How to gather a diagnostic report from your Dell Equallogic Arrays

As a part of the problem resolution or RMA process, the Customer Support team may ask you to gather diagnostic information from one or more Dell storage arrays.

Gathering diagnostics from the array GUI

With the arrival of 4.x firmware you can now gather the diagnostic report from the GUI.

Note: This option will require that you have an SMTP server configured and working. If not, please see the section *Gathering Diagnostics from the CLI* below for how to run the diag command from the CLI

The Diagnostic process gathers internal state and configuration data from an array, encodes it for transmission, and segments it into a number of files, which are stored on the array in an area reserved for diagnostic use. The data gathered does not include any user data, either from the disks or from the cache, nor does it include any group account passwords or other access information.

 In the GUI, select the "Tools" menu at the lower left hand corner. Select "Diagnostic Reports" a menu will be displayed to start the diagnostic process.
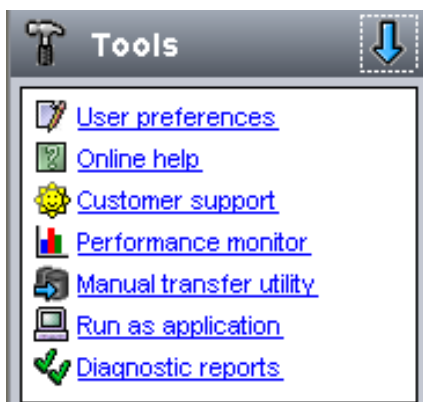
This menu will allow you to select a specific member or all members.
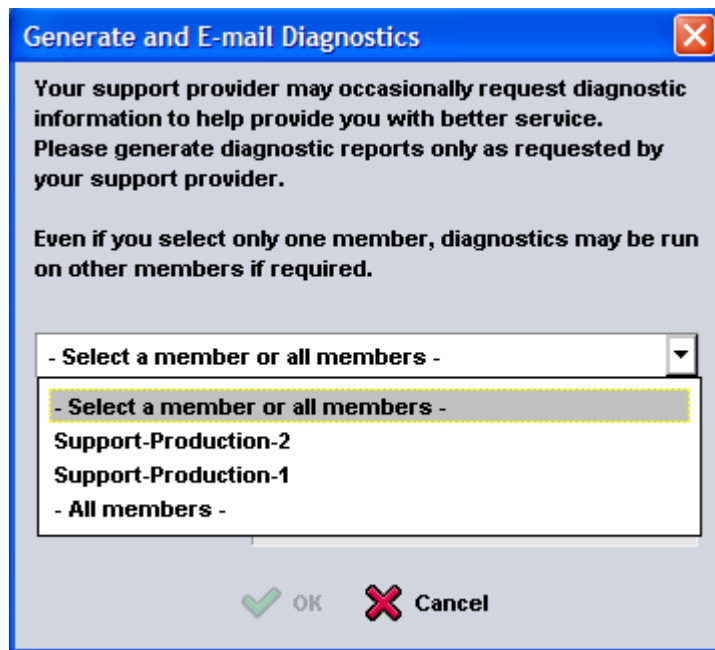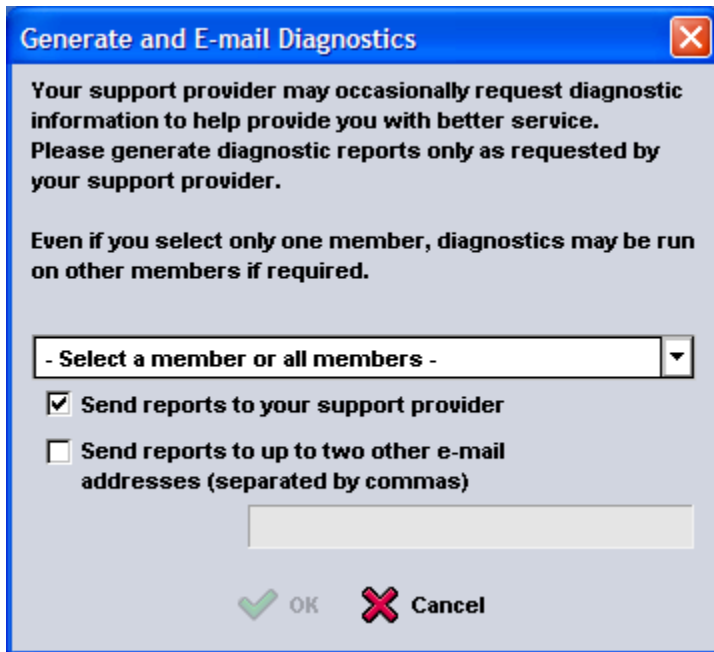
Select the option the technician requested and press "OK"   The technician may ask you to add their e-mail address to the list.

In the Group Monitoring section, under Operations you will see the progress of the diagnostic gathering process.

Gathering diagnostics from the CLI

The "diag" command runs a program that gathers internal state and configuration data from an array, encodes it for transmission, and segments it into a number of files, which are stored on the array in an area reserved for diagnostic use. The data gathered does NOT include any user data, either from the disks or from the cache, nor does it include any group account passwords or other access information.

For arrays with Firmware 2.x/3.x you must use the command line interface (CLI) "diag" command or if for some reason you cannot access the GUI on a 4.x firmware array.

The output files from the "diag" command are kept on the array until they are manually deleted or overwritten by the next invocation of the command.

The "diag" command gathers data only from the array on which it is run. If you have a group with multiple members, you may need to run the command separately on each array, if instructed to do so.   You will need to either connect to the serial port of each member or use one of the GbE Ethernet port IP addresses for each member.

Once the "diag" command completes, there are three options available for retrieving the data from the array:

- If e-mail notification is enabled on the array, and the array has an active network connection, the "diag" command will try to send the output segments to the addresses on the e-mail notification list. Each segment will be delivered as a separate, plain text e-

mail message, with the encoded information in the body of the message. There can be up to six e-mail messages, depending on how much data is being delivered.

- If the array has an active network connection, you also have the option of using FTP to retrieve the data from the array. Steps for using FTP appear later in this article.

- As the "diag" command completes, you are given the option of having the output directed (dumped) to the console, where you can use the text capture feature of your Telnet or SSH client or terminal emulator program to capture the output. This option is always provided, in case e-mail notification or FTP access is not functioning.

Running the diag Command

The steps for running the "diag" command are shown next:

1. Connect to the array using one of these methods:

   o A Telnet session.
   o A secure shell ("SSH") session.
   o A terminal emulator program on a system that is connected directly to a serial port (Port 0) on the active control module,

      1. The active CM is the control module that has the "ACT" LED lit

      2. Use 9600 baud, 8 data, 1 stop bit and no flowcontrol.

      3. If using a laptop, connect to the same AC source as the array to insure a common ground for the serial ports.

   If you use SSH or Telnet, you MUST connect to an IP address that has been assigned to one of the array's network interfaces. This will ensure that you are connected to the correct array if there are multiple group members. DO NOT connect to the group IP address.

2. Once connected, log in to the grpadmin account. The prompt for the Group Manager CLI appears.

3. Invoke the "diag" command as follows:

   GroupA> **diag**

   Instructional information will appear. When prompted to proceed, enter "y".

   The diagnostic data gathering will take several minutes to complete. A progress

indicator will be updated regularly. Note that there are some places where the indicator may appear to stall for a while, especially on arrays that are busy or have been up for a long time (and therefore have more historical data that needs to be encoded). Please be patient.

4. Once the data gathering is complete, if e-mail notification is configured, the command will attempt to send the results using e-mail, as described above. If FTP access appears to be available, information explaining this procedure will appear (also described below), including the IP address(es) to which you must connect when using FTP to obtain the data.

5. Finally, you will be prompted whether you want to direct the output to the console. If neither e-mail nor FTP access is available, this is your only option for retrieving the data from the array. However, if e-mail or FTP access is available, we recommend that you use one of those methods first, because they are more convenient and quicker than capturing the console output.

   It is strongly recommended that you do not respond negatively to the prompt until you are certain that the e-mail notification worked or you are able to obtain the data with FTP.

   If you want to direct the output to the console, first enable the text capture feature in your Telnet, SSH or terminal program, and then enter "y" at the prompt. When prompted again, press the <Enter> key. After the data finishes dumping to the screen, disable the text capture feature in order to close the file that now contains the diagnostic text.

6. Once you have retrieved the e-mail messages or files with the diagnostic data, send them to EqualLogic Customer Support, as directed by the support engineer with whom you are working.

Retrieving Diagnostic Data with FTP

To use FTP to retrieve data files containing the output of the "*diag*" command, connect to the array using any ftp client, log in as the grpadmin user, and obtain all the files that have ".*dgo*" (short for "diagnostic output") as a file name extension. To avoid any issues with line termination, it is recommended that you transfer the files in *binary* mode if that option is available.

Here is an example using the Microsoft Windows ftp client run from the Windows Command Prompt. Note that this is run from the root directory of the C: drive. (**bolded text** indicates text that you type):

  Where you start the FTP process is where the files will be transferred to. Please make note of this so you can attach them later.   Please attach them to an e-mail and send them to: cs-technicalsupport@equallogic.com with the case number.

```
C:> ftp 192.168.100.51
Connected to 192.168.100.51.
220 192.168.100.51 FTP server (NetBSD-ftpd 20001218) ready.
User (192.168.100.51:(none)): grpadmin
331 Password required for grpadmin.
Password: xxxx
230 User grpadmin logged in.
ftp> binary
200 Type set to I.
ftp> mget *.dgo
200 Type set to I.
mget Seg_1.dgo? y
200 PORT command successful.
150 Opening BINARY mode data connection for 'Seg_1.dgo' (246807
bytes).
226 Transfer complete.
ftp: 246807 bytes received in 0.17Seconds 1434.92Kbytes/sec.
mget Seg_2.dgo? y
200 PORT command successful.
150 Opening BINARY mode data connection for 'Seg_2.dgo' (662745
bytes).
226 Transfer complete.
ftp: 662745 bytes received in 0.28Seconds 2358.52Kbytes/sec.
mget Seg_3.dgo? y
200 PORT command successful.
150 Opening BINARY mode data connection for 'Seg_3.dgo' (374764
bytes).
226 Transfer complete.
ftp: 374764 bytes received in 0.20Seconds 1846.13Kbytes/sec.
ftp> close
221-
Data traffic for this session was 1284316 bytes in 3 files.
Total traffic for this session was 1284316 bytes in 3 transfers.
221 Thank you for using the FTP service on 192.168.100.51.
ftp> bye
C:>
```

Retrieving diags via the browser

In the browser URL enter: ftp://grpadmin@<IP address>
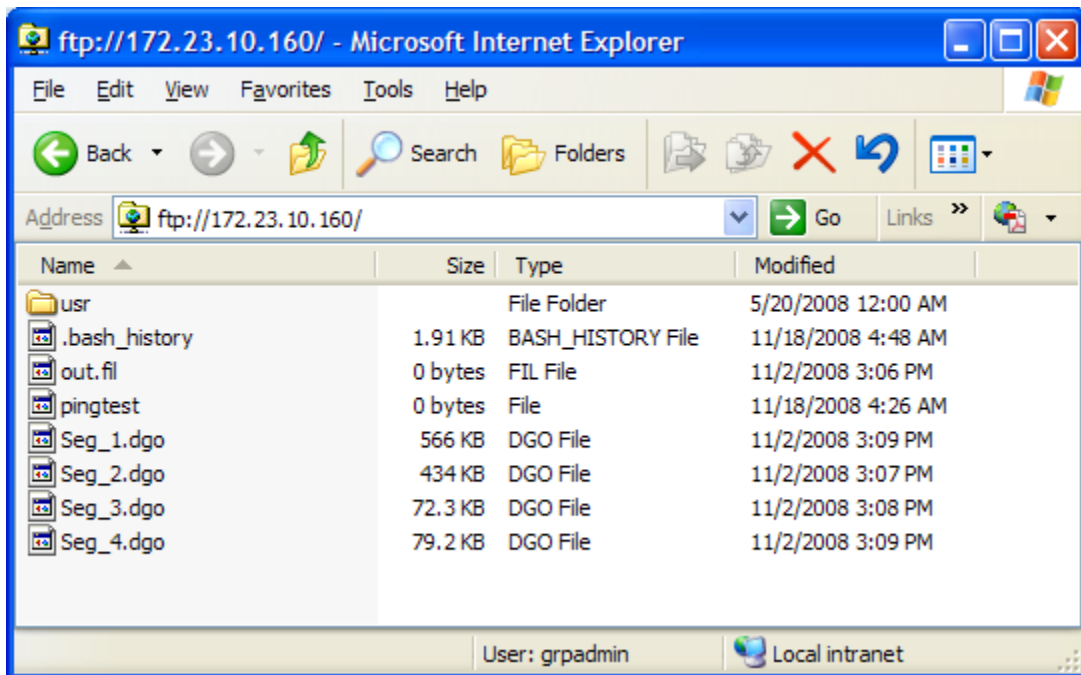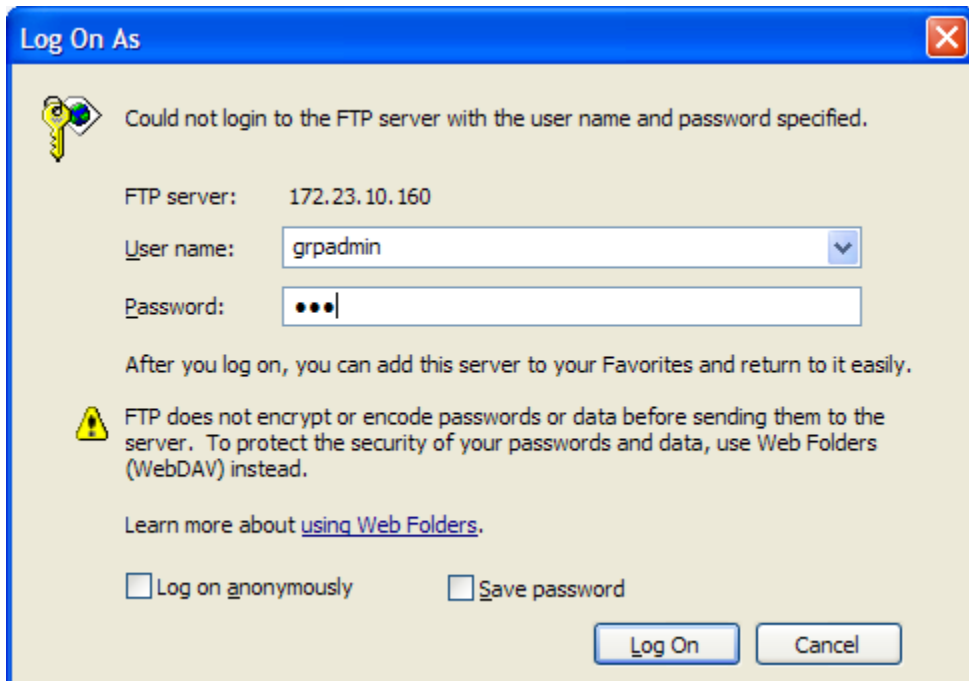
Highlight the Seg_*.dgo files and copy them to your local machine and mail them to the cs-technicalsupport@equallogic.com with the case number.