

Virtual Center 1.x Troubleshooting

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VMWORLD 2006

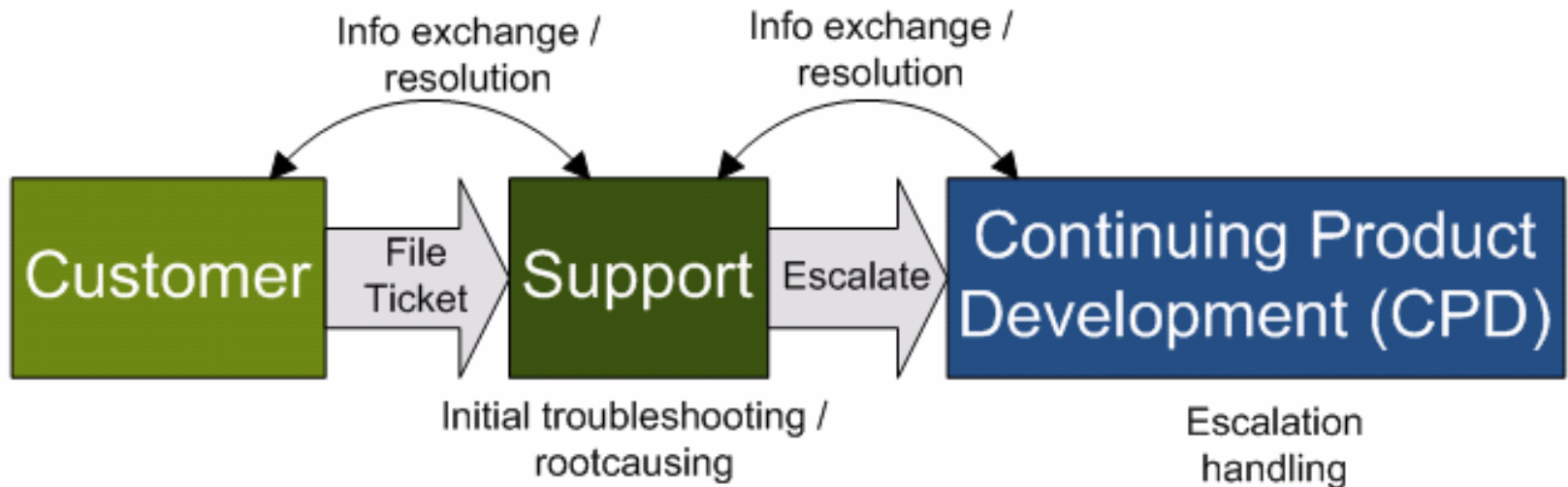
Agenda

- Goals.
- Introduction
- Troubleshooting How To and Examples
- VC1.x technical best practices
- Brief Introduction to VC2.x troubleshooting
- Q&A

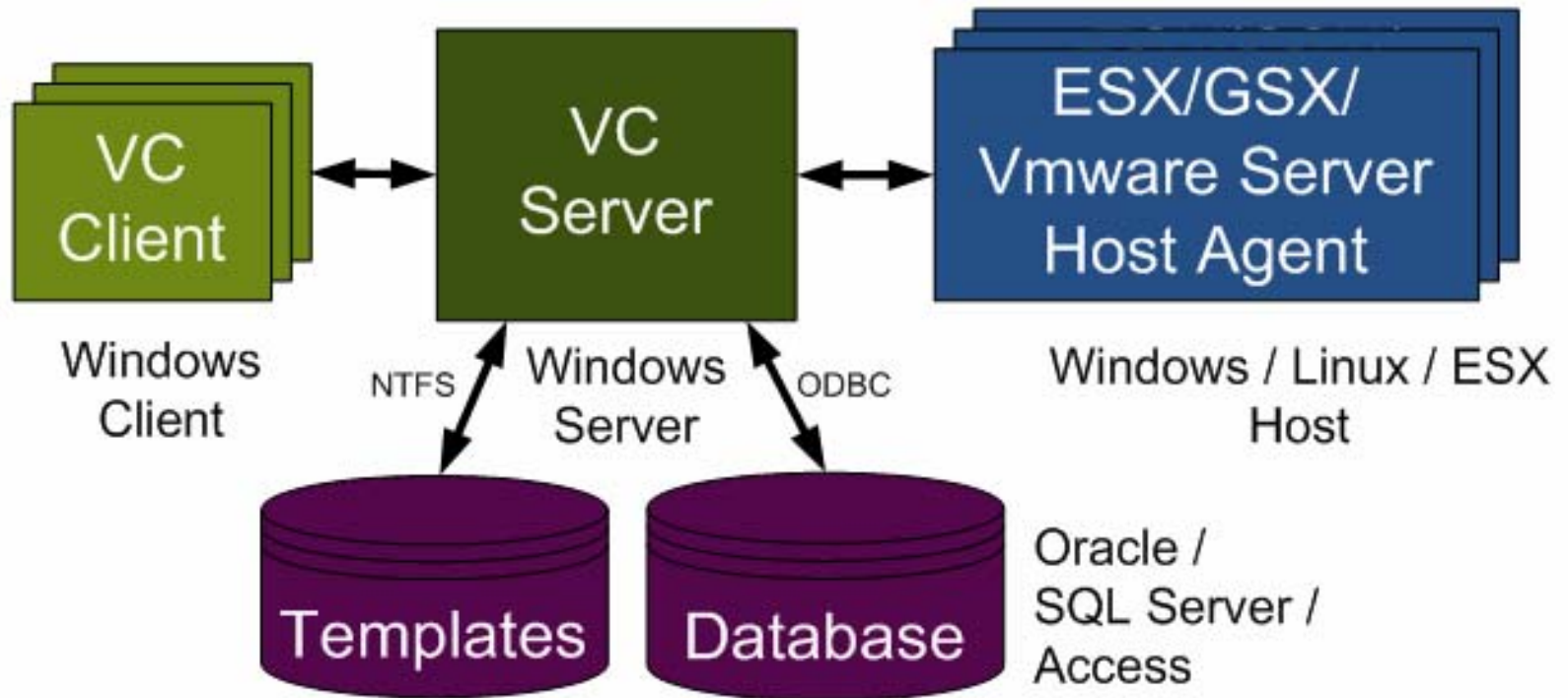
Goal of This Session

- Provide an inside view of troubleshooting
- Highlight information that is key for engineers to reduce turnaround time
- Walk thru some examples to help demonstrate how a customer can drill down into issues.
- Most importantly collect feedback to help us serve you better.

Processing Customer Issues



Overview of VC1.x Related Components



Troubleshooting Information -General

- Problem symptom
- Exact error message, provide screenshot where possible
- Date / Time of problem
 - Make sure your machine's time is correct.
 - Record time zone differences (if any) between machines.
- Problem Frequency – consistent or intermittent?
- Record : host name/IP address, VM name/ IP address.
- Changes to system
 - New operation or workload?
 - OS upgrade?
 - New application installed or existing application upgraded?
 - New hardware added?
- Steps to reproduce if relevant

Troubleshooting Information --- Log Files

VC Client



Client-<Date><PID>.log

Location:

C:\Docume~1\\
Locals~1\Temp

VC Server



Vmware-vpxd-*.log

Location:

C:\Windows\temp\

Host Agent



Vmware-serverd*.log or
Vmware-ccagent*.log

Location:

C:\Windows\temp\
\var/log/vmware

To collect VC client and server logs, use script “vclogs.wsf”. See KB1935:
http://www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=1935

For host agent (serverd) logs, run vm-support script. See KB653
http://www.vmware.com/support/kb/enduser/std_adp.php?p_faqid=653

Troubleshooting Information --- System Setup Info

- OS version.
- Virtual Center (VC) build/version.
- Host build/version.
- Number of concurrent VC clients.
- Number of hosts managed by VC.
- Any specific config option differences from default values that VMware provides.
 - Host agent config (/etc/vmware/config)
 - VC server (C:\Documents and Settings\All Users\Application Data\VMware\VMware VirtualCenter\config.ini)

Troubleshooting Information --- Database Info

- Full VC database if applicable
- Scale of the database.
 - Run script to get the table size.
 - **Number of hosts** *. Stats interval config *
 - For example, select count(*) from VPX_HOST
- DB integrity script result *. For example,
 - --all domain should have valid VMGroup id (in vpx_vmgroup table)
select * from vpx_domain
where vmgroup not in (select vmgroup_id from vpx_vmgroup)
- SQL profiler.
 - Provides detail information on backend Database activity.

(*) Please refer to appendices for the complete list of these scripts.

Troubleshooting Information --- Other

- Event Log
 - Export the application, system and security logs from the Windows Event Viewer as .evt files.
- Perfmon
 - Record activities of system resources such as CPU, memory, and so on.
- Include summary of your findings.

I am Jeff, and I rock. Sometime, on a good day...
with a tailwind, searching for bugs...



Troubleshooting ---- Understand VC Client Logs

- Format
 - <Category> <Date Time> <MESSAGE>
 - Categories
 - command – command sent to server (Remove VM)
 - client – no category specified
 - exception – exception
- Connected to
 - [client] 5/31/2006 1:54:48 PM
 - Connected to localhost (VMware VirtualCenter 1.4 build-0000) as Administrator
- Activity
 - [command] 6/7/2006 1:03:01 PM Executing setDatastoreProperties...

Troubleshooting ---- Understand VC Server Logs

- Format
 - <Date Time> <ThreadName>| [<TreadID>] <MESSAGE>
 - MESSAGE – [COMPONENT] INFORMATION
- Product information
 - May 31 13:54:04: app| Log for VMware VirtualCenter pid=2684 version=1.4 build=build-0000 option=DEBUG
- Database information
 - May 31 13:54:04: app| [3464] [ARCHIVER] Successfully connected to ODBC through DSN=VMware VirtualCenter
- Waiting for connection
 - May 31 13:54:12: app| [3464] VMware VirtualCenter ready for client connections on port number 905
- Activity
 - Jun 07 13:03:01: app| [1716] [VpxdLro] -- BEGIN #b7 -- [-Updating datastore Jun 07 13:03:04: app| [1208] [VpxdInvtHost] Lost connection to host <host name>. Initiating reconnect

Troubleshooting ---- Understand Host Agent Logs

- Format

- <Date Time> <ThreadName>| <MESSAGE>
- MESSAGE – [COMPONENT] INFORMATION

- Product information

- May 31 13:53:59: app| Log for VMware Server pid=2252
version=e.x.p build=build-23894 option=BETA

- Managed by

- May 31 13:54:13: app| New connection on socket server-vcvmdb from
host <host name> (ip address: 10.17.153.59) , user: Administrator

- Activity

- Sep 28 17:25:14: app| [VMCopierServer:1159489514.002] Starting
VmCopyServer. cfgPath: /home/vmware/New Virtual Machine/New
Virtual Machine.vmx, operationType: vmColdInfo

I like to find bugs and treat them nicely...



Example 1: Having issues when cloning VMs

- Product: Virtual Center
- Description : Having issues when cloning VM's. Not only does the cloning not work, it is deleting a file from the original VM image.
- Symptoms : End user received error message “reason unknown”
- Other Information
 - Source VMDK is <vm name>.dsk



Example 1: Identifying and Analyzing Log Entries

■ Serverd logs

- Aug 02 07:17:32: app| [CloneVMDst:1122980813.018] Comiting VmCopyClient.
- Aug 02 07:17:32: app| VmsdVmcopier: CopyFinish called.
- Aug 02 07:17:32: app| VmsdVmcopierInstantiateVm: cfgFile '/home/vmware/<vm name>/<vm name>.vmx', cfgHash 'd2a5956676ad64dc'.Aug 02 07:17:32: app| --- VMDB error 0 ---
- Aug 02 07:17:32: app| [CloneVMDst:1122980813.018] Aborting.
- Aug 02 07:17:32: app| Deleting disk file: SAN_Disk_1:<vm name>.dsk
-
- Aug 02 07:17:32: app| VMHS: Deleting file: /home/vmware/<vm name>/<vm name>.vmx
- Aug 02 07:17:32: app| Deleted directory: '/home/vmware/<vm name>'
- Aug 02 07:17:32: app| [CloneVMSrc:1122980812.016] Finishing.

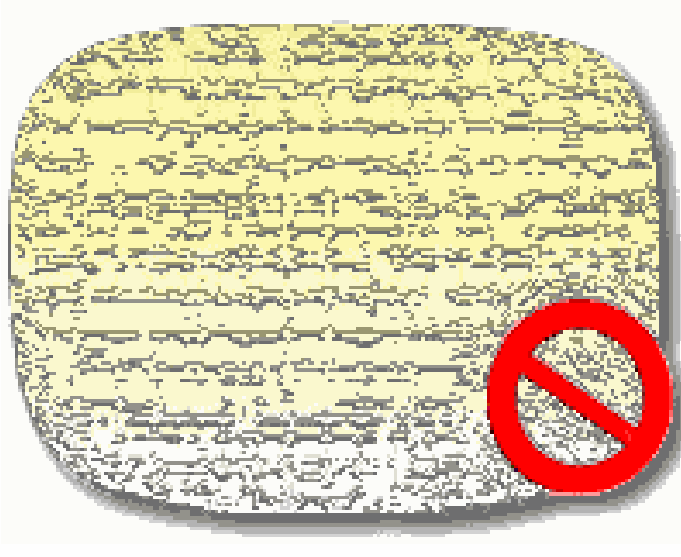
Example One: Narrowing it down further

- The disk file deletion log entry catches our attention, does not give us enough though.
- So, we next analyze the VM config file. Two suspicious points noted:
 - There are two entries for the same disk file:
 - `scsi0:0.name = "SAN_1:<VM name>.dsk"`
 - `scsi0:0.fileName = "SAN_1:<VM name>.dsk"`
 - The version entry is missing
- Is there a workaround ?
- Of course since we have access to the code, we confirmed that bad disk entries will fail the clone operation. Also, during the rollback process, the source disk will be deleted. It turned out this bad config file comes from an old version of a third party tool.

Example Two: VC Server Crashes

■ Key Information

- VC server is installed on a VM named <vm name>.
- The VM runs on ESX 2.1.0 build 7728.
- Uses SQL database which resides on another VM.
- Log files can be found in ftpsite:/<ticket#>/Outage.
- VC Server crashed between 11:30 & 11:55AM on 2/24/05



Case Study Two: Identifying and Analyzing Log Entries

- VC server log
 - Feb 24 11:33:56: app| Failed to add connection to database : -32
 -
 - Feb 24 11:44:27: app| [2180] [Vpxd] Initiating shutting down
 - Feb 24 11:45:22: app| [2288] PANIC: Out of memory trying to allocate 24 bytes.
 - Feb 24 11:45:22: app| [2484] PANIC: Out of memory trying to allocate 2 bytes.
 -
 - Feb 24 11:45:23: app| ----Backtrace using dbghelp.dll----....
 - Feb 24 11:45:23: app| backtrace[00] ebp 0x0a2cf374 eip 0x0057beda
.....
 - Feb 24 11:45:23: app| [2464] [Vpxd] Shutting down now

Example Two: Further Troubleshooting Steps

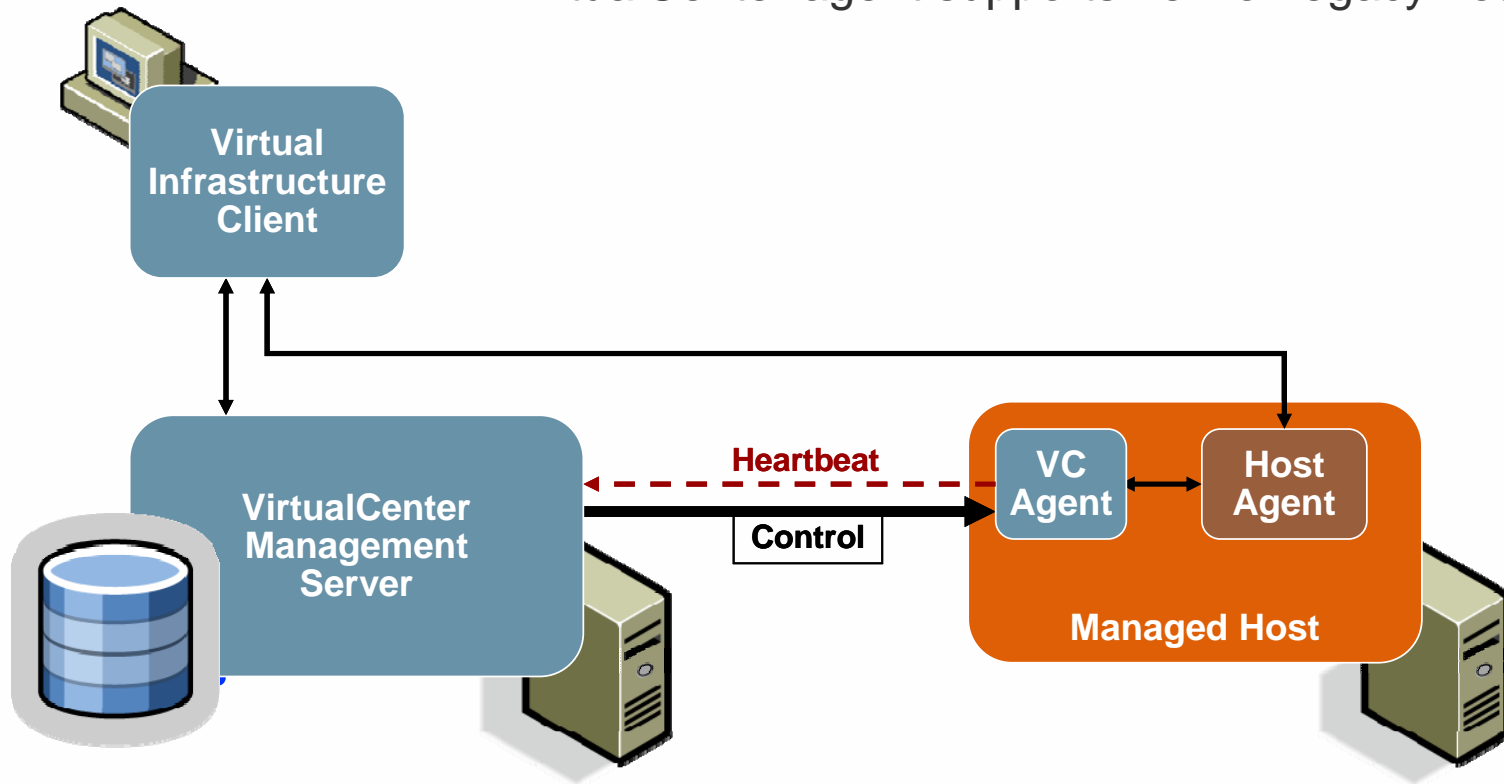
- Found following suspicious points after further exam the log file:
 - There were some database connection problem.
 - Feb 12 11:33:56: app| Failed to add connection to database : -32
 - The system ran out of memory.
 - Feb 12 11:45:22: app| [2288] PANIC: Out of memory trying to allocate 24 bytes.
- Checked VM setup to ensure memory is good enough.
- Could not access customer's database because of strict security policy. Developed SQL script to check table size and config options.
- Further log file analysis identified following log entry
 - Aug 11 20:43:26: app| [2132] [DebugTime] Stats:ArchiveRead took 13637 sec. (took about 4 hours to load stats.)
- It turned out the stats interval was set to a very small value.

VC Technical Best Practices

- Refer to the following link for a complete best practices list:
http://www.vmware.com/pdf/vc_technical_best.pdf
- Some highlights covered above:
 - Basic platform/hardware requirements.
 - Upgrade hardware to support more hosts and VMs.
 - Using Oracle or SQL Server for production deployments.
 - Vmotion basic requirements
 - Upgrade VC to most recent version if possible.
 - If any issue, backup logs by running vm-support scripts.
- This session is mainly for VC1.x troubleshooting. Please do review the above link for more best practices.

A Glimpse of VC 2.x

- Host agent exports virtual infrastructure API on ESX Server 3.0
- VirtualCenter agent supports new or legacy hosts



VC2.x Log Files

- Please refer to appendices on how to understand and where to find VC2.x log files.

Example: Timed out waiting for Server Response

- Description :
 - Login to VC Client as admin.
 - Go to Datastore view from Inventory
 - Right click on any data center
 - Select Add Permission.
 - Go through the wizard.
 - When you click ok to finish, we get this error "timed out waiting for the server response"

Example: Identify and Analyze Logs

- Questions to be answered to help narrow down where to look
 - When did the VC Client send the request to VC server?
 - When did the VC server receive the VC client request to start processing the task? Was there any delay to receive the request?
 - Did the task complete successfully eventually? If it did, when did it complete? What was the total operation time?
 - Did the task fail with an error? If fail, what was the error?
 - How many users/groups were added?

Example: Identify and Analyze Logs

- VC client

- *[Command] 2006-05-23 16:25:34.661 Executing SetEntityPermissions on vim.AuthorizationManager:AuthorizationManager sync'ly*
- *[ShowExcp] 2006-05-23 16:26:04 RequestTimedOut at VirtualInfrastructure.Vmdb.Command.ExecuteHelper() at VirtualInfrastructure.Vmdb.TransportImpl.RemoteMethod(ManagedObject mo, String opName, Object[] pars) at Vmomi.AuthorizationManager.SetEntityPermissions(ManagedEntity entity, PermissionArray permission) at VpxClient.Common.Util.Authorization.AddAclMulti(Control owner, ArrayList entities)*

Example: Identify and Analyze Logs

■ VC server log

- > *[2006-05-23 16:25:34.661 'App' 1576 info] [VpxLRO] -- BEGIN task-internal-1311 -- -- vim.AuthorizationManager.setEntityPermissions*
- > *[2006-05-23 16:25:34.951 'App' 1576 verbose] [VpxdMoEventManager] Event[51]: Permission created for DOMAIN\user1 on ESXserver, role is Read-Only, propagation is enabled*
- > *[2006-05-23 16:25:35.200 'App' 1576 verbose] [VpxdMoEventManager] Event[52]: Permission created for DOMAIN*
- > *.....*
- > *[2006-05-23 16:26:09.889 'App' 1576 info] [VpxLRO] -- FINISH task-internal-1311 -- -- vim.AuthorizationManager.setEntityPermissions*

Example: Further Troubleshooting Steps

- It turned out the VC server and Active Directory are in different country. The network connection between them is slow.
- Two possible workarounds:
 - Reduce the number of users added in a single shot
 - Increase the timeout. Go to Administration->Server Setting->Timeout Setting.

Q & A

- Thank you!

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Your Bugs Will Be in Good Hands...



Appendices 1 – VC2.x log files

- Following slides will describe where to find VC2.x log files and how to understand log entries

VC2.x Client Log – Format, Location, File Name

- **Format:**
 - [**<Category>**] **<Date>** **<Time >** **<Message>**
- **Location:**
 - *%TEMP%\vpx (relative to the user running the client)*
- **File name:** *viclient-*.log*

VC2.x Client Log --- Information You Can Get (1)

- VC Client version and process id.
 - *[startup] 2006-10-18 10:28:29 Log for Virtual Infrastructure Client, pid=2156, version=2.0.1, build=build-32042, option=release*
- The host that the VC client is connecting to
 - *[connect] 2006-10-18 10:28:37.874 Connecting to: localhost*
- Command sent to a server or response from server.
 - *[Command] 2006-10-18 16:34:54.733 Executing CreateVm on vim.Folder:group-v4 sync'ly*
 - *[Command] 2006-10-18 16:34:54.827 Return (status=done) for CreateVm on vim.Folder:group-v4*
- Action at transport level between VC client and a Server
 - *[transport] 2006-10-18 16:34:55 Created ManagedObject vim.VirtualMachine:vm-44*

VC2.x Client Log --- Information You Can Get (2)

- Miscellaneous debug information
 - *[QuickInf] 2006-10-18 10:28:42.984 Retrieving Permissions data*
- Critical information
 - *[Critical] 2006-10-18 10:28:40.890 Finished building InventoryData; size = 14*
- Error exception that happens in VC Client.
 - *[ShowExcp] 2006-10-18 10:28:04.44 RequestTimedOut*
- Warning – Warning Information
 - *[Warning,] 2006-10-18 16:52:56.329 polling requested sooner than the interval; reason: poller restart; target is ClusterSummary.*

VC2.x Server Log – Format, Location, File Name

■ **General Format:**

- [*<DATE> <TIME> ‘<SUB SYSTEM NAME>’ <THREAD ID> <TRACE LEVEL>*] MESSAGE
- MESSAGE: - [*COMPONENT NAME*] [*MESSAGE*]
- TRACE LEVEL: - [*warning/info/verbose/error/trivia*]

■ **Location:**

- *%TEMP%\vpx(relative to the user account running vpxd)*

■ **Filename:** *vpxd-*.log*

VC2.x Server Log --- Information You Can Get (1)

- Virtual Center Server product information and its current process ID.
 - *Log for VMware VirtualCenter, pid=452, version=2.0.1, build=build-32042, option=Release, section=2*
- Timeout setting for SSL connection and Network File Copy (NFC)
 - *[2006-10-18 18:12:01.901 'App' 4036 info] Vmacore::InitSSL: doVersionCheck = true, handshakeTimeoutUs = 120000000*
 - *[2006-10-18 18:12:01.932 'BaseLibs' 4036 info] NFC connection accept timeout: 180000 milliseconds*
- User account the VC server running as?
 - *[2006-10-18 18:12:01.932 'App' 4036 info] Account name: SYSTEM*
- Machine information like the domain name and the hostname.
 - *[2006-10-18 18:12:08.074 'BaseLibs' 4036 info] [ADS] Local Domain:<domain name>*

VC2.x Server Log --- Information You Can Get (2)

- When did a task start? When did it finish?
 - *[2006-10-18 19:42:23.065 'App' 780 info] [VpxLRO] -- BEGIN task-24 -- group-h5 -- vim.Folder.createFolder*
 - *[2006-10-18 19:42:23.081 'App' 780 info] [VpxLRO] -- FINISH task-24 -- group-h5 -- vim.Folder.createFolder*
- Error or warning message.
 - *[2006-10-17 14:23:58.283 'BaseLibs' 17112 warning] [VpxdOsLayer] Couldn't read registry entry compatibleWith1xWebService*

VC2.x VC Agent Log – Format, Location, File Name

- **General Format:**

- > [`<DATE>` `<TIME>` '`<SUB SYSTEM NAME>`' `<THREAD ID>` `<TRACE LEVEL>`] MESSAGE

- > MESSAGE: - [COMPONENT NAME] [MESSAGE]

- > TRACE LEVEL: - [warning/info/verbose/error]

- **Location:** `/var/log/vmware/vpx`

- **File name:** `vpxa-*.log` Note: `vpxa.log` points to the current log.

VC2.x VC Agent Log --- Information You Can Get

- VPXA version information and its current process Id.
 - *Log for VMware VirtualCenter, pid=6123, version=2.0.1, build=build-32042, option=Release, section=2*
- Timeout information for SSL and Network File Copy (NFC)
 - *[2006-06-01 00:05:12.409 'App' 3076440992 info] Vmacore::InitSSL: doVersionCheck = false, handshakeTimeoutUs = 120000000*
- *Warning message*
 - *[2006-06-01 08:31:41.014 'App' 9001904 warning] [VpxaHalStats] Unexpected return result. Expect 1 sample, receive 2*
- *Error message*
 - *[2006-05-12 00:03:13.693 'App' 3076473760 error] [VpxVmddbCnx] Authd error: 514 Error connecting to hostd-vmdb service instance.*

VC2.x Host Agent Log – Format, Location, File Name

- **Format:**

- > [*<DATE> <TIME> ‘<SUB SYSTEM NAME/COMPONENT NAME/VMX Path>’ <THREAD ID> <TRACE LEVEL>*] MESSAGE

- > TRACE LEVEL: - [*warning/info/verbose/error*]

- **Location:** */var/log/vmware*

- **Filename:** *hostd-*.log* Note: *hostd.log* points to the current *hostd* log.

VC2.x Host Agent Log --- Information You Can Get

- ESX Version and hostd's process id.
 - *Log for VMware ESX Server, pid=27132, version=3.0.0, build=build-29138, option=Release, section=2*
- *Error or warning messages*
 - *[2006-04-29 02:27:38.122 'NetworkProvider' 183397296 error] Unable to set VMkernel gateway address to 10.1.1.1 as there are no VMkernel interfaces on the same network with that IP address.*
- *Actions on a VM.*
 - *[2006-06-03 01:31:34.852 'vm:/vmfs/volumes/44241552-b75d40b6-6637-0017a4a810b6/test/test.vmx' 13650864 info] State Transition (VM_STATE_ON -> VM_STATE_POWERING_OFF)*

Appendices 2 ---- VC DB Integrity Checking Scripts

--Here is a list of sql statement for vpxd DB integrity checking. All these statements should not return anything.

```
--all domain should have valid VMGroup id (in vpx_vmgroup table)
select * from vpx_domain where vmgroup not in ( select vmgroup_id from vpx_vmgroup)
--all domain should have valid parent which is farm groups(in vpx_group table)
select * from vpx_domain where parent not in (select group_id from vpx_group)
--all host should have valid parent (in vpx_domain table)
select * from vpx_host where parent not in (select domain_id from vpx_domain)
--all vms should have valid parent (in vpx_vmgroup table)
select * from vpx_vm where parent not in (select vmgroup_id from vpx_vmgroup)
--all vmgroup should have valid parent (in vpx_vmgroup table)
select * from vpx_domain where parent not in (select vmgroup_id from vpx_vmgroup)
--all group should have valid parent (in vpx_group table)
select * from vpx_group where parent not in (select group_id from vpx_group)
-- find all orphan expression states
select * from vpx_exp_eq_y_state where expression_id not in (select expression_id from vpx_expression)
select * from vpx_exp_eq_r_state where expression_id not in (select expression_id from vpx_expression)
select * from vpx_exp_ne_y_state where expression_id not in (select expression_id from vpx_expression)
select * from vpx_exp_ne_r_state where expression_id not in (select expression_id from vpx_expression)
-- find all orphan trigger
select trigger_id from vpx_trigger_condition where trigger_id not in (select trigger_id from vpx_trigger)
select trigger_id from vpx_trigger_task where trigger_id not in (select trigger_id from vpx_trigger)
select expression from vpx_trigger_condition where expression not in (select expression_id from vpx_expression)
```

Appendices 3 ---- VC DB Diagnosis Scripts

```
--Here is a list of diagnostic sql statements
--get the row count for each table
select count(*) from STATS_CONFIG
select count(*) from STATS_HOST_DATA
select count(*) from STATS_HOST_ROWS
select count(*) from STATS_HOST_TABLES
select count(*) from STATS_VM_DATA
select count(*) from STATS_VM_ROWS
select count(*) from STATS_VM_TABLES
select count(*) from VPX_ACCESS
select count(*) from VPX_ACTION
select count(*) from VPX_ACTION_ARGS
select count(*) from VPX_CONFIG
select count(*) from VPX_DATASTORE
select count(*) from VPX_DOMAIN
select count(*) from VPX_EVENT
select count(*) from VPX_EVENT_ARGS
select count(*) from VPX_EXP_EQ_R_STATE
select count(*) from VPX_EXP_EQ_Y_STATE
select count(*) from VPX_EXP_NE_R_STATE
select count(*) from VPX_EXP_NE_Y_STATE
select count(*) from VPX_EXPRESSION
select count(*) from VPX_FIELDDEF
select count(*) from VPX_GROUP
select count(*) from VPX_HISTORY
select count(*) from VPX_HOST
select count(*) from VPX_HOST_FIELDS
select count(*) from VPX_HOST_RUNTIME
select count(*) from VPX_LICENSE_HOSTS
select count(*) from VPX_LICENSE_HOSTS_GSX
select count(*) from VPX_LICENSE_MIGRATION
select count(*) from VPX_LICENSE_VPX
select count(*) from VPX_PENDINGMIG_DISKS
select count(*) from VPX_PENDINGMIGRATIONS
select count(*) from VPX_ROLES
select count(*) from VPX_SCHEDULE
```

```
select count(*) from VPX_TEMPLATE
select count(*) from VPX_TEMPLATE_DISKS
select count(*) from VPX_TRIGGER
select count(*) from VPX_TRIGGER_CONDITION
select count(*) from VPX_TRIGGER_TASK
select count(*) from VPX_USER_PROPERTIES
select count(*) from VPX_VERSION
select count(*) from VPX_VM
select count(*) from VPX_VM_FIELDS
select count(*) from VPX_VMGROUP
```

---- configurations ----

```
--get stats config
select * from STATS_CONFIG
--vpx_config
select * from VPX_CONFIG
select * from VPX_USER_PROPERTIES
```

-----check if there is any serious data corruption ----

```
--host and vm stats data
select max(COL_ID) as maxColID, min(COL_ID) as minColID, max(ROW_ID) as
maxRowID, min(ROW_ID) as minRowID from STATS_HOST_DATA
select max(COL_ID) as maxColID, min(COL_ID) as minColID, max(ROW_ID) as
maxRowID, min(ROW_ID) as minRowID from STATS_VM_DATA
```

--host and vm stats rows

```
select max(ROW_ID) as maxRowID, min(ROW_ID) as minRowID from
STATS_HOST_ROWS
select max(ROW_ID) as maxRowID, min(ROW_ID) as minRowID from
STATS_VM_ROWS
```

--host and vm stats tables current column

```
select max(CURRENT_COLUMN) as maxCurColID, min(CURRENT_COLUMN) as
minCurColID
from STATS_HOST_TABLES
select max(CURRENT_COLUMN) as maxCurColID, min(CURRENT_COLUMN) as
minCurColID
from STATS_VM_TABLES
```