

PSOD(Purple Screen of Death) 이란?

- ESX Server Crash

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■ Purple Screen of Death

->PSOD란 VMware Hypervisor가 설치된 서버에 물리적 or 소프트웨어적으로 fail이 떨어졌을 때 발생하는 화면입니다.

윈도우 같은 경우는 Blue Screen이 발생하는 것 처럼 VMware에서는 PSOD가 발생합니다.

Ex) H/W CPU , Memory , Network Card , HBA card , VGA card 등등 물리적으로 고장이 났을 때 PSOD발생

S/W Driver , Application , 등등 호환목록에 지원하지 않거나 Customizing시 발생할 확률이 높습니다.

PSOD가 발생하게 되면 화면에 Error Code 및 Dump파일이 생성되는데 이 부분을 통해서 원인파악이 가능하게 됩니다.

PSOD화면 & Dump파일이 없다면 이러한 경우는 기본 Kernel Log로 분석 해야 하는데 시스템이 멈출 때 로그가 쌓이지 않아 분석할 수 없습니다.

PSOD 화면

VMware ESX server [release build-82663]
PCPU 0 is not responding. Cannot proceed

Physical CPU0 이 응답없음

```
0:1391/mks:DRMP 1:1313/vmm0:DRNY 2:1288/vmm0:DRNY 3:1515/vcpu-0:DR
4:1389/vmm0:DRMP 5:1393/Worker#0: 6:1514/mks:DRNYM 7:1406/vmm0:DRMP
0x41a7a4c:[0x625e94]Panic+0x17 stack: 0x868c54, 0x41a7a68, 0x41a7ac4
0x41a7a5c:[0x625e94]Panic+0x17 stack: 0x868c54, 0x0, 0x0
0x41a7ac4:[0x805136]HeartbeatDetectCpuLockups+0x365 stack: 0x0, 0x22572e5a, 0x2
2a85
0x41a7afc:[0x63b202]TimerBHHandlerLoop+0xe9 stack: 0x1456c70, 0x26ebb94, 0x17cb
80
0x41a7b3c:[0x63e111]Timer_BHHandler+0xb8 stack: 0x0, 0x282b650, 0x41a7b94
0x41a7b94:[0x6183c1]BH_Check+0x84 stack: 0x1, 0x0, 0x1101a51
0x41a7bb8:[0x61fb72]IDT_HandleInterrupt+0x85 stack: 0x41a7c04, 0x0, 0xb608000
0x41a7bcc:[0x61fc99]IDT_IntrHandler+0x4c stack: 0x41a7c04, 0x4041, 0x14041
0x41a7c7c:[0x692a2c]CommonIntr+0xb stack: 0x17cac88, 0x0, 0x41a7dec
0x41a7e28:[0x75e8fc]CpuSchedDispatch+0x487 stack: 0x2357a50, 0x17cac88, 0x32f23
d0
0x41a7e94:[0x7611c2]CpuSchedDoWaitDirectedYield+0x351 stack: 0x0, 0x0, 0x24354c
0x41a7eb8:[0x632630]IRPCWaitForEvent+0x3b stack: 0x0, 0x0, 0x63265c
0x41a7f44:[0x632d84]IRPCGetMsg+0x173 stack: 0x0, 0x0, 0x63265c
0x41a7f8c:[0x622223]DoSemaphoreWait+0x173 stack: 0x0, 0x0, 0x63265c
0x41a7fe0:[0x622465]UMKCall+0x12c stack: 0x0, 0x0, 0x63265c
```

Physical CPU0 이 응답 없음에 대한 추가적인 내용

```
50:11:37:13.988 cpu0:1391>NMI: 1625: Faulting eip:esp [0x8a75a8:0x3fbfad8]
50:11:53:13.987 cpu1:1513>Heartbeat: 470: PCPU 0 didn't have a heartbeat for 18
1 seconds. *may* be locked up
50:11:53:13.987 cpu0:1391>NMI: 1625: Faulting eip:esp [0x8a75a8:0x3fbfad8]
Starting coredump to disk using slot 1 of 1...
```

VMware S/W 관련 에러

- Upgrading vCenter Server 4.1 to 5.0 causes ESX/ESXi 4.1 host to fail with PSOD error: Spin count exceeded (VASpace) - possible deadlock with PCPU 2

Symptoms

After upgrading from vCenter Server 4.1 to 5.x, you experience these symptoms:

- The ESX/ESXi 4.1 host fails with a PSOD.
- In the PSOD screen or the system logs, you see entries similar to:

```
@BlueScreen: Spin count exceeded (VASpace) - possible deadlock with PCPU 2
2:19:58:08.201 cpu4:428426)Code start: 0x418039000000 VMK uptime: 2:19:58:08.201
2:19:58:08.209 cpu4:428426)Saved backtrace from: pcpu 2 SpinLock spin out NMI
2:19:58:08.216 cpu4:428426)0x417f80017d38:
[0x4180392acb36]Power_HaltPCPU@vmkernel:nover+0x27d stack: 0x417f80017de8
2:19:58:08.226 cpu4:428426)0x417f80017e48:
[0x4180391cbe1e]CpuSchedIdleLoopInt@vmkernel:nover+0x985 stack: 0x417f80017e88
2:19:58:08.237 cpu4:428426)0x417f80017e58:
[0x4180391d15ee]CpuSched_IdleLoop@vmkernel:nover+0x15 stack: 0x2
2:19:58:08.246 cpu4:428426)0x417f80017e88:
[0x4180390364f7]Init_SlaveIdle@vmkernel:nover+0x11e stack: 0x0
2:19:58:08.256 cpu4:428426)0x417f80017fe8:
[0x4180392b3408]SMPSlaveIdle@vmkernel:nover+0x45f stack: 0x0
2:19:58:08.274 cpu4:428426)FSbase:0x0 GSbase:0x418041000000 kernelGSbase:0xff8881a0
2:19:58:08.042 cpu2:4098)NMI: 2020: NMI IPI recvd. We Halt. eip(base):ebp:cs
[0x2acb36(0x418039000000):0x417f80017d38:0x4010] (Src0x4, CPU2)
2:19:58:08.293 cpu4:428426)Backtrace for current CPU #4, worldID=428426,
ebp=0x417f84c57958
```

원인

- ESX/ESXi 4.1 Update1이하 Version에는 vCenter 5를 지원하지 않음.

해결방안

- ESX/ESXi 4.1 Update1 적용
- ESX/ESXi 4.1 Update1에서 vCenter 5 Version이 추가 되었음.

H/W Driver 관련 에러

- ESXi 5.0 hosts PSOD with tg3 driver version 3.120h.v50.2

Symptoms

Frequent PSODs on ESXi 5.0 hosts using a tg3 driver version 3.120h.v50.2 for Broadcom Corporation NetXtreme BCM5715S NIC may show the following backtrace:

```
cpu4:5352)@BlueScreen: #PF Exception 14 in world 5352:vmm1:plmlenc IP 0x418029b61880 addr 0x0
cpu4:5352)Code start: 0x418029400000 VMK uptime: 2:17:49:57.140
cpu4:5352)0x412213a070e8: [0x418029b61880]tg3_start_xmit@com.broadcom.tg3#9.2.0.0+0x92b stack: 0x0
cpu4:5352)0x412213a07208: [0x4180298cda3c]netdev_tx@com.vmware.driverAPI#9.2+0x1df stack: 0x412213a07298
cpu4:5352)0x412213a07258: [0x418029513021]UplinkDevTransmit@vmkernel#nover+0xe4 stack: 0x410005aefad0
cpu4:5352)0x412213a072f8: [0x418029a2eb12]NetSchedSFQRunLocked@<None>#<None>+0x1e9 stack: 0x412213a07418
cpu4:5352)0x412213a073d8: [0x418029a2f0e7]NetSchedSFQInput@<None>#<None>+0x42e stack: 0xd4b0abc0014
cpu4:5352)0x412213a07488: [0x418029581bfd]NetSchedInput@vmkernel#nover+0x320 stack: 0x410028401540
cpu4:5352)0x412213a074f8: [0x41802951a00b]IOChain_Resume@vmkernel#nover+0x17a stack: 0x410028401540
cpu4:5352)0x412213a07528: [0x41802950921d]PortOutput@vmkernel#nover+0xac stack: 0x1e318000000000
cpu4:5352)0x412213a075a8: [0x418029a1a0f6]TeamES_Output@<None>#<None>+0x171 stack: 0x412213a075e8
cpu4:5352)0x412213a077a8: [0x418029a0dbfb]EtherswitchPortDispatch@<None>#<None>+0x13d2 stack: 0x412200000019
cpu4:5352)0x412213a07808: [0x418029509750]Port_InputResume@vmkernel#nover+0x113 stack: 0x412213a07858
cpu4:5352)0x412213a07858: [0x41802950b42e]Port_Input_Committed@vmkernel#nover+0x29 stack: 0x124ca90
```

- 원인
- 해당 네트워크 드라이버 Version(tg3 driver version 3.120h.v50.2)이 문제됨.(aSync를 지원하지 않음)

- 해결방안
- 최신 네트워크 드라이버를 설치 후 문제 해결.(tg3 driver version 3.123b.v50.1)

H/W Disk space insufficient

- ESX 4 may generate a purple diagnostics screen or kernel panic after an upgrade due to an insufficient disk space

Symptoms

- ESX 4 generates a purple diagnostics screen or kernel panic during reboot after upgrading to ESX 4.0 Update 1A when using VMware Update Manager or esxupdate.
- The purple diagnostics screen contains the text:

`No place on disk to dump data`
- You might also see this in the logs:

`esxcfg-boot log:
2009-12-08 11:35:15 (32358) INFO : Replacing /etc/vmware/simple.map file...
2009-12-08 11:35:15 (32358) INFO : "/sbin/vmware-mkinitrd -v -f '/tmp/vmware.0.tmp'"
2009-12-08 11:35:15 (32358) INFO : [01;31m!!! ERROR:[00;00m Not enough space to
create ramdisk
2009-12-08 11:35:15 (32358) INFO : Command returned with non-zero status: exit status
1
2009-12-08 11:35:15 (32358) ERROR: Unable to regenerate initrd.
2009-12-08 11:35:15 (32358) INFO : "/bin/sync"
2009-12-08 11:35:16 (32358) ERROR: /usr/sbin/esxcfg-boot failed, examine
/var/log/vmware/esxcfg-boot.log for details.

esxupdate.log:
[2009-12-08 11:35:10] INFO: vibcache: Running [/usr/sbin/vmkmod-install.sh]...
[2009-12-08 11:35:16] INFO: vibcache: 2009-12-08 11:35:15 (32358) ERROR: Unable to
regenerate initrd.
Unable to regenerate initrd, system in unknown state. Please check log files for
errors and correct before rebooting.2009-12-08 11:35:16 (32358) ERROR:
/usr/sbin/esxcfg-boot failed, examine /var/log/vmware/esxcfg-boot.log for details.
[2009-12-08 11:35:16] ERROR: esxupdate: An esxupdate error exception was caught:
Traceback (most recent call last):
File "/usr/sbin/esxupdate", line 242, in ?
cmd.Run()
File "/usr/lib/vmware/python2.4/site-packages/vmware/esx4update/cmdline.py", line
382, in Run
installer.Install(self.iface)
File "/usr/lib/vmware/python2.4/site-packages/vmware/esx4update/VibCach`

원인

- 디스크 용량 부족

해결방안

- A minimum of 36MB for the /tmp if it on a separated partition
- A minimum of 24MB /boot directories.
- A minimum of 100MB for the /root directory if it on a separated partition..

Thank you

A road with a colorful geometric pattern of blue and green triangles leading into a field under a dramatic sky.

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