Issue	Data Node is down.	<ul style="list-style-type: none"><li>• Data Node is down for maintenance activity, configuration issue, or memory issue.</li><li>• Data Node lost communication with one of the Management Nodes.</li></ul>	NDB cluster	See Section 2.3 on page 6
SQL Node Issue	SQL Node is down.	<ul style="list-style-type: none"><li>• SQL Node is down for maintenance activity or other errors.</li><li>• SQL Node lost communication with one of the Management Nodes.</li></ul>	NDB cluster	See Section 2.4 on page 7

**Note:** An alarm can appear as a result of the maintenance activity.

The following are the consequences for the node if the alarm is not solved:

- When both Management Nodes or Data Nodes are down, ENUM server cannot provide service.
- When all SQL Nodes are unavailable while Data Nodes are available, SS is impacted.
- When ENUM cannot connect to either of the Management Nodes, an alarm "*ENUM, Server Lost Connections of DB*" is raised.
- When both Data Nodes or all SQL Nodes lost communication with SS, SS fails `ipwcli` provisioning.

**Note:** SS monitors the status of SQL Nodes and Data Nodes through Management Node. If any node is down, an alarm that indicates the node is down is raised.



The alarm attributes are listed and explained in Table 2.

*Table 2 Alarm Attributes*

Attribute Name	Attribute Value
Major Type	193
Minor Type	860161
Managed Object Class	IpworksEM
Source	<p>ManagedElement=&lt;Node Name&gt;,SystemFunctions=1,Fm=1,FmAlarmModel=ipworksEM,FmAlarmType=ipworksEmMysqlClusterNodeUnreachable,Source=&lt;One of the following&gt;</p> <ul style="list-style-type: none"> <li>• If Management Node is down: Storage Server:&lt;SC hostname&gt;:MGM Node</li> <li>• If SQL Node is down: &lt;SC hostname&gt;:ManageNode:&lt;SC hostname&gt;:SQL Node</li> <li>• If Data Node is down: &lt;SC hostname&gt;:ManageNode:&lt;SC hostname&gt;:Data Node</li> </ul>
Specific Problem	Storage Server, MySQL Cluster Node Unreachable
Event Type	communicationsAlarm(2)
Probable Cause	x733CommunicationsSubsystemFailure(306)



Attribute Name	Attribute Value
Additional Text	<ul style="list-style-type: none"><li>• If Management Node is down: "This alarm is issued when the MySQL Cluster [&lt;SC hostname&gt;:MGM Node ] is down or unreachable from [ &lt;SC hostname&gt; ] Storage Server";uuid:&lt;Product_UUID&gt;<sup>(1)</sup></li><li>• If SQL Node or Data Node is down: "This alarm is issued when the MySQL Cluster [ &lt;SC hostname&gt;:&lt;SQL or Data Node&gt; ] is down or unreachable from [ &lt;SC hostname&gt;] ManageNode";uuid:&lt;Product_UUID&gt;<sup>(1)</sup></li></ul>
Perceived Severity	Major

(1) <Product\_UUID> is the universally unique identifier (UUID) of machine that generates the alarm. The value can be fetched from `/sys/devices/virtual/dmi/id/product_uuid` on the PL node.

## 1.2 Prerequisites

This section provides information on the documents, tools, and conditions that apply to the procedure.

### 1.2.1 Documents

Before starting this procedure, ensure that you have read the following documents:

- *System Safety Information*
- *Personal Health and Safety Information*

### 1.2.2 Tools

No tools are required.

### 1.2.3 Conditions

No conditions.





## 2 Procedure

This section describes the procedure to follow when this alarm is received.

### 2.1 Analyzing the Alarm

Do the following at the maintenance center:

1. Check Management Node
2. Check Data Node
3. Check SQL Node

### 2.2 Checking Management Node

To clear the alarm, do the following:

1. Log on to SC-1.

```
ssh sc-1
```

2. Check whether the Management Node is down.

Example:

```
# /etc/init.d/ipworks.mysql show-status
```

```
Connected to Management Server at: SC-1:1186
Cluster Configuration
```

```
-----
```

```
[ndbd(NDB)]                2 node(s)
id=27    @169.254.100.1    (mysql-5.6.31 ndb-7.4.12, Nodegroup: 0,
id=28    @169.254.100.2    (mysql-5.6.31 ndb-7.4.12, Nodegroup: 0)
```

```
[ndb_mgmd(MGM)]            2 node(s)
id=1 (not connected, accepting connect from SC-1)
id=2     @169.254.100.2    (mysql-5.6.31 ndb-7.4.12)
```

```
[mysqld(API)]             24 node(s)
...
```

The example indicates that the SC-1 Management Node is down.

3. Start the Management Node.
  - If the Data Node and the SQL Node are running, execute the following command:



```
#/etc/init.d/ipworks.mysql start-mgmd
```

- If the Data Node and the SQL Node are down, execute the following commands:

```
#/etc/init.d/ipworks.mysql start-mgmd
```

```
#/etc/init.d/ipworks.mysql start-ndbd
```

```
#/etc/init.d/ipworks.mysql start-sqlnode
```

If the operator needs to initialize the Data Node, execute the following command instead:

```
#/etc/init.d/ipworks.mysql start-ndbd-initial
```

**Note:** The initialization deletes all the data in the Data Node.

4. Confirm that the alarm has ceased (within 60 seconds). If the alarm remains, consult the next level of maintenance support. Further actions are outside the scope of this instruction.

## 2.3 Checking Data Node

To clear the alarm, do the following:

1. Check whether the Data Node is down.

Example:

```
SC-1:~#/etc/init.d/ipworks.mysql show-status
```

```
Connected to Management Server at: SC-1:1186
Cluster Configuration
```

```
-----
[ndbd(NDB)]          2 node(s)
id=27 (not connected, accepting connect from SC-1)
id=28      @169.254.100.2  (mysql-5.6.31 ndb-7.4.12, Nodegroup: 0,

[ndb_mgmd(MGM)]      2 node(s)
id=1      @169.254.100.1  (mysql-5.6.31 ndb-7.4.12)
id=2      @169.254.100.2  (mysql-5.6.31 ndb-7.4.12)

[mysqld(API)]        24 node(s)
id=3      @169.254.100.1  (mysql-5.6.31 ndb-7.4.12)
id=4 (not connected, accepting connect from SC-2)
...
```

This example output indicates that the Data Node (id=27) is down.

2. If the Data Node is down, execute the following command to start it:



Example:

```
SC-1:~#/etc/init.d/ipworks.mysql start-ndbd
```

If the operator needs to initialize the Data Node, execute the following command instead:

```
#/etc/init.d/ipworks.mysql start-ndbd-initial
```

**Note:** The initialization deletes all the data in the Data Node.

3. Confirm that the alarm has ceased. If the alarm remains, consult the next level of maintenance support. Further actions are outside the scope of this instruction.

## 2.4 Checking SQL Node

To clear the alarm, do the following:

1. Check whether the SQL Node is down.

Example:

```
SC-1:~#/etc/init.d/ipworks.mysql show-status
```

```
Connected to Management Server at: SC-1:1186
Cluster Configuration
```

```
-----
[ndbd(NDB)]      2 node(s)
id=27  @169.254.100.1  (mysql-5.6.27 ndb-7.4.8, Nodegroup: 0, *)
id=28  @169.254.100.2  (mysql-5.6.27 ndb-7.4.8, Nodegroup: 0)

[ndb_mgmd(MGM)]  2 node(s)
id=1   @169.254.100.1  (mysql-5.6.27 ndb-7.4.8)
id=2   @169.254.100.2  (mysql-5.6.27 ndb-7.4.8)

[mysqld(API)]    24 node(s)
id=3  (not connected, accepting connect from SC-1)
id=4  (not connected, accepting connect from SC-2)
...
```

This example output indicates that the SQL Nodes (id=3 and id=4) are down.

2. If the SQL Node is down, execute the following command to start it:

Example:

```
SC-1:~#/etc/init.d/ipworks.mysql start-sqlnode
```



3. Confirm that the alarm has ceased. If the alarm remains, consult the next level of maintenance support. Further actions are outside the scope of this instruction.