

OpenVMS System and Database Administration

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A Story...

- ◆ Poor system response time, mid morning
- ◆ Started suddenly “couple weeks ago”
- ◆ “Nothing changed”!

1-AUG-2019 10:04:20.22		0	25				50				75				100						
PATRLR	CPU %		+	-	-	-	+	-	-	-	-	+	-	-	-	+	-	-	-	-	+
20282868	WBM_SN00K000E73	92	#####																		[SYSCOMMON.SYSEXE] RDB\$NATCOM
20265777	save	65	#####																		[NSR] SAVE.EXE;1
20260378	save_3	56	#####																		[NSR] SAVE.EXE;1
2029AD26	save_2	46	#####																		[NSR] SAVE.EXE;1
20262975	save_1	39	#####																		[NSR] SAVE.EXE;1
2027C0C9	WBM_SI00H000973	24	#####																		[SYSCOMMON.SYSEXE] RDB\$NATCOM

What happened...

- ◆ System Manager retired
- ◆ Operations adjusted backup schedule
 - ◆ Started running backups manually each morning
- ◆ System Managers do more than manage a system
- ◆ Great System Managers understand big picture



That was an example of a “bad thing” that can happen
when your OpenVMS expertise is unavailable

Or, goes on holiday

Or, gets sick



My System Manager Retired Now What?



Agenda

- ◆ Options for System Management
- ◆ SCI
- ◆ Best Practices



Agenda

- ◆ Options for System Management
- ◆ SCI
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Options: Hire New Employee

- ◆ Challenging to find VMS experts
 - ◆ How to determine how well they know VMS
- ◆ Experience with your hardware, storage & networks?
 - ◆ How long to come up to speed in your environment
- ◆ How long to transition from reactive to proactive?
- ◆ How to retain them?



Options: Contract Consultants

- ◆ Typically engaged in reactive mode (after a problem) or for project work
- ◆ Limited exposure / knowledge of your systems & users
- ◆ Usually not available 24x7x365
 - ◆ Will your systems be their priority?



Options: Managed Services

- ◆ Full time engagement with your systems
 - ◆ 24x7x365 monitoring and response
- ◆ Typically provider takes full responsibility
 - ◆ Top to bottom: storage through end user experience
- ◆ Benefit from team of experts, not just a person
- ◆ Benefit from lessons learned at multiple managed sites over many years of management
- ◆ Never worry about illness, vacations or personnel leaving for other opportunities



Agenda

- ◆ Options for System Management
- ◆ **SCI**
- ◆ Best Practices



About Software Concepts International

Managing OpenVMS systems and
databases requiring the highest
levels of performance and
availability – worldwide



What Sets SCI Apart

- ◆ Very accomplished team of experts – average 30+ years, former VMS/Oracle engineers
- ◆ Proactive, not reactive
 - ◆ Our goal is to prevent problems long before they occur
- ◆ Long history providing managed services – pioneered Remote Managed Services in 1995



What Sets SCI Apart

- ◆ Expertise from storage and network infrastructure through the OS to the applications
 - ◆ Including newest, latest technologies
- ◆ Security processes implemented to ISO27001
 - ◆ We meet the most stringent security requirements including financial and DOD businesses



SCI's Approach

- ◆ Proactive management
 - ◆ Prevent problems, not just react to them
- ◆ Zero unplanned down time
- ◆ Efficiently and confidently restore services
- ◆ Prevent future occurrences
- ◆ Develop confidence in running system

***Proactive does NOT mean “periodic login” to
“review logs” or “look at the system”***



SCI People

- ◆ Average 30+ years OpenVMS experience
- ◆ Many are former DEC/CPQ/HP engineers
- ◆ Small sample:
 - ◆ Bryan Holland – President, 40 years OpenVMS Consulting
 - ◆ Brad McCusker – Former OpenVMS engineer, 31 years
 - ◆ Norm Lastovica – Former Oracle Rdb engineer, 37 years
 - ◆ Keith Parris – DEC/CPQ/HP, Cluster expert, 36 years



SCI Managed Services History

- ◆ Originated circa 1995
- ◆ Global exposure in every sector including:
 - ◆ Manufacturing, Financial, Healthcare, Mass Media, Defense, Distribution, Communication segments
- ◆ Supporting customers in North America, Europe, Asia, and Australia
- ◆ Providing managed services at some sites 20+ years



Agenda

- ◆ Options for System Management
- ◆ SCI
- ◆ **Best Practices**



IT Manager's priorities:

1. Reliability
 - a) Keep the systems running
 - b) Protect the data
2. Stability
 - a) No performance or service degradation
3. Continuity
 - a) Quickly restore services if the system fails
 - b) Keep projects moving forward



RELIABILITY



Keep The Systems Running

- ◆ Your former manager was watching a lot:
- ◆ Explicitly:
 - ◆ Checking log files, critical queues, critical jobs, disk space
- ◆ Implicitly:
 - ◆ Noticing 'unusual' things
 - ◆ Based on years of system experience
- ◆ Proactive



Proactive Means:

- ◆ Need to make system management a priority
- ◆ Prevent problems, not just react to them
- ◆ Zero unplanned down time
- ◆ Efficiently and confidently restore services
- ◆ Prevent future occurrences
- ◆ Develop Confidence in running system



ESTABLISH A BASELINE

KNOW YOUR HISTORY



Do You Keep Historical Data?

- ◆ Former system manager knew what “normal” is
- ◆ Need to know your history
 - ◆ Performance Data (T₄, ECP/TDC, PAWZ, RMU statistics)
 - ◆ Not just performance data
 - ◆ Disk Space
 - ◆ History of changes (prior state & time)
 - ◆ Logical names
 - ◆ Network configuration
 - ◆ Mounted volumes
 - ◆ SYSGEN parameter values



MONITOR



Use Existing Monitoring

- ◆ Most sites have some monitoring in place
 - ◆ Created when the application went in service
- ◆ Don't let monitoring be neglected
 - ◆ Someone or some process performs regular checks
 - ◆ Logs regularly have errors or issues – hard to discern real issues
 - ◆ You prior manager knew which errors to ignore
 - ◆ Will need to rebuild expertise to understand logs



Examples of Monitoring

- ◆ High file version numbers
- ◆ Excessive number of files
- ◆ New, modified or missing shared system logical names
- ◆ Startup log files
- ◆ Critical application log and event files
- ◆ Redundancy, availability of failover paths
- ◆ Changes to network configurations
- ◆ New or modified queues
- ◆ Queue status (jobs stuck, queues stopped)
- ◆ System resource utilization
- ◆ Process states
- ◆ SYSGEN Parameters
- ◆ Critical Configuration files
- ◆ And hundreds more...



Real Time Monitoring

◆ System Resources

- ◆ Certain system resources can be very critical, e.g.
 - ◆ CPU utilization should never go above X%
 - ◆ Lock ops should not be above X
 - ◆ Xxx mailbox should never be full

◆ OpCom

- ◆ Many system managers will enable OPCOM in a background window
- ◆ Tremendous amount of information broadcast to OPCOM
- ◆ Write a tool to monitor and report interesting events



PROTECT DATA



Backup Fail Example

- ◆ Customer's CoLo was supposed to change tape on weekly basis.
- ◆ System Manager left early July
- ◆ Excerpts from backup log file:

```
160716 mounted : Initializing the tape : with label 160723
160723 mounted : Initializing the tape : with label 160730
160730 mounted : Initializing the tape : with label 160806
160806 mounted : Initializing the tape : with label 160813
160813 mounted : Initializing the tape : with label 160820
160130 mounted : Initializing the tape : with label 160827
160206 mounted : Initializing the tape : with label 160903
```

Lesson Learned:

- ◆ Make sure you understand your data protection!
- ◆ Don't blindly overwrite a tape
 - ◆ Verify label
 - ◆ Consider using expiration dates
- ◆ Test Restores, not backups
 - ◆ Backups are easy, restores are much harder



STABILITY



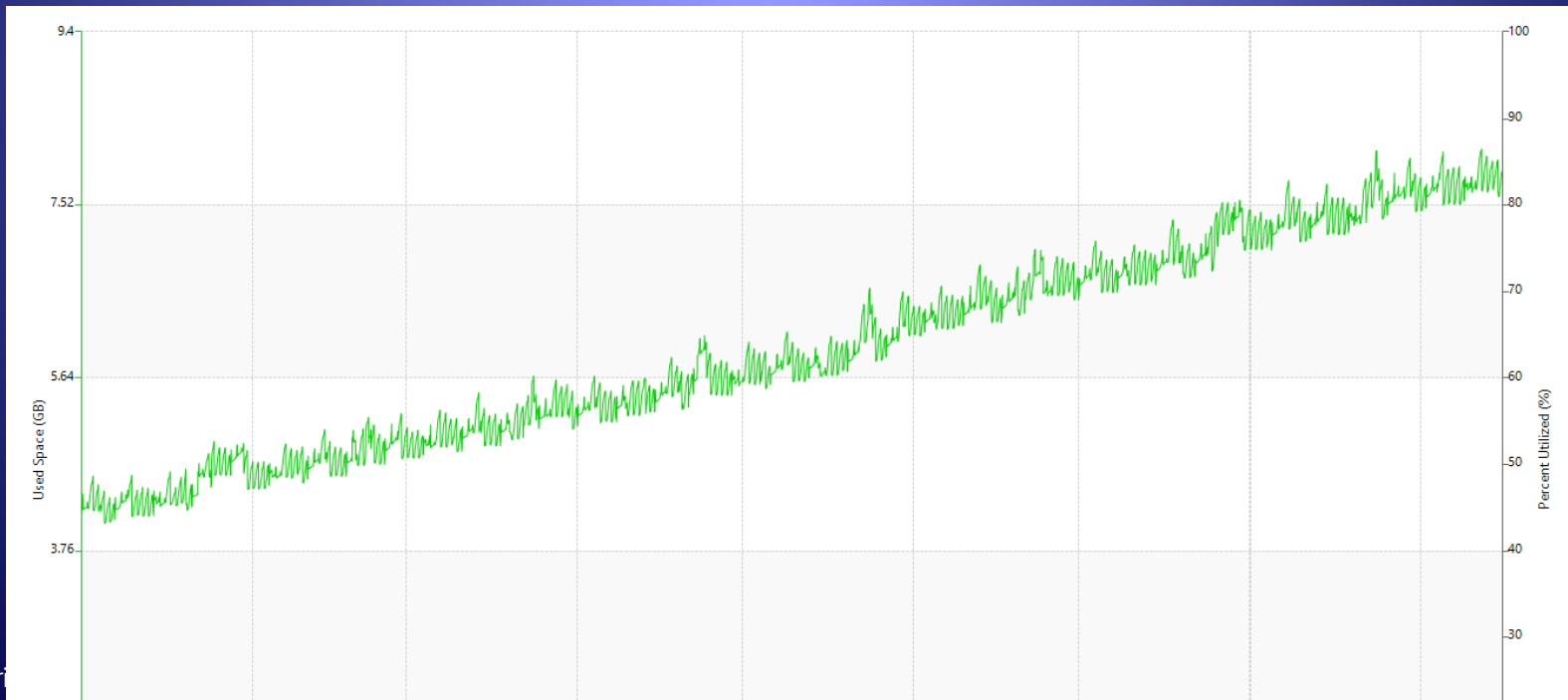
Performance Data

- ◆ Collect performance data:
 - ◆ Setup T₄ to collect CPU usage, I/O activity, and cluster traffic (if applicable)
 - ◆ Roll up CSV files into appropriate intervals for reporting
 - ◆ Graph results for ease of analysis
 - ◆ Maintain historical data for comparison
 - ◆ Not just performance data
 - ◆ Disk Space



Trend Monitoring

- ◆ How often do you look at the performance data?
- ◆ Would you recognize this trend before it caused a problem?



CONTINUITY



**Q: When are you likely
to miss your System
Manager?**

A: System Reboot/Recovery



DK834 [Long file] TPN

DK83 [CISSEK] - files on TPN
DK83 - CISSEK - CND

To compile CND

There is DK83 [CISSEK]
CHWHL23CHWHL23

1. [CISSEK] program set to x-
2. [CISSEK] program set to x-
3. [CISSEK] program set to x-

To compile Ported

STAY in CND
Sign to CND
Copy to CND
Copy to CND

TPN = OPER OFF PT

TPN

TPN

TPN

TPN

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TPN

TPN

TPN

TPN

TPN

TPN

DE CLUSTER

ADVR - boot first
CIRC - second

THE DISKS REMOTE MOUNTED

DEV D
DEV /MULTI
DEVICE \$1\$DGA1S /PATH=
PGBO, 5008-0SF3-
0010-BA31 /SWITCH
DEV. /MULTI
/SYSTEM \$1\$DGA1S CMN-BACKUP
CMN-BACKUPS

S RUNS ON 1 NODE

R RUNS ON BOTH

PORT

PORT OFF

PORT ON

PORT ON

PORT ON

PORT ON

PORT ON

PORT ON

PORT ON

PORT ON

PORT ON

PORT ON

PORT ON

PORT ON

7.3
CD
DESTROYED

7.4 CD
FOR BACKUPS

Without a Known Baseline...

- ◆ How do you know you've started up properly?
- ◆ Is the system configuration the same as before it shutdown? Are your:
 - ◆ Logicals defined?
 - ◆ Queues started?
 - ◆ Databases opened, applications started?
 - ◆ Are you back to your baseline?



Questions?

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