Case studies

Real ThinkSystem problem determination and troubleshooting case examples

Case study 1: Failed drive

- A user reported a failed drive – one of the drives could not be recognized by the OS (EXSi)
- The drive was running in JBOD mode
- The user's system was a ThinkAgile VX machine type 7Y94 (the hardware is based on the ThinkSystem SR650)
- VMware vSAN reported the issue, not XCC

Click each number in turn to see the troubleshooting procedure.

Step ①—②—③—④

Lenovo

Case study 1: Failed drive

- The user was asked to check the system LEDs, and they confirmed that no system error or HDD error LEDs were lit

- The user was asked to check XCC again, and they confirmed that there were no hardware error or warning messages

Step ①—②—③—④

Case study 1: Failed drive

The user was asked to use XCC to collect service data and then upload the service data to Lenovo Systems Care. Note that in this case, the system was running the EXSi OS, so the user could not use OneCLI to collect the FFDC log.

Quick Actions

⏻ Power Action   ID Location LED: Blink   ⬇ Service

Step **1**—②—**3**—**4**
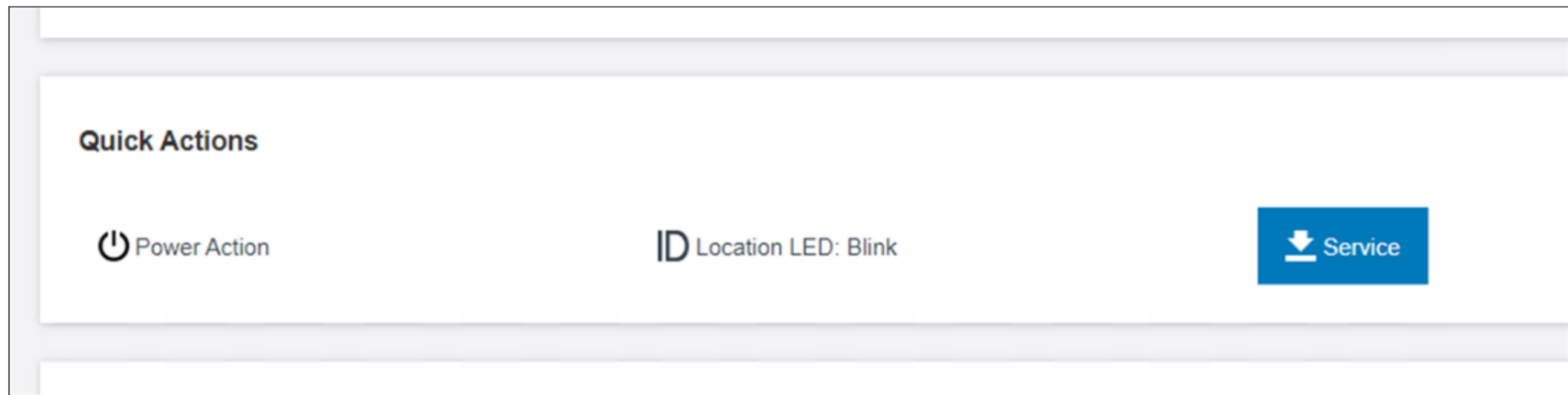
Case study 1: Failed drive

After parsing the log, there were only two warning messages in event log and neither were related to failed drive issue. The other information event logs were normal.

Index	Sev	Source	Service State ▲	Event ID	Date, Time	Message
242	W	System	serviceable	0x800701142201FFFF	02/14/2019 19:18:30.761	Sensor Phy Presence Set has transitioned from normal to non-critical state.
106	W	System	serviceable	0x800701142201FFFF	02/11/2019 21:43:02.326	Sensor Phy Presence Set has transitioned from normal to non-critical state.
610	I	System	not serviceable	0x4000003700000000	12/16/2019 10:02:00.394	ENET[CIM:ep2] IPv6-LinkLocal:HstName=XCC-USPRIESX064, IP@=fe80::7ed3:0aff:fe66:30a6 ,Pref=64 .
609	I	System	not serviceable	0x4000001900000000	12/16/2019 10:01:33.980	LAN: Ethernet[IMM : ep2] interface is now active.
608	I	System	not serviceable	0x4000001700000000	12/16/2019 10:01:20.809	ENET[CIM:ep2] IP-Cfg:HstName=XCC-USPRIESX064, IP@=169.254.95.118 ,NetMsk=255.255.0.0, GW@=0.0.0.0 .
607	I	System	not serviceable	0x4000003700000000	12/16/2019 10:01:20.342	ENET[CIM:ep1] IPv6-LinkLocal:HstName=XCC-USPRIESX064, IP@=fe80::7ed3:0aff:fe66:30a5 ,Pref=64 .

Quick Search: [ ] Go Advanced Search

Step ① — ② — ③ — ④

Lenovo

Case study 1: Failed drive

After considering the user's problem and using keywords (vSAN/JBOD/drive/failed) to search through the technical tips on the Lenovo Support website, the following possible result was found: https://support.lenovo.com/us/en/solutions/HT507438

How to determine slot location of a drive on JBOD mode failed by VMWare/ vSAN – Lenovo ThinkSystem

Symptom

Drives in JBOD mode (that is, drives attached to an HBA) can be marked as failed by the software (OS, application).

This may occur without an actual hardware fault. Therefore, the system will not illuminate the fault LED of the drive being marked 'bad'.

(where JBOD = just a bunch of disks/drives, HBA = Host Bus Adapter)

Suggested action: Follow the instructions in the technical tip. Use commands to locate the failed drive and then replace it. If the problem remains, escalate the problem to the VMware support team.

Step ❶—❷—❸—④

Case study 2: DIMM issue

- A user reported a DIMM error issue: System DIMM 17 had failed
- The user's system was a ThinkAgile HX machine type 7X83 (the hardware is based on the ThinkSystem SR630)
- XCC reported the failed DIMM

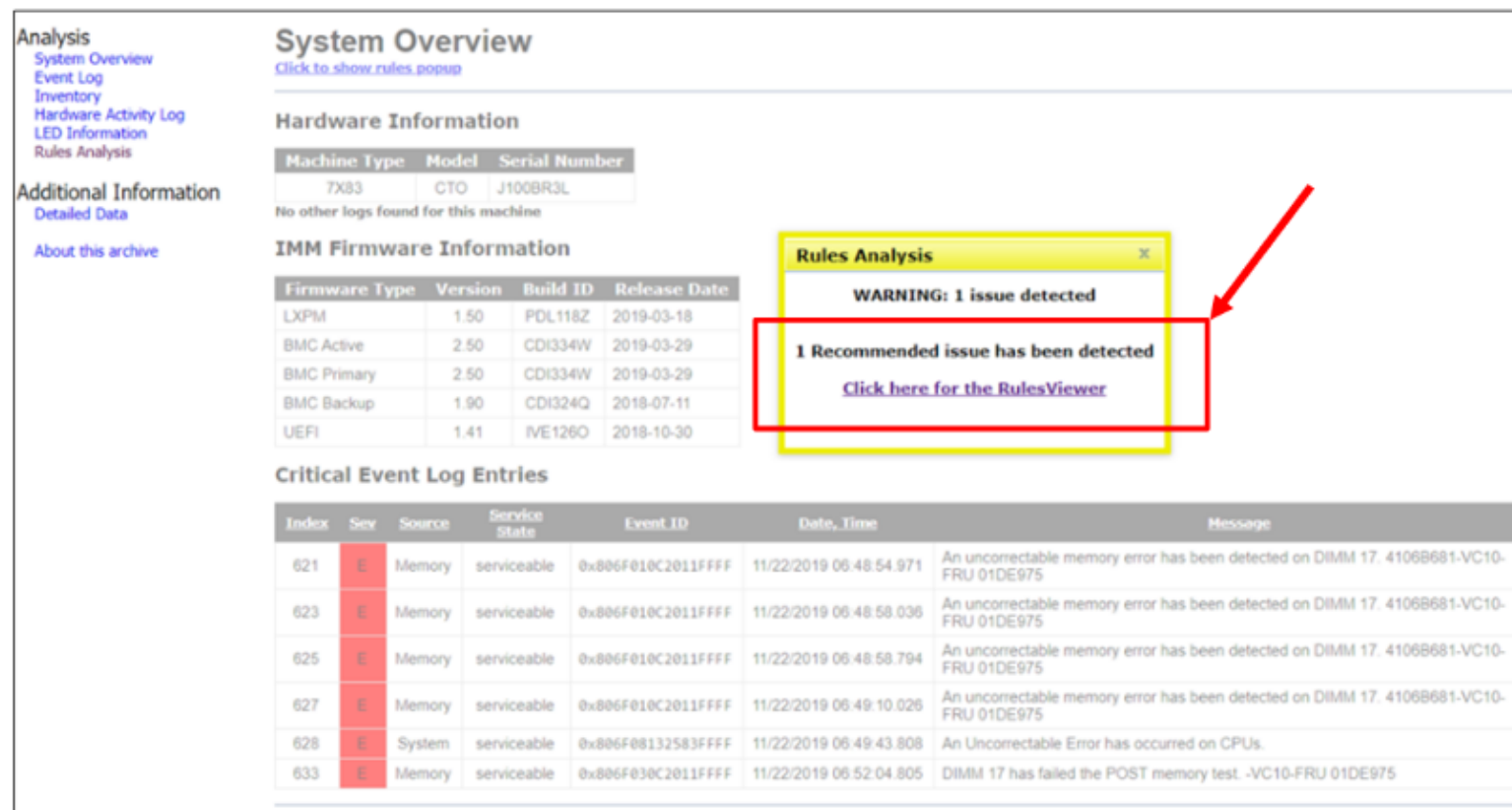Click each number in turn to see the troubleshooting procedure.

Step ❶─❷─❸

Lenovo

Case study 2: DIMM issue

In this case, XCC did report the hardware error, but given that it's a solution-level product (ThinkAgile HX), collecting logs and log analysis are still the recommended actions.

The DIMM 17 and CPU errors are displayed in the log parsing results under **Critical Event Log Entries**. A rules analysis result was also available.

Step ①—❷—❸

Case study 2: DIMM issue

Rules analysis detected that the system UEFI setting did not match the recommended UEFI settings. Note that as this is a solution-level system, all UEFI settings must match the Lenovo manufacturing settings or there might be unexpected errors.

Refer to technical tip HT115952 in the **Action Plan/Resolution** section for more information about this problem.

Rules Analysis

Total Number of Rules: 1
Selected Rule Category : undefined

Type	Ratin	ID	Message
⚠ Recommended	🔷	RecommendedUEFISettingsNotDetected	Recommended UEFI settings not detected for HX Systems

Description

Current UEFI settings do not match the recommended UEFI settings for machine types 7X82, 7X83, 7X84, 7X81, 7Y88, 7Y89, 7Y90, 7Z03, 7Z04 or 7Z05

Action Plan/Resolution

Sub-optimal UEFI settings detected for HX Solution. See HT115952 for more information.

Properties	Values
Machine Type	7X83
Processors.C-States	Disable
Processors.C1EnhancedMode	Disable
ProcessorsEnergyEfficientTurbo	Disable
Power.PowerPerformanceBias	Platform Controlled
Power.PlatformControlledType	Maximum Performance
DevicesAndIoPorts.PCI64-BitResourceAllocation	Auto
DevicesAndIoPorts.MMConfigBase	3GB

Survey

Rate the effectiveness of this rule for resolving the issue:
- ⚪ 🟢 Not Relevent
- ⚪ 👤 Action plan failed
- ⚪ 👤 Action plan worked
- 🔷 Survey results not available
- ⬜ Survey results not set

Submit

Step ①—②—③

Lenovo

Case study 2: DIMM issue

Suggested Action: Do not replace any hardware. Ask the user to go to **UEFI System Settings –> Operating Modes** and change the settings to match the following values.

Action Plan/Resolution

Sub-optimal UEFI settings detected for HX Solution. See **HT115952** for more information.

Properties	Values
Machine Type	7X83
Processors.C-States	Disable
Processors.C1EnhancedMode	Disable
ProcessorsEnergyEfficientTurbo	Disable
Power.PowerPerformanceBias	Platform Controlled
Power.PlatformControlledType	Maximum Performance
DevicesAndIoPorts.PCI64-BitResourceAllocation	Auto
DevicesAndIoPorts.MMConfigBase	3GB

Step ①—②—③

Lenovo

Case study 3: System power-on failure

- A user reported that their system could not power on after power cycling
- The user could still access XCC where they found a sensor ME error message
- The user's system was a ThinkAgile HX machine type 7X83 (the hardware is based on the ThinkSystem SR630)

Click each number in turn to see the troubleshooting procedure.

Step **1**—**2**—**3**—**4**

Lenovo

Case study 3: System power-on failure

The user was asked to collect the log and then upload it to Lenovo Systems Care.

Two sensor ME status errors were displayed in the log parsing results under the **Critical Event Log Entries** section. A rules analysis result was also available.

System Overview
Click to show rules popup

Hardware Information

Machine Type	Model	Serial Number
7X83	CTO	J100D01F

No other logs found for this machine

IMM Firmware Information

Firmware Type	Version	Build ID	Release Date
LXPM	1.50	PDL118Z	2019-03-18
BMC Active	2.60	CDI334Y	2019-05-07
BMC Primary	2.60	CDI334Y	2019-05-07
BMC Backup	2.19	CDI330G	2019-02-18
UEFI	2.13	IVE136X	2019-05-17

Rules Analysis   x

WARNING: 2 issues detected

1 Critical issue has been detected
1 Recommended issue has been detected

Click here for the RulesViewer

Critical Event Log Entries

Index	Sev	Source	Service State	Event ID	Date, Time	Message
277	E	System	serviceable	0x800702282E01FFFF	02/02/2020 17:51:56.963	Sensor ME Status has transitioned to critical from a less severe state.
296	E	System	serviceable	0x800702282E01FFFF	02/21/2020 19:20:39.092	Sensor ME Status has transitioned to critical from a less severe state.

Step ①──②──③──④

Lenovo
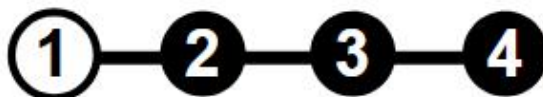
Case study 3: System power-on failure

Rules analysis suggested that the system was failing to start with ME in critical state. The user was referred to technical tip HT504864 for more information.

Description

Machine type starts with 7X or 7Y, the LED fault light is ON and the System Event log contains a message with id PLAT0522.

Action Plan/Resolution

If the system is failing to power on with ME in critical state... See **HT504864** for more information.

Properties	Values
Machine Type	7X83
LED Name	Fault
LED Status	on
Event ID	PLAT0522
Event Message	Sensor ME Status has transitioned to critical from a less severe state.

Survey

Rate the effect

- ⊘ Not F
- 👎 Acti
- 👍 Acti
- ❓ Survey re
- ☐ Survey r

Submit

Step ❶—②—❸—④

Case study 3: System power-on failure

Suggested action: Follow the technical tip HT504864 solution to update the system XCC firmware.

Note: ThinkAgile solution-level system firmware must follow the Best Recipe. If you find the suggested firmware version in the solution is outside the Best Recipe, escalate to the next level of support to confirm the correct action.

Symptom

When power cycling the system, the XCC may show the following error:

ERROR PLAT0522 Sensor ME Status has transitioned to critical from a less severe state. FQXSPUN0019M

(where XCC = Lenovo XClarity Controller)

Solution

This behavior is corrected in XCC version 1.70 (Build ID: CDI320S) for the following products:

- ThinkSystem SR630, Machine Types: 7X01,7X02
- ThinkSystem SR550, Machine Types: 7X03,7X04
- ThinkSystem SR650, Machine Types: 7X05,7X06
- ThinkSystem SR530, Machine Types: 7X07,7X08
- ThinkSystem ST550, Machine Types: 7X09,7X10
- ThinkSystem SR590, Machine Types: 7X98,7X99
- ThinkSystem SR570, Machine Types: 7Y02,7Y03
- ThinkSystem ST558, Machine Types: 7Y15,7Y16
- ThinkAgile VX Series, Machine Types: 7Y13,7Y14
- ThinkAgile HX Series, Machine Types: 7X83,7X84

Step ①—②—③—④

Case study 3: System power-on failure

Users are sometimes not able to update the system firmware. When this happens, use the error message as keywords to search for an alternative workaround on the Lenovo Support website. In this case, another technical tip, HT508933, provided a workaround that could be used to solve the problem without updating the firmware.

Solution

This is a Intel C620 PCH design limitation.

It is recommended to have a delay of over eight (8) seconds between each power cycle.

Additional Information

With a short power cycle duration of less than eight (8) seconds, the Intel Management Engine (ME) will stay in an incorrect power state.

It is recommended to have a delay of over eight (8) seconds between each power cycle in order to have the Intel ME work in the right power state.

If users experience this issue, try to restart the XCC or AC power cycle to recover system.

Step ❶—❷—❸—④

Lenovo
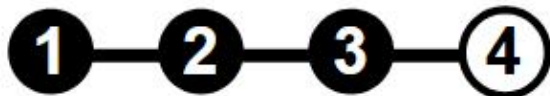
Case study 4: PSU issue

- A user said XCC reported a failed PSU, but the PSU returned to a normal status without any service actions. This happened multiple times.

- The user's system was a ThinkSystem SR590 type 7X99

- The user said this issue happened multiple times on other SR590 servers in their data center

Click each number in turn to see the troubleshooting procedure.

Step **1** — **2** — **3** — **4** — **5**

Case study 4: PSU issue

- The user was asked to collect the log.
- After parsing the log, a Power Supply 1 Failed message was displayed.
- There were multiple PSU1 failure and transitioned from normal to non-critical state warning event logs
- Rules analysis was not available in the log parsing results.

Index	Sev ▲	Source	Service State	Event ID	Date, Time	Message
385	W	Power	serviceable	0x800701080A014000	01/11/2020 01:53:32.200	Sensor PSU1 PF Failure has transitioned from normal to non-critical state.
384	W	Power	serviceable	0x806F02080A01FFFF	01/11/2020 01:53:32.070	Failure predicted on Power Supply 1.
381	W	Power	serviceable	0x800701080A014000	01/11/2020 01:52:22.690	Sensor PSU1 PF Failure has transitioned from normal to non-critical state.
380	W	Power	serviceable	0x806F02080A01FFFF	01/11/2020 01:52:22.075	Failure predicted on Power Supply 1.
377	W	Power	serviceable	0x800701080A014000	01/11/2020 01:41:52.190	Sensor PSU1 PF Failure has transitioned from normal to non-critical state.
376	W	Power	serviceable	0x806F02080A01FFFF	01/11/2020 01:41:52.030	Failure predicted on Power Supply 1.
373	W	Power	serviceable	0x800701080A014000	01/11/2020 01:30:32.189	Sensor PSU1 PF Failure has transitioned from normal to non-critical state.

Critical Event Log Entries

Index	Sev	Source	Service State	Event ID	Date, Time	Message
1	E	Power	serviceable	0x800702080A010100	07/08/2019 17:46:24.214	Sensor PSU1 Failure has transitioned to critical from a less severe state.
6	E	Power	serviceable	0x806F01080A01FFFF	07/08/2019 17:46:33.112	Power Supply 1 has Failed.

Step (1)—(2)—(3)—(4)—(5)

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Case study 4: PSU issue

- Although rules analysis was not available, the user's description of the problem (the issue happened multiple times on multiple systems) suggested that this might have been a common defect issue.

- This might have been a PSU issue, so the servicer verified the PSU details, such as PSU FRU and manufacture brand.

- From the parsing result, **Detailed Data** can be clicked for more information about the system.

Lenovo FFDC Parser   callisto-[7X99CTO][ ]   Captured on Sat Ja
Parsed on   Mon J

Analysis
System Overview
Event Log
Inventory
Hardware Activity Log
LED Information
Rules Analysis

Additional Information
Detailed Data

About this archive

Hardware Information

Machine Type	Model	Serial Number
7X99	CTO	

No other logs found for this machine

IMM Firmware Information

Firmware Type	Version	Build ID	Release Date
LXPM	1.70	PDL122H	2019-09-21
BMC Active	2.54	CDI336D	2019-04-19
BMC Primary	2.54	CDI336D	2019-04-19
BMC Backup	2.54	CDI336D	2019-04-19
UEFI	2.10	TEE636U	2019-04-19

Step   **1**—**2**—**3**—**4**—**5**

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Case study 4: PSU issue

- On the Detailed Data page, go to **FRU Device Info – All**
- The system PSU FRU was 01PF515, and its manufacturing name was ACBE, which stands for the Acbel company

Lenovo FFDC Parser [7X99CTO1WW][J301L57V]

parser version: 2.45
capture@ Sat Jan 11 09:57:27 +08 2020
uptime: 09:57:26 up 17 days, 14:47, 0 users, load average: 17.31, 10.22, 8.19

Adam Configuration
Boot Performance
Boot Performance2
BMC Boot
  BMC Reset Summary
Firmware Update
  Firmware Version
  Firmware Update Log
  Firmware Update Hisotry
CMR Log
AAA Log
EDDC
FPGA Diagnosis
  FPGA dump
FFDC Parser's Log
  Log Message
  ffdc_target.gzip
  Parser Version History
Sorted Time Logs
  Time Log - All
FRU Device
  FRU Device Info - All

other_log

FRU_Device	MFG_Date	MFG	Product_Name	Serial_Number	Part_Number	FRU_Number	POS_ID
Backplane 1 (ID 81)	Mon Nov 4 20:00:00 2019	LNVO	LENOVO Product	L1HF9AP0DDP	SC57A01988	01GV282	6c00
PCI Riser 1 (ID 65)	Mon Oct 14 20:00:00 2019	LNVO	LENOVO Product	W2ZS9AL00BV	SC57A22738	00MX796	1000
PHY Card (ID 68)	Mon Nov 11 20:00:00 2019	LENOVO	LENOVO Product	S3SZ9BB01KA	SN37A18686	01PE408	0003
PSU 1 (ID 33)	Mon Nov 4 20:00:00 2019	ACBE	LENOVO Product	A2DB9B910T0	SP57A53402	01PF515	6400
PSU 2 (ID 34)	Mon Nov 4 20:00:00 2019	ACBE	LENOVO Product	A2DB9B711FA	SP57A53402	01PF515	6400

Step ① — ② — ③ — ④ — ⑤

Case study 4: PSU issue

- Use possible keywords such as error message, failed part FRU, or failed part manufacturing name to search for technical tips on Lenovo Systems Care
- In this case, 01PF515 (the PSU FRU number) was used as the keyword, and technical tip HT510162 was found.

1 document(s) found for **01PF515**

HT510162 - ACBEL PSU PF FAILURE
ASSERT/DEASSERT EVENTS
★★★★★

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HT510162 - ACBEL PSU PF FAILURE ASSERT/DEASSERT EVENTS

Tech Tip at Lenovo Support Site HT510162   (Internal - Internal Lenovo or Servicer viewing only is allowed)

Symptom

In specific conditions, ThinkSystem servers may report the following events repeatedly:

    Failure no longer predicted on Power Supply 1.
    Sensor PSU1 PF Failure has deasserted the transition from normal to non-critical state.

Step ❶ — ❷ — ❸ — ④ — ❺

Lenovo

Case study 4: PSU issue

Suggested actions:

- Follow the solution in the tip to update the PSU firmware, or replace the PSU.

- If the problem still exists, escalate the problem to the next level of support.

Solution

The issue has been resolved with the following AcBel power supply unit (PSU) firmware:
    AcBel 550W PT FSF030-EL0G, firmware version 1.62
    AcBel 750W PT FSF055-EL0G, firmware version 2.62
    AcBel 750W TT FSF061-EL0G, firmware version 3.62
    AcBel 1100W TT FSF061-EL0G, firmware version 4.62

Best Practice for ThinkSystem Intel Based Servers:

    1. Check the PSU firmware and update the PSU firmware via Lenovo XClarity Controller (XCC) WebUI.

        Please get the firmware and instruction via the attachment.
     << Cogent_AcBel_PSU_firmware_and_Instruction.zip >>

    Firmware Prerequisite:

        # Lenovo XClarity Controller (XCC) 1.90 or later versions entitled to update the PSU firmware.
        # AcBel PSU firmware version is x.60 or x.61 entitled to update firmware, where x means:
            1 for 550W PT, 2 for 750W PT, 3 for 750W TT, 4 for 1100W PT

    2. If the PSU firmware is below x.60, replace the power supply unit.

Step ①—②—③—④—⑤

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Key takeways

- In the log parser, use rules analysis to determine the root cause of the problem
- A hardware error can sometimes be caused by incorrect software or hardware configuration, especially when dealing with solution-level products
- A system firmware update can sometimes be used to fix the hardware error without having to replace any hardware components
- If rules analysis is not available, use the error message, FRU part, or the part manufacturing name as keywords to search for technical tips

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