

Обслуживание и диагностика EMC VNX

Леонтьев Алексей
Системный инженер
E-Mail: aleontev@ocs.ru
tel. +7 (495) 995-2575 ext. 5556
tel. +7 (343) 379-4991 ext. 5556



1. Возможные проблемы в СХД

- Сервера
- Коммутаторы
- Массив

2. Методы диагностики ошибок

- Просмотр и сбор логов
- Анализ логов
- Средства диагностики

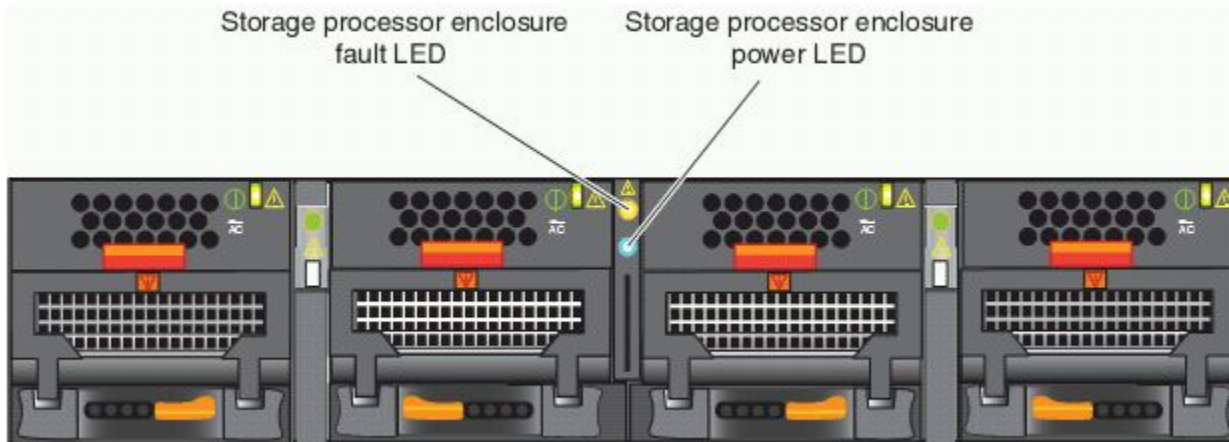
Возможные проблемы в СХД

Обслуживание и диагностика EMC VNX



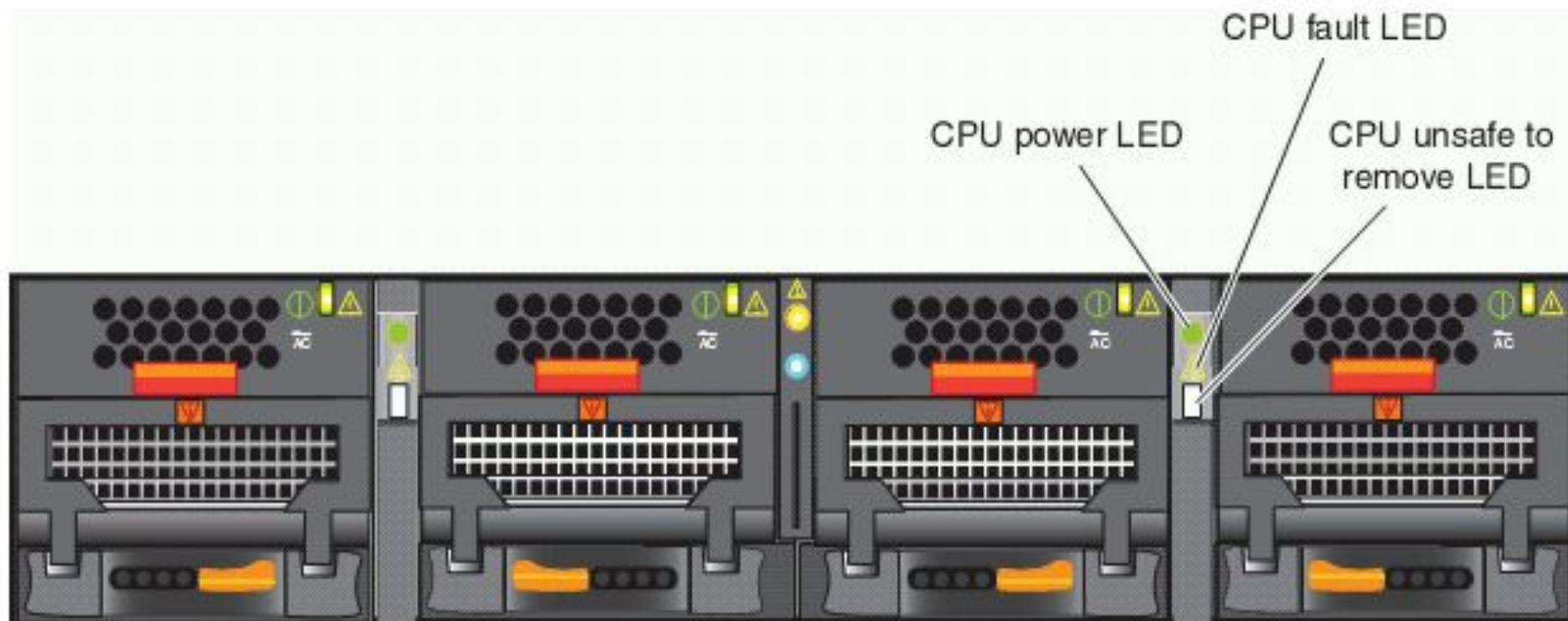
1. Ошибки на серверах
 - сбои HBA
 - настройки ПО
2. Ошибки на коммутаторах
 - Сбои SFP
 - Отказ Блоков Питания
 - ПО
3. Ошибки на массиве
 - системные ошибки
 - настройки ПО

Индикация VNX5700 (подробнее в «Hardware Information Guide»)



| LED | Color | State | Description |
|-------|-------|-------|--|
| Power | Blue | On | Storage processor enclosure is powered up and all the FRUs in the enclosure are operating properly |
| | — | Off | Storage processor enclosure is powered down. |
| Fault | Amber | On | A FRU failed within the enclosure. |
| | — | Off | Storage processor enclosure operating normally. |

Индикация VNX5700

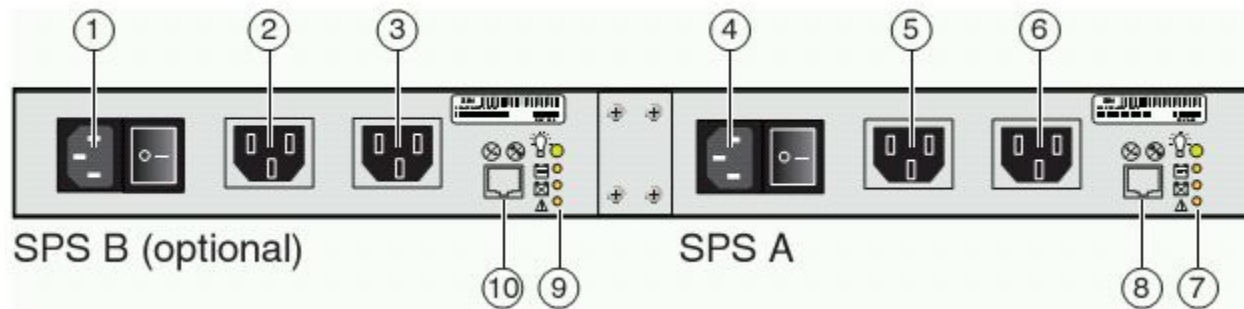


Индикация VNX5700

| LED | Color | State | Description |
|------------------|-----------------|----------|---|
| Power | Green | On | Storage processor is powered up and all FRUs in the Data Mover are operating properly. |
| | — | Off | Storage processor is powered down. |
| Fault | Amber | On | Storage processor has faulted. |
| | | Blinking | Storage processor goes through six stages of power up: <ol style="list-style-type: none"> 1. Executes a BIOS check, blinking once every 4 seconds 2. Executes a POST check, blinking once every second 3. Loads the operating system, blinking four times a second |
| | Blue (see Note) | | <ol style="list-style-type: none"> 4. Operating system loaded, blinking once every 4 seconds 5. Operating system starting operating system drivers, blinking once every second 6. Operating system drivers operating, blinking four times a second |
| | — | Off | Storage processor operating normally. |
| Unsafe-to-remove | White | On | Storage processor is unsafe to remove. |
| | — | Off | Storage processor is safe to remove. |

Note: The fault LED changes color from amber to blue when the operating system is loading, see step 4 in the description.

Индикация VNX (SPS)

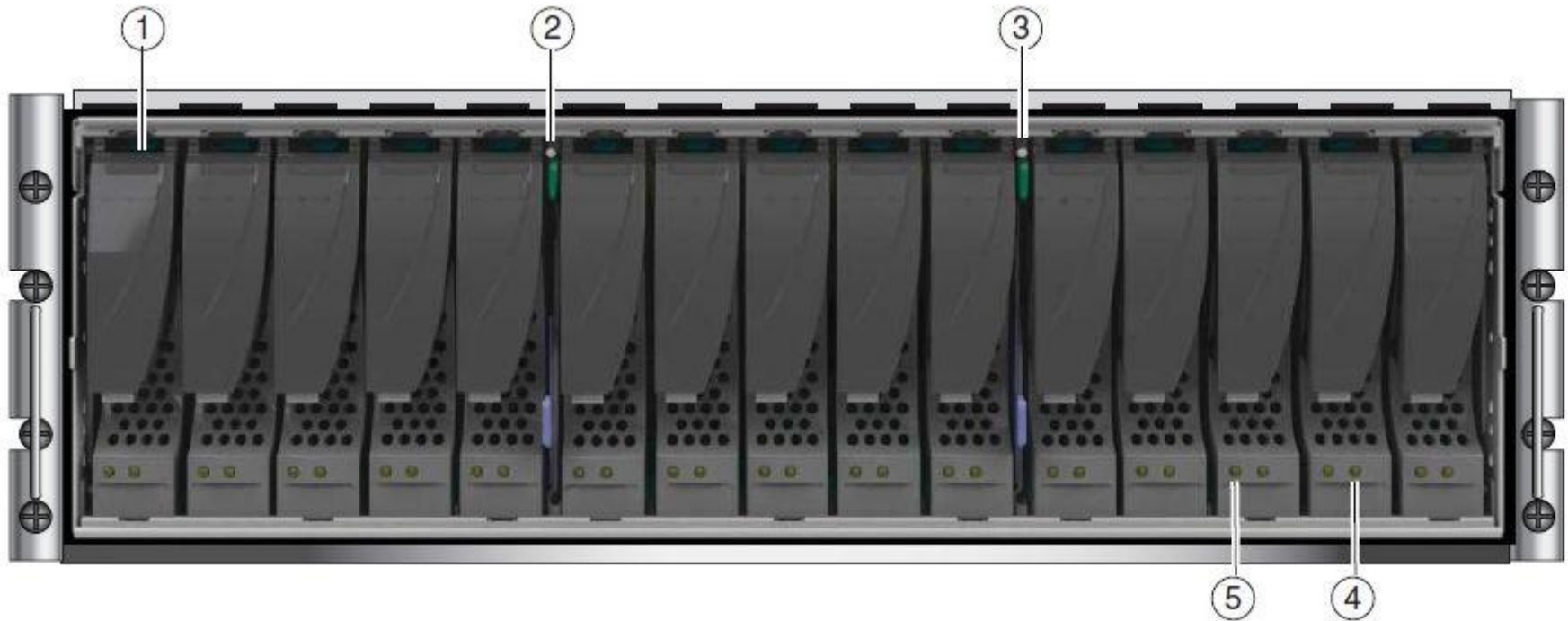


| | | | |
|---|--|----|---|
| 1 | SPS B AC power in (recessed plug) | 6 | Power out socket to LCC A on the 1st DAE (ID 2) |
| 2 | Power out socket to LCC B on the 1st DAE (ID 2) | 7 | Four SPS A status LEDs (green and amber) |
| 3 | Power out socket to the SP B power supply on the SPE | 8 | SPS A to SP A management (RJ-12) connector |
| 4 | SPS A AC power in (recessed plug) | 9 | Four SPS B status LEDs (green and amber) |
| 5 | Power out socket to the SP A power supply on the SPE | 10 | SPS B to SP B management (RJ-12) connector |

| Led | Color | State | Description |
|-----------|-------|----------|---|
| SPS power | Green | On | SPS ready and operating normally; battery fully charged |
| | | Blinking | On/battery charging |
| | — | Off | Off/disconnected |



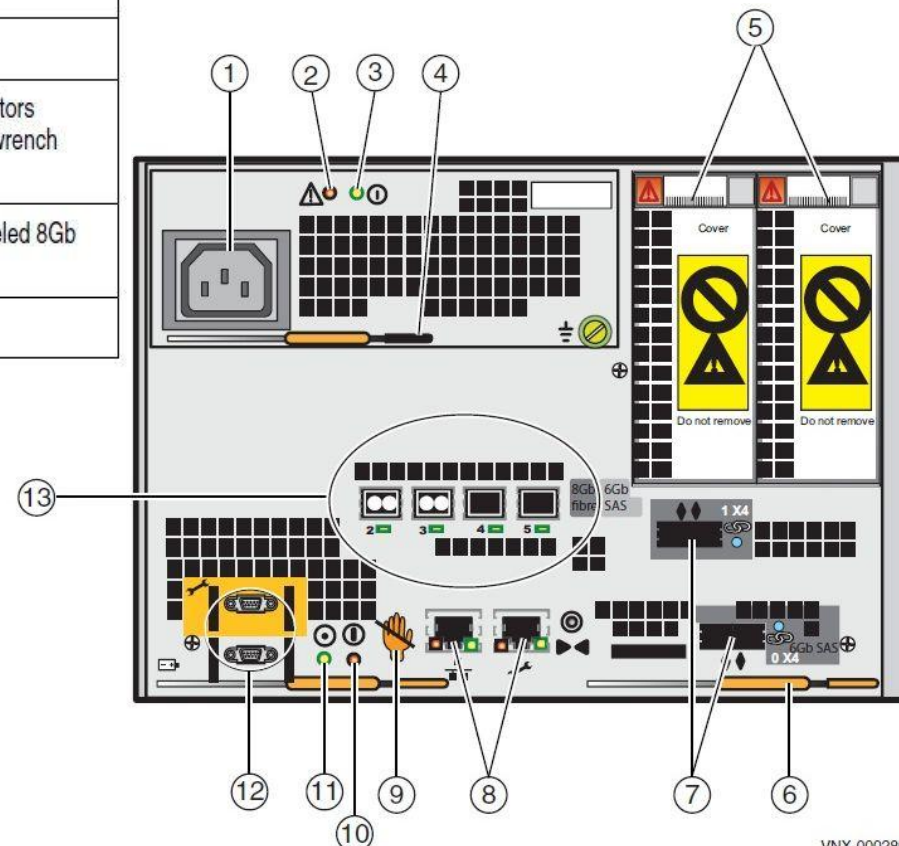
Индикация VNX5300



| | | | |
|---|---|---|------------------------------------|
| 1 | 3.5-inch 6-Gb/s SAS drives or 6-Gb/s NL-SAS disk drives | 4 | Disk drive fault LED (amber) |
| 2 | DPE fault LED (amber) | 5 | Disk drive on/activity LED (green) |
| 3 | DPE power on LED (blue) | | |

Индикация VNX (SP)

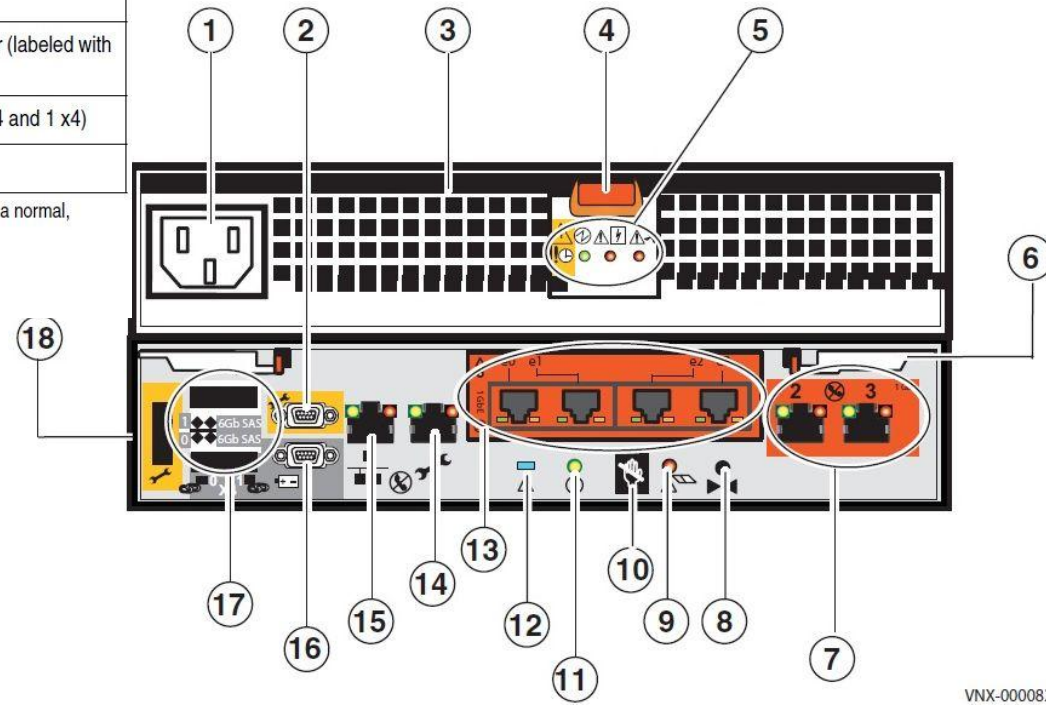
| | | | |
|---|---|----|---|
| 1 | AC power in connector (recessed plug) | 8 | Two RJ-45 (management and service laptop) connectors (labeled with a network management symbol and a wrench symbol, respectively) |
| 2 | Power supply fault LED (amber) | 9 | SP unsafe to remove LED |
| 3 | Power supply power on LED (green) | 10 | SP fault LED (amber) |
| 4 | Power supply latch handle | 11 | SP power on LED (green) |
| 5 | Two I/O module slots showing one four-port 8-Gb/s Fibre Channel (FC) I/O module and one four-port 1-Gb/s iSCSI I/O module | 12 | Two RS-232/EIA (micro DB-9) connectors (labeled with a battery symbol and a wrench symbol, respectively) |
| 6 | Two SP latch handles (bottom left and right) | 13 | Four 8-Gb/s Fibre Channel ports (labeled 8Gb fibre 2, 3, 4, and 5) |
| 7 | Two 6-Gb/s SAS ports | | |



Индикация VNXe3100

| | | | |
|---|--|----|---|
| 1 | AC power in connector (recessed plug) | 10 | SP unsafe to remove LED (white) |
| 2 | RS-232/EIA (micro DB-9) connector (labeled with a wrench symbol) | 11 | SP power LED (green) |
| 3 | Power supply module | 12 | SP status/fault LED (amber/blue ^a) |
| 4 | Power supply latch handle (top, middle) | 13 | Four-port 1-Gb/s (1000BASE-T) copper Ethernet I/O personality module (labeled e0, e1, e2, and e3) |
| 5 | Power supply module status LEDs | 14 | Service LAN (RJ-45) port (labeled with a wrench symbol) |
| 6 | SP latch handle (middle, left and right) | 15 | Management LAN (RJ-45) port (labeled with a network management symbol) |
| 7 | Two 1-GbE iSCSI (host IP connect) ports (labeled 2 and 3) | 16 | RS-232/EIA (micro DB-9) connector (labeled with a battery symbol) |
| 8 | NMI ^b (password reset) push button | 17 | Two 6-Gb/s SAS ports (labeled 0 x4 and 1 x4) |
| 9 | CRU fault LED (amber) ^c | 18 | SP |

- a. The SP fault status LED amber or blue, flashing at different rates, depending on current status of SP. In a normal, operational state, it will be off.
- b. NMI = non-maskable interrupt
- c. CRU fault LED lights amber when an internal CRU is faulted.



Методы диагностики ошибок

Обслуживание и диагностика EMC VNX



Виды логов массива EMC VNX

SPCollect

Требуется для всестороннего анализа утилитой CAP и дает полную картину всего происходящего на массиве, включая логи конфигурации, очевидные проблемы в графическом виде

Event Log (в Unisphere)

Последовательный список событий на массиве

Методы диагностики ошибок

Event Log (в Unisphere)

EMC Unisphere

Pool LUN Search... Advanced Search

Dashboard System Storage Hosts Data Protection Settings Support

VNX5300T > System > Monitoring and Alerts > SP Event Logs

SP Event Logs

- Show SP A Event Log
- Show SP B Event Log
- Open Events File

VNX5300T - SPA - Events

Current SP Date and Time: 2011-10-22 23:04

| Line | Date | Time | Event Code | Description | Storage Syst... | Device | SP | Host |
|------|------------|----------|------------|--------------------|-----------------|--------|-----|------|
| 16 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 17 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 18 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 19 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 20 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 21 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 22 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 23 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 24 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 25 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 26 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 27 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 28 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 29 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 30 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 31 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 32 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 33 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 34 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 35 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 36 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 37 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 38 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 39 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 40 | 2011-10-22 | 22 | | | | | N/A | SPA |
| 41 | 2011-10-22 | 22:46:05 | 0x4600 | 'lun' called by... | CKM0011230... | N/A | N/A | SPA |
| 42 | 2011-10-22 | 22:46:01 | 0x7208 | There are no ... | CKM0011230... | N/A | N/A | SPA |
| 43 | 2011-10-22 | 22:45:50 | 0x2086 | Unable to rea... | N/A | N/A | N/A | SPA |
| 44 | 2011-10-22 | 22:45:50 | 0x2006 | Able to read ... | N/A | N/A | N/A | SPA |

Event Details

| Field | Value | Field | Value |
|-----------------|---------------|------------|---------|
| Date: | 2011-10-22 | Type: | Warning |
| Time: | 22:51:23 | Category: | N/A |
| Log: | Application | Sense Key: | N/A |
| Host: | SPA | Ext Code1: | N/A |
| Event Code: | 0x7208 | Ext Code2: | N/A |
| Storage System: | CKM0011230... | SP: | N/A |
| Source: | N/A | Device: | N/A |

Description:
There are no available hot spares on the storage system. Creating hot spares is highly recommended. See alerts for details.

<< Previous Next >> OK Help

< > Save... Clear Print... Filter... Cancel Help

Alerts: 16 8 Critical Certificates: 1 User: sysadmin

Сбор SPCollect с массива из NaviCli

Запустить сбор SPCollect-ов на обоих SP командой:

```
NaviSECCLI.exe -h IP_ADDRESS_SP -user USER -password PASSWORD -Scope 0  
spcollect
```

Подождать минут 10 пока соберутся логи. Посмотреть файлы доступные для скачивания можно следующей командой:

```
NaviSECCLI.exe -h IP_ADDRESS_SP -user USER -password PASSWORD -Scope 0  
managefiles -list
```

Забрать последние SPCollect с обоих SP командой:

```
NaviSECCLI.exe -h IP_ADDRESS_SP -user USER -password PASSWORD -Scope 0  
managefiles -retrieve -path c:\SPCollects -file FILE_NAME.zip
```

В примере файлы загрузятся на локальный компьютер в папку c:\SPCollects

Параметры в командах это:

IP_ADDRESS_SP - ip адрес SP

USER - логин пользователя

PASSWORD - пароль пользователя

FILE_NAME.zip - имя загружаемого файла (можно забрать все файлы указав вместо параметра -file параметр -all)

Сбор логов с массива VNX в Unisphere (1/2)

The screenshot shows the EMC Unisphere web interface. The top navigation bar includes 'Dashboard', 'System', 'Storage', 'Hosts', 'Data Protection', 'Settings', and 'Support'. The 'System' menu item is highlighted with a red box and a red number '1'. The main content area is divided into 'Hardware', 'Monitoring and Alerts', and 'Reports'. On the right side, there are several panels: 'Setup Wizard for File', 'System Management', 'Monitoring', 'Control Station CLI', 'Diagnostic Files', and 'Service Tasks'. In the 'Diagnostic Files' panel, three items are highlighted with red boxes: 'Generate Diagnostic Files - SPA', 'Get Diagnostic Files - SPA', and 'Generate Diagnostic Files - SPB'. A red number '2' is placed to the right of these items. The bottom status bar shows 'Alerts: 16', '8 Critical', 'Certificates: 1', and 'User: sysadmin'.

Для снятия логов через веб интерфейс подключаемся к системе, авторизуемся и запускаем сбор логов на SPA и SPB - отмечено цифрой 2. После чего необходимо подождать 5-10 минут.

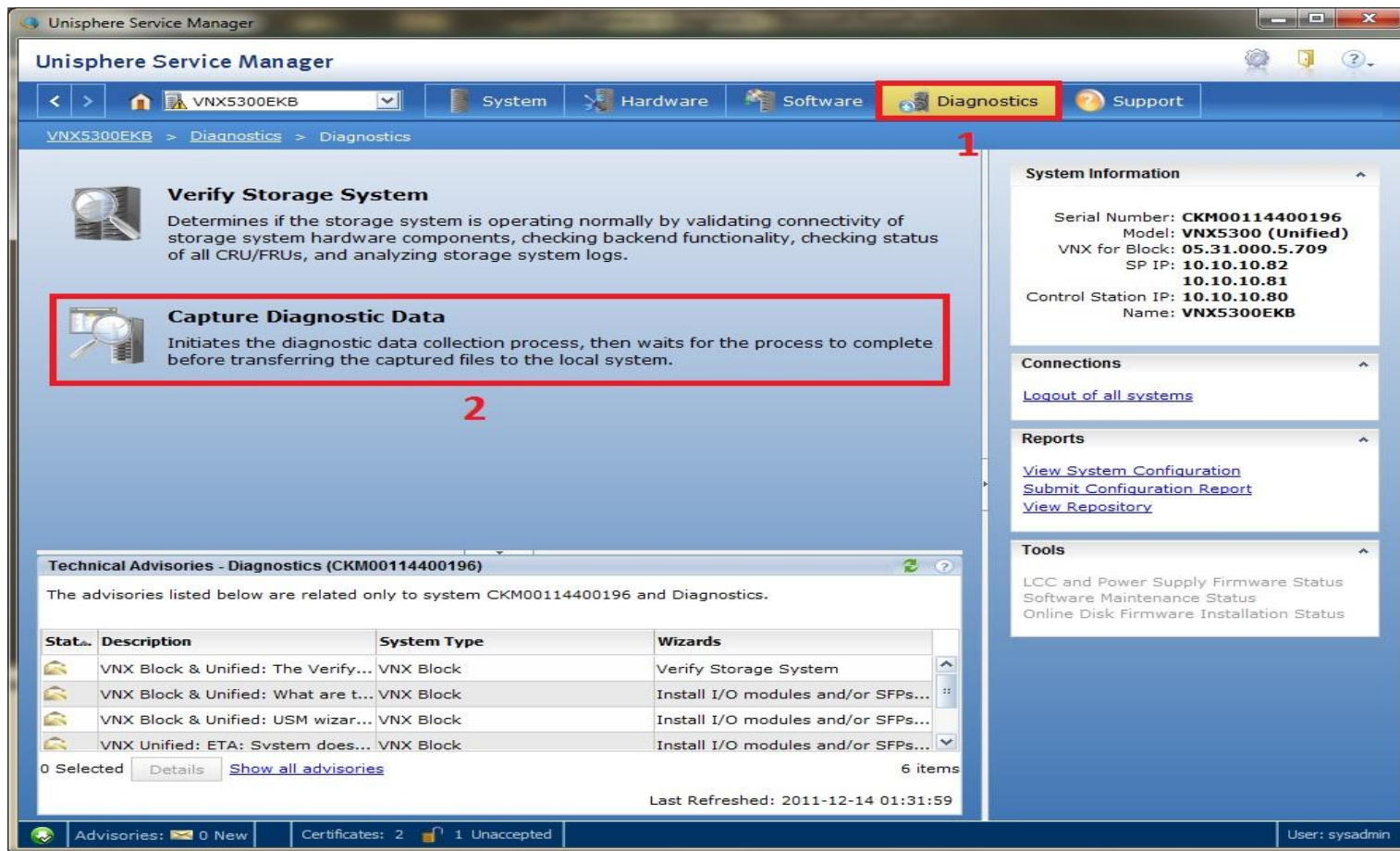
Сбор логов с массива VNX в Unisphere (2/2)

The screenshot shows the EMC Unisphere interface for SP A - File Transfer Manager. The main window displays a list of files on the SP. A text overlay in red provides instructions for selecting and transferring diagnostic files. The instructions are numbered 3 through 7. The interface includes a navigation bar at the top with tabs for Dashboard, System, Storage, Hosts, Data Protection, Settings, and Support. The right sidebar contains various system management and diagnostic tools. The bottom status bar shows alerts and certificates.

Закладываем в Get Diagnostic Files - отмечено цифрой 3, сортируем по дате - отмечено цифрой 4, выбираем папку куда копировать - отмечено цифрой 5, выбираем файл вида chassisSerialNumber_SPA_date_time_spsignature_data.zip - отмечено цифрой 6 и нажимаем Transfer - отмечено цифрой 7. Повторяем все действия для второго SP.

| Name | Size | ... | ... |
|--|-------|--------|-----|
| EFDCConfigurations.xml | 8543 | 201... | |
| gui_filter.out | 4233 | 201... | |
| CKM00112300526_SPA_lccstats.log | 0 | 201... | |
| em_logs.zip | 68727 | 201... | |
| navimon_log bak | 20 | 201... | |
| CKM00112300526_SPA_2011-09-22_11-58-52_2cc053_data.zip | 716 | 201... | |
| CKM00112300526_SPA_2011-09-22_12-32-46_2cc053_data.zip | 785 | 201... | |
| CKM00112300526_SPA_2011-09-22_12-32-46_2cc053_data.zip | 785 | 201... | |
| CKM00112300526_SPA_2011-09-22_12-32-46_2cc053_data.zip | 785 | 201... | |
| ktdump-111001-111535.txt | 531 | 201... | |
| CKM00112300526_SPA_2011-09-22_11-58-52_2cc053_data.zip | 716 | 201... | |
| ktdump-111004-050144.txt | 568 | 201... | |
| ktdump-111004-050144.txt | 568 | 201... | |
| ktdump-111004-050144.txt | 568 | 201... | |
| NAL_dump.txt | 439 | 201... | |
| naviagent_Oct-06-11_07-30-33.log | 0 | 201... | |
| ktdump-111004-050144.txt | 568 | 201... | |
| naviagent_Oct-07-11_01-59-10.log | 0 | 201... | |
| ktdump-111004-050144.txt | 568 | 201... | |
| ktdump-111004-050144.txt | 568 | 201... | |
| NetshSetScriptLog.txt | 8522 | 201... | |
| naviagent_Oct-20-11_04-58-52.log | 0 | 201... | |
| drive_flash_stats.txt | 1764 | 201... | |
| admin_tiddump.txt | 479 | 201... | |
| PeerWatchLog.txt | 99606 | 201... | |
| DefaultCaptureOutput.tmp | 536 | 201... | |
| CKM00112300526_SPA_2011-10-22_17-17-58_2cc053_data.zip | 111 | 201... | |
| SPCollect_Log.txt | 4993 | 201... | |

Сбор логов с массива VNX через Unisphere Service Manager



SPCollect-ы сохраняются по следующему пути:
C:\EMC\repository\DiagnosticData

Методы диагностики ошибок

Сбор логов с массива VNXe

The screenshot shows the EMC Unisphere web interface for a VNXe3100 storage system. The browser address bar shows the IP address 10.10.10.83 and the page title is EMC Unisphere. The navigation menu includes Dashboard, System, Storage, Settings, Hosts, and Support. The breadcrumb trail is VNXe3100 > Settings > Service System, with 'Settings' and 'Service System' highlighted by a red box and labeled with a red '1'. The 'Service System' page is divided into three main sections: 'System Components', 'Storage System Details', and 'Service Actions'. In the 'System Components' section, 'Storage System' is selected and highlighted by a red box labeled with a red '2'. Below it, 'Storage Processor SPA' and 'Storage Processor SPB' are listed. The 'Storage System Details' section shows 'Storage System: VNXe3100 Dual SP', 'Software Version: 2.1.2.15342', 'Status: Both Storage Processors are running in normal mode.', 'Product ID / SN: CKM00111000792', and 'SSH Protocol: Disabled'. The 'Service Actions' section contains a list of actions: 'Collect Service Information', 'Save Configuration', 'Restart Management Software', 'Reinitialize', 'Change Service Password', and 'Enable SSH'. The 'Collect Service Information' action is highlighted by a red box labeled with a red '3'. To the right of this action, there is a description: 'Collect information about your system and save it to a file. Your service provider can use the collected information to analyze your system.' Below the description, there is a button labeled 'Execute service action' highlighted by a red box labeled with a red '4'. At the bottom of the page, there is a status bar with 'Name: VNXe3100', 'Alerts: 2', 'User: admin', and 'System Time: 09:32'.

Сервисные команды VNХе

Подключение консольным кабелем и траблшутинг «VNХе Configuration Utility» (Primus емс264232):

9600 baud, 8 data bits, no parity, 1 stop bit (defaults on most software)

Перевод SP в сервисный режим (выполняется на каждомSP):

> **svc_rescue_state -s**

> **svc_shutdown -r**

Реинициализация массива выполняется с одного SP:

> **svc_reinit**

Реимидж массива:

> **svc_reimage -r**

Просмотр текущего статуса компонентов массива:

> **svc_diag --state=cru**

Описание остальных сервисных команд в документе:

[300-011-236_VNХе Unisphere CLI User Guide.pdf](#)

Разбор логов

1. CAP2 (Clariion Array Properties)
2. SPLAT (Storage Processor Analyze Tool)

CAP: C:\Temp\ot202\cap_CK200030700104_05-05-04_13-35-51.xml

Sort by: Component

| Severity | Component | Issue | Action |
|---------------|--------------------------|--|--|
| Critical | BE Bus 1 Enclosure 0 | Faulted; Bus 1 Enclosure 0 Disk 8 : Removed on SP-A | Please Verify |
| Informational | FBI Report | No FBI data is available. | Obtain FBI data if desired. |
| Critical | HDA 1_0_14 | Hot Spare is in use. | Replace failed disk or call EMC support. |
| Critical | HDA 1_0_8 | HDA is not enabled. | Replace failed disk or call EMC support. |
| Critical | HealthCheck | HealthCheck failed. | Analyze healthcheck report. |
| Critical | LUN 1 | LUN is faulted. | Verify that EMC support has been contacted. |
| Warning | LUN 3 | Trespassed! | Verify server attachment. |
| Warning | LUN 500 | Trespassed! | Verify server attachment. |
| Warning | LUN 501 | Trespassed! | Verify server attachment. |
| Warning | Non Resilient Raid Group | Raid Group 237 is bound as disk A single disk failure will cause data loss!! | Please verify that this is desired by the customer! |
| Critical | SP A | A fault condition (LED) is indicated. | Check array faults and logs in Navisphere (ignore if 'SPS Charging') |

E:\Documents and Settings\Administrator\My Documents\Презентация\CAP\cap_CK200033800028_05-06-08_13-10-34.xml doesn't exist. Can not add to report
Loading C:\Temp\ot202\cap_CK200030700104_05-05-04_13-35-51.xml

SPLAT: mergedlogs.tab

```
File Edit BookMark Mode Filter Colors Help Search
```

| | | | | | |
|---|----------|----------|-------------|----------|---|
| A | 07/01/03 | 17:10:25 | NDU | 71510000 | Info: spcollect: Rev: 3.3, @ SPA_data_APM00030300557 |
| B | 07/01/03 | 17:15:18 | NDU | 71510000 | Info: spcollect: Rev: 3.3, @ SPB_data_APM00030300557 |
| A | 08/08/03 | 18:04:24 | Reboot | 71200002 | Compiled at Dec 25 2002. |
| A | 08/08/03 | 18:04:24 | Reboot | 71200006 | Current (incremented) reboot count is 1. |
| B | 08/08/03 | 18:04:28 | Reboot | 71200002 | Compiled at Dec 25 2002. |
| B | 08/08/03 | 18:04:28 | Reboot | 71200006 | Current (incremented) reboot count is 1. |
| B | 08/08/03 | 18:14:03 | Reboot | 71200002 | Compiled at Dec 25 2002. |
| B | 08/08/03 | 18:14:03 | Reboot | 71200006 | Current (incremented) reboot count is 3. |
| A | 08/08/03 | 18:43:02 | Reboot | 71200002 | Compiled at Dec 25 2002. |
| A | 08/08/03 | 18:43:02 | Reboot | 71200006 | Current (incremented) reboot count is 2. |
| ****: Problem. Starting t trip the Reboot Counter | | | | | |
| B | 08/08/03 | 18:43:07 | Reboot | 71200002 | Compiled at Dec 25 2002. |
| B | 08/08/03 | 18:43:07 | Reboot | 71200006 | Current (incremented) reboot count is 1. |
| B | 08/08/03 | 18:46:55 | Reboot | 71200002 | Compiled at Dec 25 2002. |
| B | 08/08/03 | 18:46:55 | Reboot | 71200006 | Current (incremented) reboot count is 2. |
| A | 08/08/03 | 19:21:50 | DumpManager | 41004100 | Created Compressed Dump C:\dumps\dump..08-08-2003_19 |
| B | 08/08/03 | 19:27:48 | Reboot | 71200002 | Compiled at Dec 25 2002. |
| ****: Tripped Reboot Counter!! | | | | | |
| B | 08/08/03 | 19:27:48 | Reboot | 71200006 | Current (incremented) reboot count is 3. |
| B | 08/08/03 | 19:43:10 | Save Dump | 3e9 | The computer has rebooted from a bugcheck. The bugcheck w |
| B | 08/08/03 | 19:43:51 | DumpManager | 41004100 | Created Compressed Dump C:\dumps\dump..08-08-2003_19 |
| B | 08/27/03 | 21:18:38 | NDU | 71510000 | Info: spcollect: Rev: 3.3, @ SPB_data_APM00030300557 |
| A | 08/27/03 | 21:52:14 | NDU | 71510000 | Info: spcollect: Rev: 3.3, @ SPA_data_APM00030300557 |
| B | 01/28/04 | 14:08:55 | SP B | 907 | Microcode Panic 0 800094 699 |
| A | 01/28/04 | 14:51:15 | NDU | 71510000 | Info: spcollect: Rev: 3.3, @ SPA_data_APM00030300557 |
| B | 01/28/04 | 14:53:42 | NDU | 71510000 | Info: spcollect: Rev: 3.3, @ SPB_data_APM00030300557 |

Viewing mergedlogs.tab
Filtering with spcollect.vfilt
Removing filtering spcollect.vfilt
Filtering with reboot.vfilt
Removing filtering reboot.vfilt
Filtering with dump.vfilt

SAP2 отчеты

- Issues
- Sp information
- LUN information
- Drive modules
- RAID Groups
- RAID-Group layout
- MetaLUNs
- Host ports
- CRU information
- SAN Copy
- Snap views
- Snap sessions
- Snap clones
- Mirrors (synchronous)
- Mirrors (asynchronous)
- Storage Groups
- NDU software
- Switches
- Analysis
- Virtual Provisioning

Triiage

Пример запуска из директории с SPCollects:

```
C:\Users\aleontev>d:
```

```
D:\>cd d:\\EMC_incidents\2152
```

```
d:\EMC_incidents\2152>trriage -l -p -f -c
```

```
TRiiAGE                                REV: 26.2.7                            BUILD DATE: 091211
*****
Input specified:      [ triage -l -p -f -c ]
Generating:          [ full ] TRiiAGE Analysis.
Accessing TOOLS in:  [ C:\Tools ]

03/21/2012 00:32:10   Checking directory for SPcollects.
03/21/2012 00:32:10   Extracting SPcollects.
03/21/2012 00:32:12   Extracting enclosure geometry information.
03/21/2012 00:32:12   Merging and annotating SP event logs.
03/21/2012 00:32:13   Merging standard Ktrace logs.
03/21/2012 00:32:14   Scanning event logs for issues.
03/21/2012 00:32:15   Scanning ktrace logs for issues.
03/21/2012 00:32:15   Annotating ktrace log.
03/21/2012 00:32:17   Analyzing Flare checksum data.
03/21/2012 00:32:18   Creating LUN STATUS report (SPA).
03/21/2012 00:32:18   Creating LUN STATUS report (SPB).
03/21/2012 00:32:18   Creating ARRAY SUMMARY report.
03/21/2012 00:32:18   Creating DISK DETAIL report.
03/21/2012 00:32:19   Creating RESUME report.
03/21/2012 00:32:19   Creating SP STATUS report (SPA).
```

Triiage отчеты

Основной файл отчета: **TRiiAGE_full_Analysis.txt**

Полное описание смотреть в файле: C:\Tools\TRiiAGE_Companion.doc

Полный лог событий в файле: **TRiiAGE_full_SPlogs.txt**

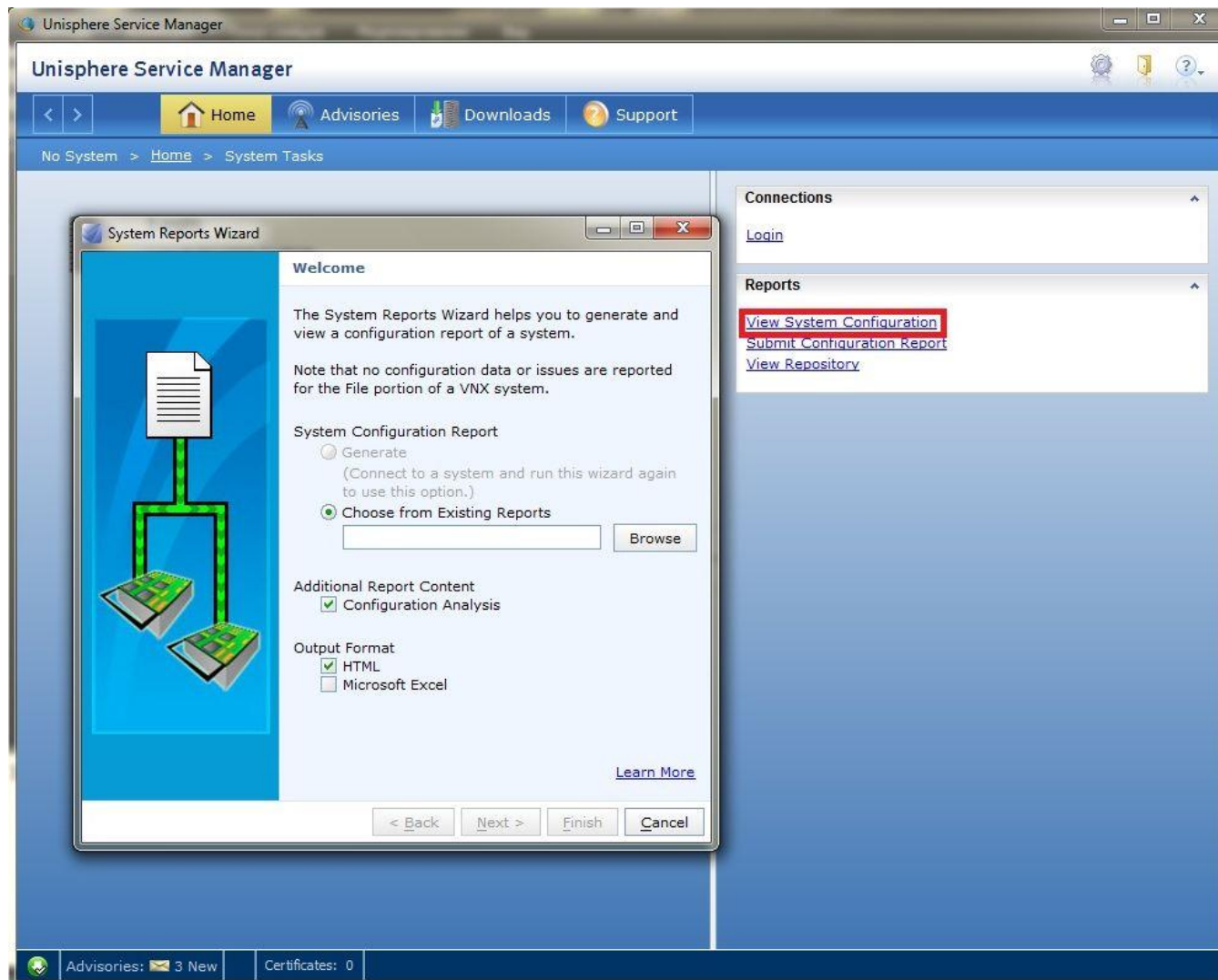
```
*****
ARRAY CONFIGURATION INFORMATION [ArrayInfo Script]
*****
Array Name: CK200082700617
Array Serial Number: CK200082700617
Array Model: CX3-40f

Array Software Revision: SPA----- SPB-----
3.26.40.5.016 3.26.40.5.016
SP Serial Number: CF2TK082400347 CF2TK082400343
IP Address: 192.168.0.149 192.168.0.150
PROM Revision: 3.58.00 3.58.00
SP Signature: 2171ba 2170d8
Agent Revision: 6.26.7 (0.87) 6.26.7 (0.87)
SP Memory: 4096 4096
SP Time: 08/29/2011 03:26:56 08/29/2011 03:25:38
Read Cache State: ENABLED ENABLED
Write Cache State: ENABLED ENABLED
Read Cache Size: 1012 1012
Write Cache Size: 2004 2004
Greater WC Availability: N/A N/A
System Fault LED: ON ON
Enclosures: 5 5
Disks: 64 64

Enclosure SPA Type Vers F SPB Type Vers F Notes
Bus 0 Enclosure 0 DAE3P 7.76 DAE3P 7.76 Stiletto 4G DAE
Bus 0 Enclosure 1 DAE3P 7.79 DAE3P 7.79 Stiletto 4G DAE
Bus 1 Enclosure 0 DAE3P 7.79 * DAE3P 7.79 * Stiletto 4G DAE
```


Методы диагностики ошибок

Анализ текущей конфигурации массива через USM



Виды ошибок

Ошибки массива

- Ошибки дисков
- Ошибки Storage Processor'ов
- Ошибки LCC/BCC
- Ошибки PS и SPS

Ошибки хостов

- Ошибки HBA
- Ошибки ПО (PowerPath, Naviagent)

Ошибки коммутаторов

- Ошибки SFP
- Ошибки настройки

Критические ошибки дисков (emc123689)

| | | | | | | |
|---|-------------------|----------------|----------------------------------|---|---|---|
| A | 09/29/11 03:12:38 | Bus0 Enc1 Dsk0 | 820 Soft Media Error [Bad block] | 0 | 0 | 5 |
| A | 09/29/11 03:12:39 | Bus0 Enc1 Dsk0 | 820 Soft Media Error [Bad block] | 0 | 0 | 5 |
| A | 09/29/11 03:12:46 | Bus0 Enc1 Dsk0 | 820 Soft Media Error [Bad block] | 0 | 0 | 5 |
| A | 09/29/11 03:12:48 | Bus0 Enc1 Dsk0 | 820 Soft Media Error [Bad block] | 0 | 0 | 5 |
| A | 09/29/11 03:12:55 | Bus0 Enc1 Dsk0 | 820 Soft Media Error [Bad block] | 0 | 0 | 5 |
| A | 09/29/11 03:12:57 | Bus0 Enc1 Dsk0 | 820 Soft Media Error [Bad block] | 0 | 0 | 5 |
| A | 09/29/11 03:13:03 | Bus0 Enc1 Dsk0 | 820 Soft Media Error [Bad block] | 0 | 0 | 5 |
| A | 09/29/11 03:13:04 | Bus0 Enc1 Dsk0 | 820 Soft Media Error [Bad block] | 0 | 0 | 5 |
| A | 09/29/11 03:13:06 | Bus0 Enc1 Dsk0 | 820 Soft Media Error [Bad block] | 0 | 0 | 5 |

- **820 – Soft Media Error**
- **920 – Hard Media Error**
- **801 – Потребовался повтор SCSI операции. Успешно.**
- **901 – Потребовался повтор SCSI операции. Неуспешно.**
- **801 и 901 ошибка создается не диском, а LCC и тоже может говорить о неисправности диска.**
- **803 – Рекомендуется заменить диск.**

Background Verify (запуск)

```
naviseccli -h <SP_IP_address> setsniffer -rg <RAID_group_number> [-bv]  
[-bvtime <priority>]
```

*priority - может иметь одно из следующих значений

ASAP = 1 minute per gigabyte or faster.

High = 5 minutes per gigabyte

Medium = 10 minutes per gigabyte

Low = 15 minutes per gigabyte

Вместо **-rg** можно просто указать ID конкретного луна или ключ **-all**

Н-р: **naviseccli -user admin -password 123456 -scope 0 -h 192.168.3.207
setsniffer 3 -bv -bvtime medium**

В примере будет выполнен BV для луна, имеющего ID **3** на массиве.

Background Verify (проверка статуса)

Проверить статус процесса можно командой:

```
naviseccli -user USERNAME -password PASSWORD -scope 0 -h  
IP_ADDRESS getsniffer -rg
```

Н-п: **naviseccli -user admin -password P@ssw0rd -scope 0 -h 10.10.10.45
getsniffer -rg 1**

Ничего не происходит

Идет BV

Currently Running Full Unit Verify

```
Verify State: Idle  
Percent Complete: 0  
Corrected Uncorrectable  
Checksum errors 0 0  
Write Stamp errors 0 0  
Time Stamp errors 0 0  
Shed Stamp errors 0 0
```

Currently Running Full Unit Verify

```
Verify State: Sniff Running  
Percent Complete: 60  
Corrected Uncorrectable  
Checksum errors 0 0  
Write Stamp errors 0 0  
Time Stamp errors 0 0  
Shed Stamp errors 0 0
```

E-lab Advisor

Support > Product and Diagnostic Tools > Environment Analysis Tools > E-Lab Advisor

E-Lab Advisor

Upload

Reports Search

SANsummary

Help

File Upload (Required)



Accepts EMCGrab, EMCReport, Cisco, McData, Brocade, SYMAPI logs and Celerra files

Service Request number

Project Name

Site Name

CCA5 send to CCA5 server

CCA Party Number

Email Report to aleontev@ocs.ru

Upload and Create Report(s)

E-lab Advisor (справка)

E-Lab Advisor

<http://elabadvisor.emc.com/>

Upload

Reports Search

SANsummary

Help

Getting Started

Upload

Upload Summary

Data Collections

Reports Search

SANsummary

FAQ

Data Collections

All of the following are supported for upload into E-Lab Advisor:

Hosts

[EMCgrab](#): TAR.GZ files produced by EMCgrab for the following operating systems: AIX, HP-UX, Linux, Solaris, and Tru64.

[EMCREPORTS](#): ZIP files produced by EMCREPORTS for Windows hosts

SAN Switches

Brocade: *supportshow*

Brocade: *supportsave*

Cisco: *show tech-support details*

McData: Connectrix Manager Data Collection

McData: *show all*

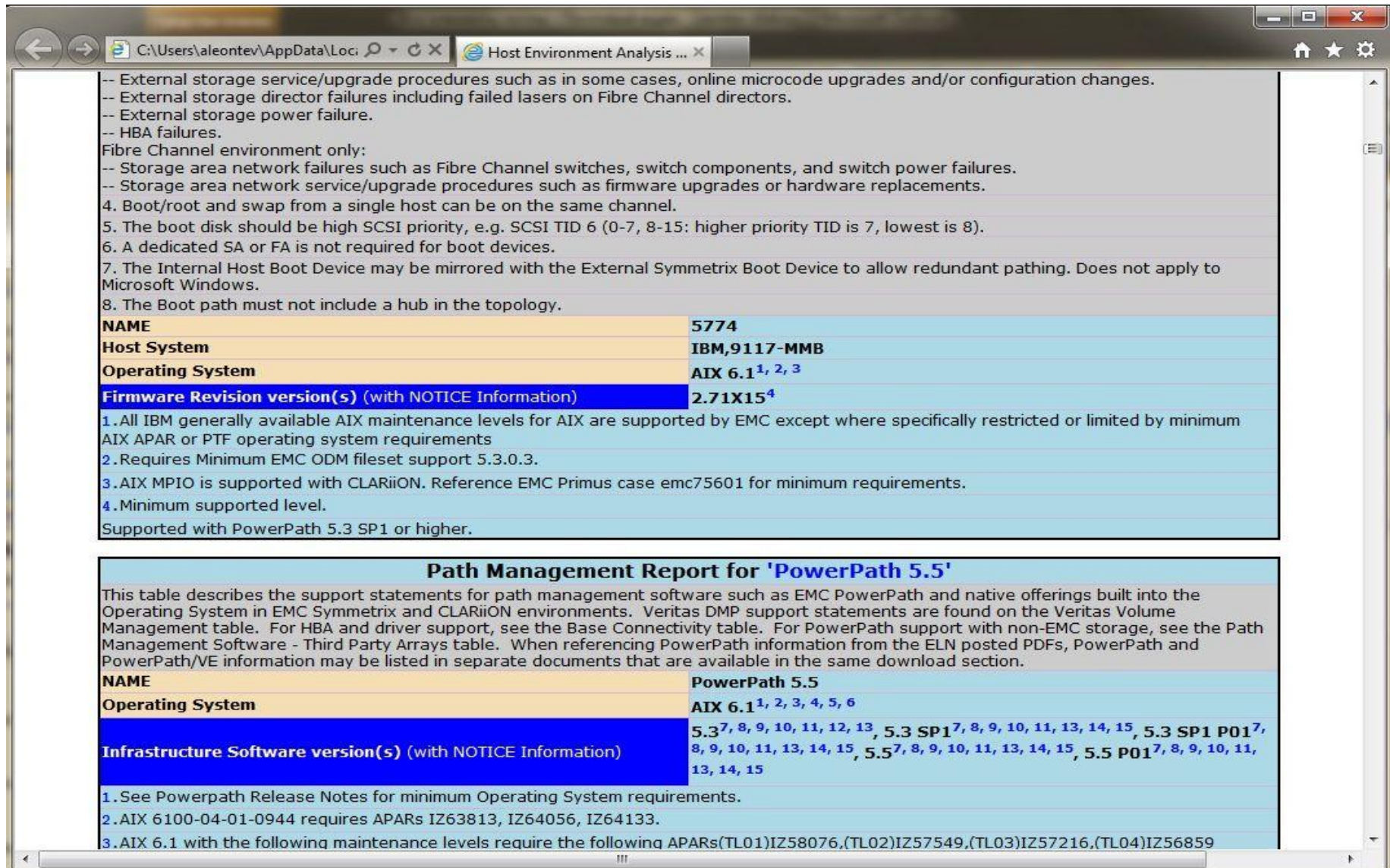
McData: Web interface -> Maintenance -> Product Information

Batches

ZIP file containing multiple items from Hosts or SAN Switches as described above.

NOTE: Batch files should not contain **folders or directories**

E-lab Advisor (отчет)



The screenshot shows a web browser window displaying a report titled "Host Environment Analysis". The report contains several sections of diagnostic information:

- External storage service/upgrade procedures:** Such as in some cases, online microcode upgrades and/or configuration changes.
- External storage director failures:** Including failed lasers on Fibre Channel directors.
- External storage power failure.**
- HBA failures.**
- Fibre Channel environment only:**
 - Storage area network failures such as Fibre Channel switches, switch components, and switch power failures.
 - Storage area network service/upgrade procedures such as firmware upgrades or hardware replacements.
- 4. Boot/root and swap from a single host can be on the same channel.**
- 5. The boot disk should be high SCSI priority, e.g. SCSI TID 6 (0-7, 8-15: higher priority TID is 7, lowest is 8).**
- 6. A dedicated SA or FA is not required for boot devices.**
- 7. The Internal Host Boot Device may be mirrored with the External Symmetrix Boot Device to allow redundant pathing. Does not apply to Microsoft Windows.**
- 8. The Boot path must not include a hub in the topology.**

| | |
|---|----------------------------|
| NAME | 5774 |
| Host System | IBM,9117-MMB |
| Operating System | AIX 6.1 ^{1, 2, 3} |
| Firmware Revision version(s) (with NOTICE Information) | 2.71X15 ⁴ |

1. All IBM generally available AIX maintenance levels for AIX are supported by EMC except where specifically restricted or limited by minimum AIX APAR or PTF operating system requirements

2. Requires Minimum EMC ODM fileset support 5.3.0.3.

3. AIX MPIO is supported with CLARiiON. Reference EMC Primus case emc75601 for minimum requirements.

4. Minimum supported level.
Supported with PowerPath 5.3 SP1 or higher.

Path Management Report for 'PowerPath 5.5'

This table describes the support statements for path management software such as EMC PowerPath and native offerings built into the Operating System in EMC Symmetrix and CLARiiON environments. Veritas DMP support statements are found on the Veritas Volume Management table. For HBA and driver support, see the Base Connectivity table. For PowerPath support with non-EMC storage, see the Path Management Software - Third Party Arrays table. When referencing PowerPath information from the ELN posted PDFs, PowerPath and PowerPath/VE information may be listed in separate documents that are available in the same download section.

| | |
|---|--|
| NAME | PowerPath 5.5 |
| Operating System | AIX 6.1 ^{1, 2, 3, 4, 5, 6} |
| Infrastructure Software version(s) (with NOTICE Information) | 5.3 ^{7, 8, 9, 10, 11, 12, 13} , 5.3 SP1 ^{7, 8, 9, 10, 11, 13, 14, 15} , 5.3 SP1 P01 ^{7, 8, 9, 10, 11, 13, 14, 15} , 5.5 ^{7, 8, 9, 10, 11, 13, 14, 15} , 5.5 P01 ^{7, 8, 9, 10, 11, 13, 14, 15} |

1. See Powerpath Release Notes for minimum Operating System requirements.

2. AIX 6100-04-01-0944 requires APARs IZ63813, IZ64056, IZ64133.

3. AIX 6.1 with the following maintenance levels require the following APARs:(TL01)IZ58076,(TL02)IZ57549,(TL03)IZ57216,(TL04)IZ56859

Спасибо за внимание!

