

# 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
- ◆ Best Practices



# 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 (T<sub>4</sub>, 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





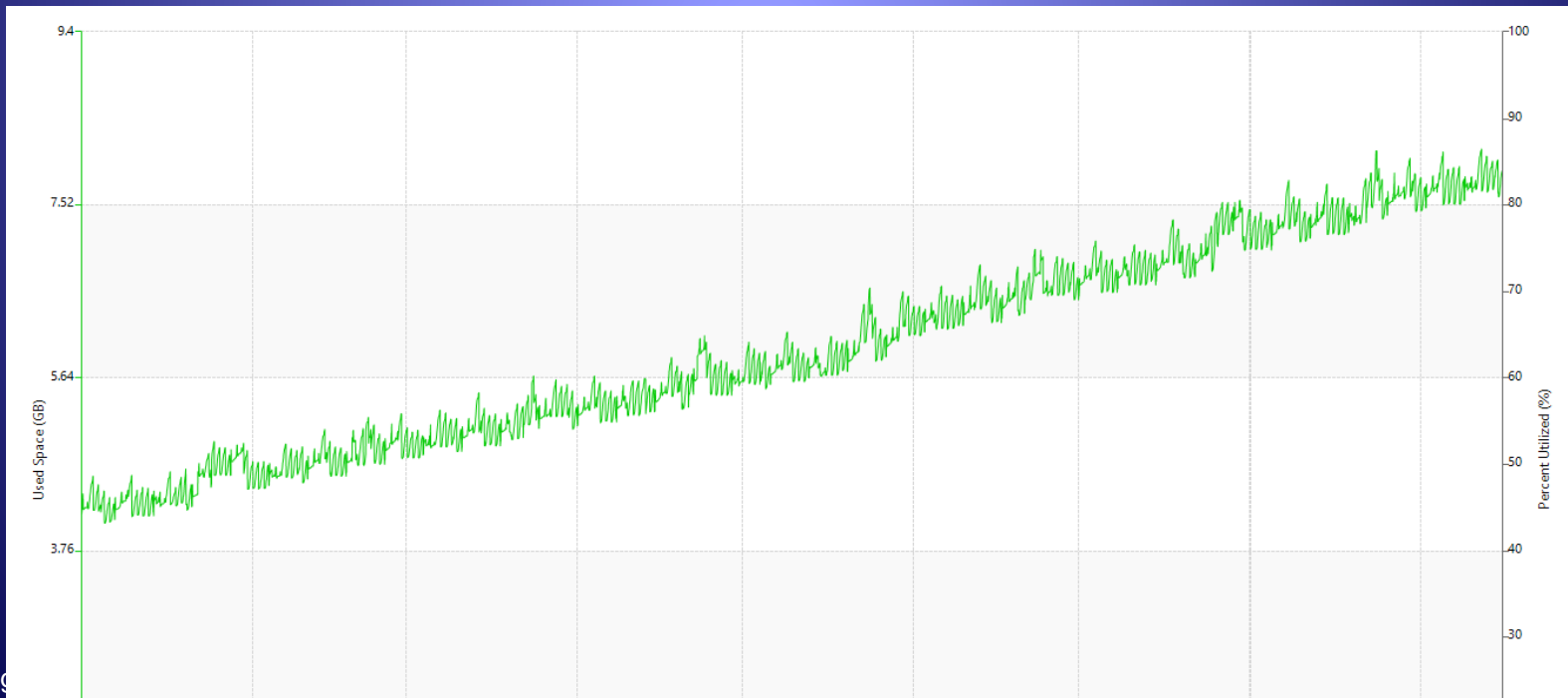
# Performance Data

- ◆ Collect performance data:
  - ◆ Setup T<sub>4</sub> 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**





TRN - CPSR off I PT

MINNESOTA AL708A

46. Jefe  
SIC Mexico

ADVR - <sup>best</sup> first  
CIRC - second

→ PROVIDERS

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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