IBM @server® BladeCenter™
Data collection guide

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Acknowledgements

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Table of Contents

1.0 Change Notification

Change Revision	Description	Date
1.0	Initial release	01-2005
2.0	Instructions for eGatherer and DSA modified	02-2005
3.0	Instructions added to include LS20 and Infiniband switch and minor changes	05-2005
4.0	Added DSA for Linux and some minor corrections	09-2005

2.0 Using this document

This document will demonstrate on how-to collect all necessary data needed for data analysis when dealing with BladeCenter problems. Therefore the user is asked to prepare an inventory list containing all devices used in the BladeCenter. Next he will visit the relevant section to perform the required steps for data collection and data analysis.

- Customer Template (section 3.0)
- Step-by-step instruction on how to perform data collection on BladeCenter by option. (section 4.0)

3.0 Customer Template (Information and logs that are needed)

Gather the following information;

NOTE:
See section 4.1 for instructions on how-to gather this information. All log and configuration files should be zipped into one single zip-file and be available upon request by support personnel.

3.1.0 Define the problem

Supply a problem description that includes the following information;

- Customer name:
  _____
- Onsite Contact name:
  _____
- Good callback phone number
  _____
- Severity of call:
  _____
- Device type, Model and S/N:
  _____
- Operating System version and level (SUSE, AIX, RedHat, Windows etc)
  _____
- Whether system is new / recent install or problem is new / repeat problem; whether system has ever worked
  _____
- Recent changes made to the system prior to the problem (hardware or software)
  _____
- When problem first occurred
  _____

- When problem occurs, i.e. during boot, run time, at power on, at minimum config, with specific application, etc.

  _____

- Has the symptom changed from the original problem?

_____

- Full LED sequence, software messages, error log entries, console messages

  _____

- Parts replaced prior to this call

  _____

- What is the size of the BladeCenter installation?

_____

- How many BladeCenter Chassis does the customer have in total?

_____

- How many of the chassis are affected by the current issue?

_____

- Who designed the overall BladeCenter solution for the customer?

_____

3.2.0 Management Module

Gather the following logs from the Management Module from all of the affected BladeCenter chassis: (instructions on how-to capture these logs are described in section 4.1)

- Management Module Event Log
- HW VPD and Firmware VPD
- Fuel Gauge Settings

3.3.0 Blade Servers

Use this section to capture logs from the blade servers in the chassis. Note that you need to perform this on all affected blade servers. (instructions on how-to capture these logs are described in section 4.2).

- How was the Operating system installed onto the blade server? Example, manually, or assisted via ServerGuide, or automated via RDM or some other method ?

- Please confirm the hardware configuration of the blade server? Detail Processor/Memory/Disk subsystem configuration and any other optional devices.

HS20/HS40/LS20 blade servers:

- For Windows,
  - include the version (e.g. 2000/2003/etc.)
  - service pack applied
  - any additional drivers added.
  - IBM Dynamic Systems Analysis output

- For Linux,
  - include the distribution version and kernel version
  - additional drivers added
  - IBM Dynamic Systems Analysis output for Red Hat Enterprise v3 or SUSE Enterprise v9
  - IBM eGatherer output for other Linux distributions

JS20 blade servers:

Note: Linux Service Aids should be downloaded / installed in advance of problem occurrence to minimize time spent in problem resolution. See section 4.0 for more detailed information.

- Output from snap

- Diagnostic utilities (and versions) used (such as AIX diagnostics, stand-alone diagnostics), if any. Also, include results of diagnostic tests.

- Operating System version and level

3.4.0 Switch modules

Use this section to define the networking problem and to capture logs from the ethernet switch modules in the chassis. Note that you need to perform this on all affected blade servers. (instructions on how-to capture these logs are described in section 4.3)

- Please provide the basic IP structure of the Bladecenter. We require the IP address range for the individual Blades and also the IP addresses for the Management Module(s) and the I/O modules

_____

- Please provide a local topology diagram for the Bladecenter and connected devices.

_____

- State if teaming is being used and detail the levels of Broadcom firmware, device driver and BASP.

_____

Ethernet Switch Module (ESM/Dlink):

- Event Log

Nortel Switch Module:

- Output from <`maint/tsdmp`>

Cisco Switch Module:

- Output from <`show tech-support`>

Qlogic Fibre Switch Module:

- Output from <`show support`>

Brocade Fibre Switch Module:

- Output from <`supportShow`>

NOTE:

See section 4.1 for instructions on how-to gather this information. All log and configuration files should be zipped into one single zip-file and be available upon request by support personnel.

Additional Information:

4.0 Instructions for Data Collection (how-to gather)

NOTE:
It is recommended that all log and configuration files are saved into the same directory and then zipped into one single zip-file and be available upon request by support personnel. Also, name the logs with a relevant or descriptive name.

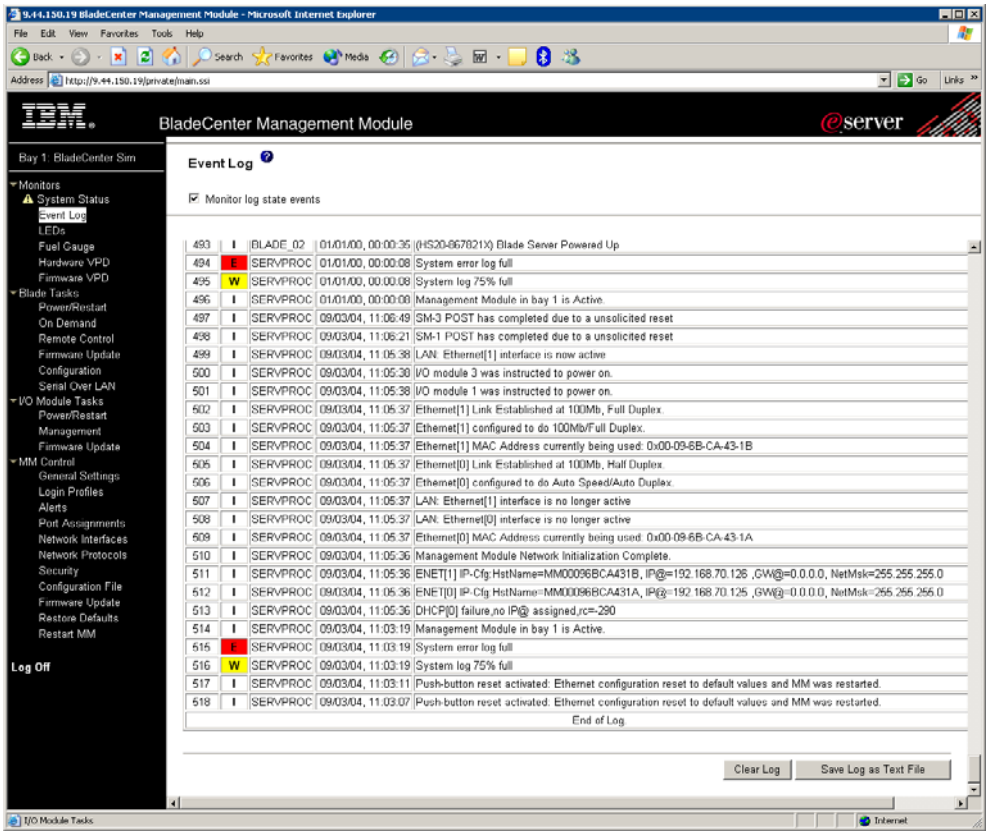
4.1 Management Modules and Chassis

Note that the Management Module Interface for the Entry / Enterprise and Telco chassis looks the same. Use these instructions for capture the logs and configuration for these type of chassis.

Event Log

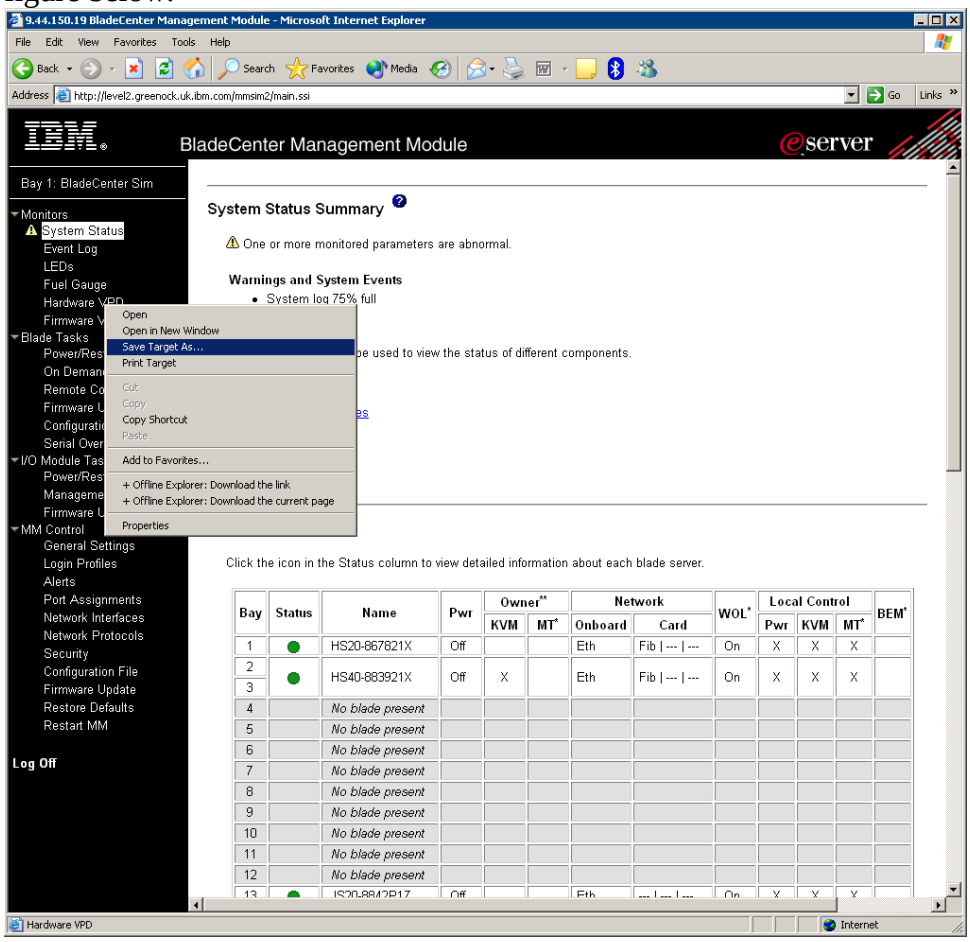
_____**1.** Connect and login to the Management Module using your favourite web browser (default userid and password is: USERID/PASSW0RD).

_____**2.** Select “Event Log” from the left hand side. Scroll down to the end of the “Event Log” and select <Save Log as Text File>, as shown in the figure below.

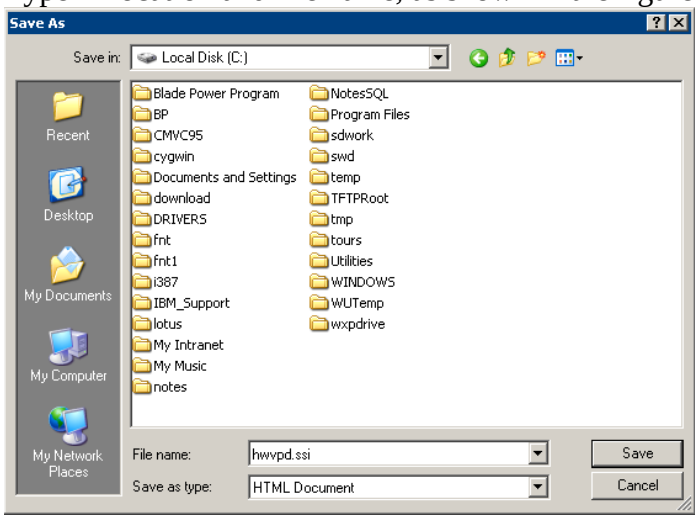


Hardware VPD

____1. Right click on “Hardware VPD” and select <Save As>, as shown in the figure below.



____2. Type in location and file name, as shown in the figure below.

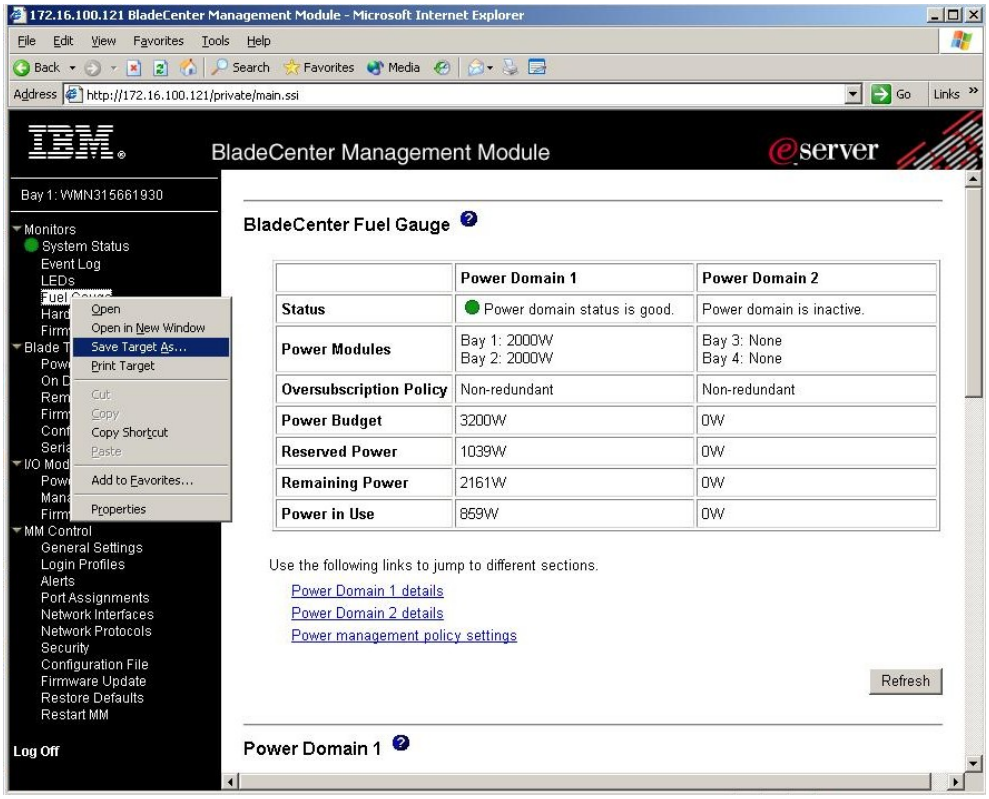


Firmware VPD

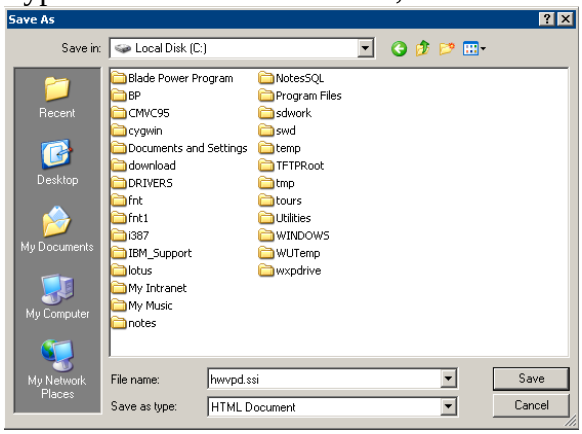
____**1.** Save the “Firmware VPD”, using the same procedure as described in the previous step.

Fuel Gauge

____**1.** Right click on “Fuel Gauge” and select <Save As>, as shown in the figure below.



____**2.** Type in location and file name, as shown in the figure below.



4.2 Blade Servers

4.2.1 HS20 / HS40 / LS20 blade servers

Windows Systems

Collect information using IBM Dynamic Systems Analysis Portable Edition

Note: The portable version of DSA does not required to be installed.

____**1.** Download the latest DSA utility from the IBM support site
http://www-1.ibm.com/support/docview.wss?uid=psg1SERV-DSA

____**2.** To run DSA and generate output files that can be provided to IBM Support, run this command: `<DSAxxxP.exe >`

____**3.** To run DSA and generate HTML output files that can be viewed locally with a browser, run this command: `<DSAxxxP.exe /a /v>`

____**4.** Each time you run DSA, a directory is created to contain the output files. This directory is created in the IBM_Support directory of the hard drive from which you ran DSA. The following naming convention is used for these DSA output directories:
<machine_type> <serial_no>_<date>_<time>

____**5.** The .xml.gz output file can be provided to IBM support for analysis.

Installing IBM Dynamic Systems Analysis (DSA) Installable Edition

____**1.** Download the latest DSA utility from the IBM support site.
http://www-1.ibm.com/support/docview.wss?uid=psg1SERV-DSA

____**2.** Select <Start> -> <Run>. The "Run" window opens.

____**3.** In the Open field, type the path to the DSA Installable Edition executable file, or click Browse to locate it.
(Optional) Type /s after the executable file name to automatically accept the license terms of DSA.
(Optional) Type DSA command-line options after the /s option or after the executable file name. For more information, see "USING DSA COMMAND-LINE OPTIONS" later in the readme.

____**4.** Select <OK>. The InstallShield Wizard starts and displays a window for DSA. This step does not apply when the /s option is used when running DSA. Note: When using the /s option to run DSA, the InstallShield Wizard screens are not displayed. Therefore, the remaining steps in this procedure do not apply.

____**5.** Select <Next>.

____**6.** Review the license agreement.

____**7.** Select <I accept the terms in the license agreement>.

____**8.** Select <Next.>

Collecting information using the IBM DSA Installable Edition

____**1.** Open a command line.

____**2.** Type `<C:\Program Files\IBM\DSA\collectall.exe>` to run DSA.

DSA Usage
`/? /h` – Display help for DSA command-line options **`/d`** – Place DSA output is supplied directory rather than in default location. If not specified with /c, directory must already exist **`/c`** - Create directory specified by /d option, if it does not already exist. **`/i`** – Use this input file, rather than triggering a data collection on the current system. **`/x`** - Do not output the compressed XML output file. **`/v`** - Create HTML output files **`/b`** – Run in batch mode, skipping any user-interactive prompts **`/u`** – Specify location of UpdateXpress CD or CD Image for use in UpdateXpress Firmware Analysis Plug-in **`/t`** – Transfer collected data to IBM Service testcase.boulder.ibm.com via anonymous FTP All options must be separated with one or more spaces.

____**3.** Each time you run DSA, a directory is created to contain the output files. This directory is created in the IBM_Support directory of the hard drive from which you ran DSA. The following naming convention is used for these DSA output directories:
<machine_type> <serial_no>_<date>_<time>

____**4.** The .xml.gz output file can be provided to IBM support for analysis.

Linux Systems

Collect information using IBM Dynamic Systems Analysis Portable Edition

Note: The portable version of DSA does not required any installation.

____**1.** Download the latest DSA utility from the IBM support site . Ensure that you download the file appropriate for your distribution .

____**2.** To run DSA and generate output files that can be provided to IBM Support, run this command:
for RHEL3: dsaxxxp-rhel.sh
for SLES9: dsaxxxp-sles.sh
where xxx is the version number of the release.

____**3.** To run DSA and generate output files that can be viewed locally, run this command:
for RHEL3: dsaxxxp-rhel.sh /a /v
for SLES9: dsaxxxp-sles.sh /a /v
where xxx is the version number of the release.

____**4.** Each time you run DSA, a directory is created to contain the output files. This directory is created in the IBM_Support directory of the hard drive from which you ran DSA. The following naming convention is used for these DSA output directories:
<machine_type> <serial_no>_<date>_<time>

____**5.** The .xml.gz output file can be provided to IBM support for analysis.

For futher details on using DSA please refer to the Readme information provided with the utility.

Collect information using IBM eGatherer

____**1.** Download the latest eGatherer utility from the IBM support site.
http://www-1.ibm.com/support/docview.wss?uid=psg1MIGR-4R5VKC

____**2.** Open a terminal window.

_____**3.** Type the path to the eGatherer utility.

_____**4.** Run the eGatherer utility (i.e ./egather2-2.09.linux)

_____**5.** eGatherer will collect all the logs and configuration files and place it into a *.eg2 file into the current directory.

_____**6.** The .eg2 file can be provided to IBM Support for analysis.

4.2.2 JS20 blade servers

AIX Systems

____**1.** Telnet and login to the JS20.

____**2.** Remove old snap files using <snap –r>, as shown in the figure below.

JS20 - AIX command line: remove old snap

```
# snap –r
```

____**3.** Run <snap –gc) to start data collection and compress the output, as shown in the figure below. This will generate an output file Snap.pax.Z in the default directory: /tmp/ibmsupt/ (size approx. 7 MB)

JS20 - AIX command line: run snap

```
# snap -gc
```

Linux Systems

After the installation of the Linux operating system, the customer must download and install the Service Aids for Hardware Diagnostics. This service aids toolkit provides the tools required to service JS20 systems running IBM's supported versions of the Linux operating system. In the rare instance when a system error occurs, the toolkit provides first failure data capture, error log analysis, and other necessary information needed for accurate problem determination and correction. Your hardware service provider then uses this information to effectively service your equipment.

Service Aids for Linux

____**1.** First you have to download the service aids from following: http://techsupport.services.ibm.com/server/lopdiags. Select your Linux distribution.

____**2.** Download the following packages from this page:

- ppc64-utils-x.x-x.ppc64.rpm.gz
  These utilities implement RAS (Reliability, Availability, Scalability) and instrumentation interfaces to the Linux PowerPC64 kernel. They include the update_flash command, which allows customers to download and install firmware updates; and the snap command, which captures extended error data that aids analysis of intermittent errors. These utilities provide an interface to these functions and data from the kernel. The RAS functions are one of the major market differentiators for the pSeries hardware supported by the Linux PowerPC64 kernel.
- lsvpd-x.xx.x-x.ppc.rpm.gz
  The lsvpd package contains both the lsvpd and lscfg commands. These commands, along with a boot-time scanning script called update-device-tree, constitute a simple hardware inventory system. The lsvpd command provides Vital Product Data (VPD) about hardware components to

higher-level serviceability tools. The lscfg command provides a more human-readable format of the VPD, as well as some system-specific information.

- `diagela-x.x.x.x-x.ppc.rpm.gz`
  The Error Log Analysis tool provides automatic analysis and notification of errors reported by the platform firmware on IBM eServer pSeries systems. This RPM analyzes errors written to /var/log/platform. If a corrective action is required, notification is sent to the Service Focal Point on the Hardware Management Console (HMC), if so equipped, or to users subscribed for notification via the file /etc/diagela/mail_list.

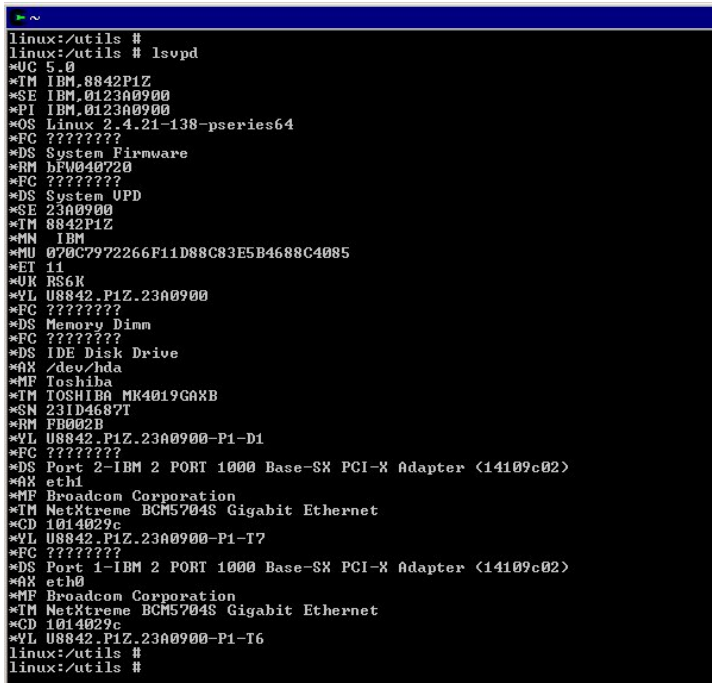
____**3.** Copy these three packages onto your JS20 blade.

____**4.** Unzip these three packages with the following command:
`gunzip –d packagename.rpm.gz`

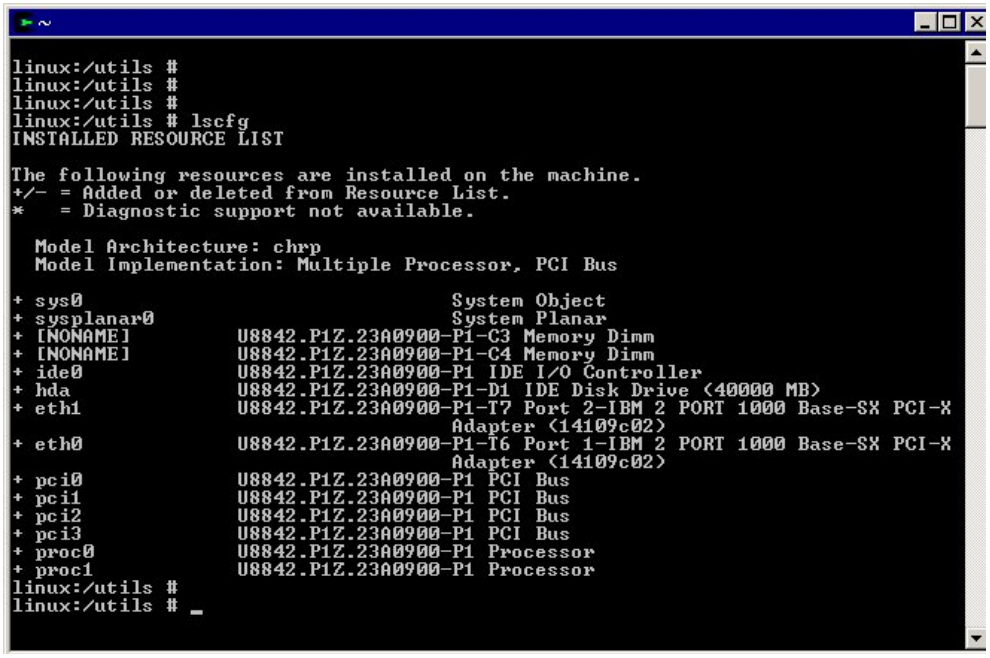
____**5.** Install these three packages with the following command:
`rpm –Uvh packagename.rpm`

____**6.** Initialize the lsvpd database with the following command:
`/etc/init.d/lsvpd start`

____**7.** Verify that `lsvpd` is installed correctly by executing, as shown in the figure below.



____**8.** Verify that `lscfg` is installed correctly, as shown in the figure below.



lscfg

____**9.** To collect all this information into one file, type `snap -va.`

____**10.** The snap utility will create a file called snap.tar.gz and place into current directory.

4.3 Switch Modules

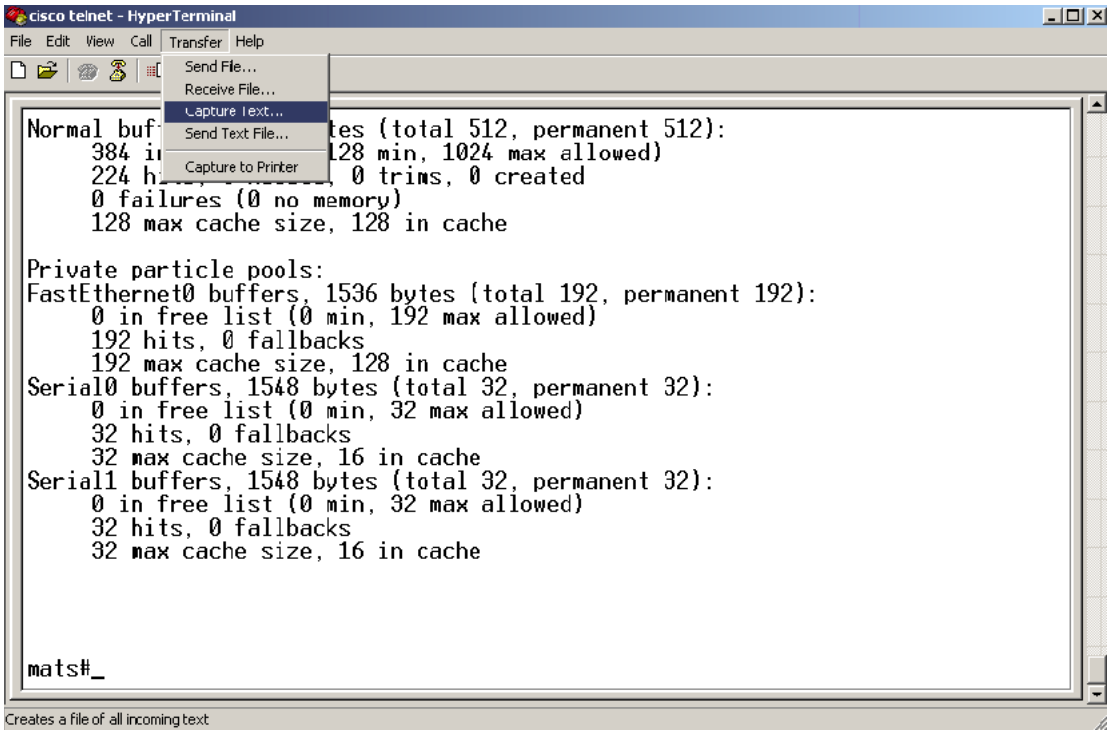
Important Notice for Switch Modules

- *Make sure that the IP addresses of the blade servers are NOT on the same subnet as the MM and I/O modules. This causes blade servers to lose network connectivity.*
- *For Cisco ESM, make sure that ports 15 and 16 (mgt ports) have not been changed to the same Vlan as the Blades. By default, blade server ports are Vlan_2 and management ports are Vlan_1.*

When capturing logs and configuration dumps, it is important that you enable capture text within the telnet application. To enable this for Hyperterminal for Windows;

____**1.** Start Hyperterminal and open a telnet session to the switch.

____**2.** Select <Transfer> and then <Capture Text>, as shown in the figure below.



_____**3.** Type in the location where you want the text file to be stored on your hard drive and select <Start>.

4.3.1 BladeCenter 4-port GB Ethernet Switch Module (ESM/Dlink)

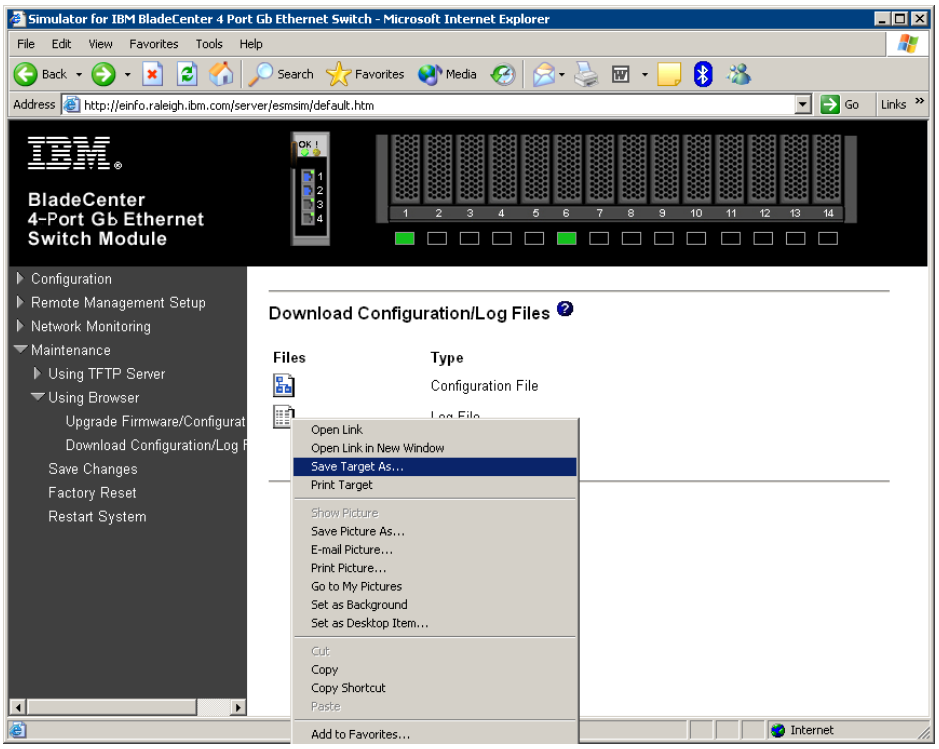
_____**1.** Connect and login to the Ethernet Switch Module using your favourite web browser (default userid and password is: USERID/PASSW0RD).

_____**2.** Select “Maintenance” from the right hand side.

_____**3.** Select “Using Browser”.

_____**4.** Select “Download Configuration/Log File”.

_____**5.** Right-click on the log file and save it to local disk, as shown in the figure below.



4.3.2 Nortel Networks switch module option

____**1.** Telnet and login to the switch, as shown in the figure below.
Note: Ensure that "capture text" is switched on for the telnet application, details discussed in section 4.3.

Nortel switch command line

```
C:\>telnet 192.168.70.228

Nortel Networks Layer2-3 GbE Switch
Module.
Enter password: xxxxxxx
```

____**2.** Enter the Maintenance menu using the `maint` command, as shown in the figure below.

Nortel switch command line – Main Menu

```
------------------------------------------------------------
[Main Menu]
     info      - Information Menu
     stats     - Statistics Menu
     cfg       - Configuration Menu
```

```
     oper     - Operations Command Menu
     boot     - Boot Options Menu
     maint    - Maintenance Menu
     diff     - Show pending config changes  [global
command]
     apply    - Apply pending config changes [global
command]
     save     - Save updated config to FLASH [global
command]
     revert   - Revert pending or applied changes [global
command]
     exit     - Exit  [global command, always available]

>> Main# maint
```

____**3.** Load the tech support dump using the `tsdmp` command, as shown in the figure below.

Nortel switch command line – Maintenance Menu

```
------------------------------------------------------------
[Maintenance Menu]
     sys      - System Maintenance Menu
     fdb      - Forwarding Database Manipulation Menu
     debug    - Debugging Menu
     arp      - ARP Cache Manipulation Menu
     route    - IP Route Manipulation Menu
     uudmp    - Uuencode FLASH dump
     ptdmp    - Upload FLASH dump via FTP/TFTP
     cldmp    - Clear FLASH dump
     panic    - Dump state information to FLASH and
reboot
     tsdmp    - Tech support dump
     pttsdmp  - Upload tech support dump via FTP/TFTP

>> Maintenance# tsdmp
```

____**4.** Select yes to load the tech support dump.
Note: Ensure that "capture text" is switched on for the telnet application, details discussed in section 4.3.

Nortel switch command line - tsdmp

```
Confirm dumping all information, statistics, and
configuration [y/n]: y
System Information at 11:15:51 Thu Jan  1, 2070
Time zone: No timezone configured
```

```
Nortel Networks Layer2-3 GbE Switch Module
sysName:
sysLocation:

Switch is up 0 days, 11 hours, 15 minutes and 51 seconds.
Last boot:  0:00:44 Thu Jan  1, 2070 (power cycle)

MAC address: 00:11:58:ad:ed:00    IP (If 128) address:
192.168.70.228
Unreleased Software: FW_VERSION: #15 Wed Aug 25 12:45:24
PDT 2004
                  FW_VIEW: rjprokop_rjprokop_ch1
                  FW_CONTEXT: ALT-HW_ZOE-1 / pass2
                   (FLASH image1), factory default
configuration.

Last 30 syslog message information:
Jan  1  0:00:55 NOTICE  system: link up on port INT2
Jan  1  0:00:58 NOTICE  mgmt: Management via all ports is
ENABLED thru I2C Control Register
Jan  1  0:00:58 NOTICE  system: link up on port MGT1

<.... lots of output ....>
```

4.3.3 Cisco Gigabit Ethernet Switch module

____1. Telnet and login to the switch, as shown in the figure below.
Note: Ensure that "capture text" is switched on for the telnet application, details discussed in section 4.3.

Cisco switch command line

```
User Access Verification

Password: xxxxxxx
mats>
```

____2. Turn on privileged commands using the `enable` command, as shown in the figure below.

Cisco switch command line

```
mats> enable

Password: xxxxxxx
mats#
```

____**3.** Run the `show tech-support` command, as shown in the figure below.

Cisco switch command line

```
mats# show tech-support

------------------ show version -------

Cisco Internetwork Operating System
Software
IOS (tm) C1700 Software (C1700-SY56I-
M), Version 12.0(7)T,  RELEASE SOFTWARE
(fc2)
Copyright (c) 1986-1999 by cisco
Systems, Inc.
Compiled Mon 06-Dec-99 19:57 by
phanguye
Image text-base: 0x80008088, data-base:
0x8082CE3C

<…… Lots of text ……>
mats#
```

4.3.4 IBM BladeCenter 2-port / 6-port Fibre Channel Switch Module (Qlogic)

____**1.** Telnet and login to the switch, as shown in the figure below.
Note: Ensure that "capture text" is switched on for the telnet application, details discussed in section 4.4.

Qlogic switch command line

```
# telnet 192.168.70.128
```

Default userid and password is:

```
USERID / PASSW0RD
```

____**2.** Run and capture the `showsupport` command, as shown in the figure below.

Qlogic switch command line

```
# Show Support
```

4.3.5 Brocade Entry / Enterprise SAN Switch Module for IBM BladeCenter

____**1.** Telnet and login to the switch, as shown in the figure below.
Note: Ensure that "capture text" is switched on for the telnet application, details discussed in section 4.4.

Brocade switch command line

`# telnet 192.168.70.129`
Default userid and password is:
`USERID / PASSW0RD`

____**2.** Run and capture the `uptime` and `supportShow` command, as shown in the figure below.

Brocade switch command line
`# uptime` `# supportShow`

____**3.** If you have a problem on one or more ports and you can recreate the problem, perform the Additional Action Plan.

Brocade Additional Action Plan
____**1.** Type and save the output: `# portLogClear` to reset the port errors ____**2.** Type and save the output: `# supportShow` ____**3.** Recreate the problem. ____**4.** Type and save the output: `# supportShow`

____**4.** If you have a problem with unexpected switch reboots and system crashes, do;

Brocade Unexpected Reboots
____**1.** Type and save the output: # pdshow # save core

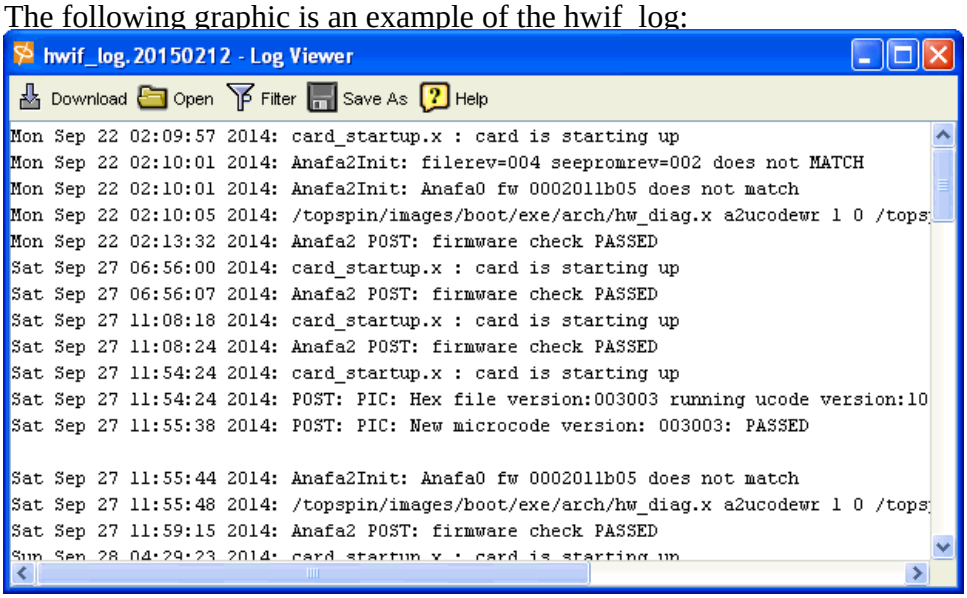
4.3.6 Topspin Infiniband Switch Module for IBM eServer BladeCenter

Extracting the hwif_log

The hwif_log can be extracted by using the following command at the CLI:

IBM BladeCenter# more syslog:hwif_log

The following graphic is an example of the hwif_log:



Then save it as a text file or copy and paste the information into a text file.

Extracting the ts_log

Another important log is the software log ts_log and it can be extracted by using the following command at the CLI:

IBM BladeCenter# more syslog:ts_log

The following graphic is an example of the software log ts_log: