Abstract
This guide helps you to determine the cause of bit error rate (BER) alerts on an Isilon cluster.

January 15, 2018
Contents and overview

Note
Follow all of these steps, in order, until you reach a resolution.

1. Follow these steps.

   Before you begin
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2. Perform troubleshooting steps in order.

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   If you need further assistance

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   How to use this flowchart

   Appendix C
   Example isi devices output

For links to all Isilon customer troubleshooting guides, visit the Customer Troubleshooting - Isilon Info Hub. We appreciate your help in improving this document. Submit your feedback at http://bit.ly/isi-docfeedback.
Before you begin

**CAUTION!**

If the node, subnet, or pool that you are working on goes down during the course of troubleshooting and you do not have any other way to connect to the cluster, you could experience data unavailability.

Therefore, make sure that you have more than one way to connect to the cluster before you start this troubleshooting process. The best method is to have a serial cable available. This way, if you are unable to connect through the network, you will still be able to connect to the cluster physically.

For specific requirements and instructions for making a physical connection to the cluster, see [article 16744](http://bit.ly/16744) on the EMC Online Support site.

Before you begin troubleshooting, confirm that you can connect through either another subnet or pool, or that you have physical access to the cluster.

**Configure logging through SSH**

We recommend that you configure screen logging to log all session input and output during your troubleshooting session. This log file can be shared with EMC Isilon Technical Support, if you require assistance at any point during troubleshooting.

**Note:** The screen session capability does not work in OneFS 7.1.0.6 and 7.1.1.2. If you are running either of these versions, you can configure logging by using your local SSH client's logging feature.

1. Open an SSH connection to the cluster and log in by using the root account.
   
   **Note:** If the cluster is in compliance mode, use the compadmin account to log in. All compadmin commands must be preceded by the `sudo` prefix.

2. Change the directory to `/ifs/data/Isilon_Support` by running the following command:
   
   ```
   cd /ifs/data/Isilon_Support
   ```

3. Run the following command to capture all input and output from the session:
   
   ```
   screen -L
   ```
   
   This will create a file named `screenlog.0` that will be appended to during your session.

4. Perform troubleshooting.
Start troubleshooting

Introduction
Start troubleshooting here. If you need help to understand the flowchart conventions used in this guide, see Appendix B: How to use this flowchart.

Note
A bit error rate (BER) alert typically indicates a problem in the connection between the SAS controller and the SAS Expander/Fan Control Board, or between the SEFC board and the drive bays. In most cases, the problem is caused by a cabling issue or by running incorrect or outdated node firmware.

Did the BER alert occur during a drive replacement?
See the example alert at the bottom of this page.

Yes

Start

If you have not done so already, log in to the cluster and configure screen logging through SSH, as described on page 3.

No

Clear the alert and monitor for recurrence. If the alert does not recur on this drive and bay, the alert was false and no action is needed.

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Example BER alert
The SAS link connected to chassis 0 PHY 11 has exceeded the maximum Bit Error Rate (BER).
Troubleshoot a BER alert

Confirm that you are running the latest firmware by running the following command:

```bash
isi firmware status
```

For the latest firmware and instructions for updating, visit [Downloads for Isilon](https://www.emc.com/products/software-storage-software-collaboration/isilon/content-delivery.html) on the EMC Online Support web site.

Are all the nodes in the cluster running the latest version of firmware?

- [X] Yes
- [ ] No

- [ ] Go to Page 6
- [ ] Go to Page 7

Troubleshoot a BER alert (2)

Update the node firmware, wait 24 to 48 hours, and check whether any new BER alerts occur.

Did the firmware update solve the problem?

Yes

End troubleshooting

No

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Note
For the latest firmware and instructions for updating, visit Downloads for Isilon on the EMC Online Support web site.

You could have arrived here from:

- Page 5 - Troubleshoot a BER alert

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Troubleshoot a BER alert (3)

You could have arrived here from:

- Page 5 - Troubleshoot a BER alert
- Page 6 - Troubleshoot a BER alert (2)

Do BER alerts occur only for a specific drive bay?

Yes

Look at the drive to make sure it is seated correctly in the bay. If the drive appears to be incorrectly seated, or if it is sticking out, perform the following:

1. Shut down the node, by running the following command:
   
   ```
   shutdown -p now
   ```

2. Remove the drive.

3. Reseat it.

No

Check the drive health on the node by running the following command for your version of OneFS:

- OneFS 8.0 - 8.1.0
  
  ```
  isi devices list
  ```

- OneFS 7.2
  
  ```
  isi devices
  ```

See Appendix C for example output.

Note the page number that you are currently on. Upload log files and contact Isilon Technical Support, as instructed in Appendix A.

No

Does the status show that the drive state is HEALTHY?

Yes

Go to Page 8

No

Page 7

Yes

Page 7
Troubleshoot a BER alert (4)
Troubleshoot a BER alert (5)

You could have arrived here from:
• Page 8 - Troubleshoot a BER alert (4)

Has this particular drive previously been replaced because of BER alerts?

Yes

Has this particular drive previously been replaced because of BER alerts?

No

The drive might need to be replaced.

Note the details from the last drive replacement, including:
• The date the drive was replaced.
• The related service request number.
• The reason the drive SmartFailed.
• Any log output related to that incident.

And contact Isilon Technical Support.

Note the page number that you are currently on. Upload log files and contact Isilon Technical Support, as instructed in Appendix A.

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Appendix A: If you need further assistance

Contact EMC Isilon Technical Support

If you need to contact Isilon Technical Support during troubleshooting, reference the page or step that you need help with. This information and the log file will help Isilon Technical Support staff resolve your case more quickly.

Upload node log files and the screen log file to EMC Isilon Technical Support

1. When troubleshooting is complete, type exit to end your screen session.
2. Gather and upload the node log set and include the SSH screen log file by using the command appropriate for your method of uploading files. If you are not sure which method to use, use FTP.

   **ESRS:**
   ```
   isi_gather_info --esrs --local-only -f /ifs/data/Isilon_Support/screenlog.0
   ```

   **FTP:**
   ```
   isi_gather_info --ftp --local-only -f /ifs/data/Isilon_Support/screenlog.0
   ```

   **HTTP:**
   ```
   isi_gather_info --http --local-only -f /ifs/data/Isilon_Support/screenlog.0
   ```

   **SMTP:**
   ```
   isi_gather_info --email --local-only -f /ifs/data/Isilon_Support/screenlog.0
   ```

   **SupportIQ:**
   Copy and paste the following command.
   **Note:** When you copy and paste the command into the command-line interface, it will appear on multiple lines (exactly as it appears on the page), but when you press Enter, the command will run as it should.

   ```
   isi_gather_info --local-only -f /ifs/data/Isilon_Support/screenlog.0 --noupload \ 
   --symlink /var/crash/SupportIQ/upload/ftp
   ```

3. If you receive a message that the upload was unsuccessful, refer to article 16759 on the EMC Online Support site for directions on how to upload files over FTP.
Appendix B: How to use this flowchart

Introduction
Describes what the section helps you to accomplish.

You could have arrived here from:
- Page # - Page title

Directional arrows indicate the path through the process flow.

Decision diamond

Yes
- Process step
  - Optional process step
  - End point

No
- Process step with command:
  - command xyz
  - Go to Page #

Note
Provides context and additional information. Sometimes a note is linked to a process step with a colored dot.

CAUTION!
Caution boxes warn that a particular step needs to be performed with great care, to prevent serious consequences.

Document Shape
Calls out supporting documentation for a process step. When possible, these shapes contain links to the reference document. Sometimes linked to a process step with a colored dot.

## Appendix C: Example isi devices output

This page contains an example output of the `isi devices` command, which is used to display information about the devices in an Isilon cluster.

### Example isi devices output

#### Cluster-1# isi devices

Node 1, [ATTN], [SED Node]

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<th>Lnum</th>
<th>Status</th>
<th>SN:</th>
<th>dev</th>
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<td>22</td>
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</table>
Troubleshoot a Bit Error Rate (BER) Alert on your Isilon Cluster

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