Linux System Automation
Using PROP

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Agenda

- Review of PROP Functions
- PROP for Linux
  - What Do We Automate?
  - How Clever Can You Be?
- PLINUX: The Tool
- PLIng: Expanding PLINUX using ssh and syslog
Review of PROP Functions

- Two parts to a PROP implementation:
  - PROP RTABLE
  - Action Routines
- PROP receives CPCONIO, MSG, SMSG, etc based on SET command settings
- Each action routine terminates PROP RTABLE processing (once fired, take the next message)
- Basic logging performed
PROP for Linux

- Linux outputs error and system management information in two locations:
  - /dev/console
  - Syslog daemon (either local or remote via UDP)
- Most “operator” function limited to console using default security configuration
  - Direct root logins normally not permitted on non-physical terminals
What Makes Sense to Automate?

- System startup/shutdown prompts
- Resource constraint messages
- Security alerts
- Remote versions of constraint and security messages processed by VM SYSLOGD (thanks, Neale!)
How Complicated Do You Want to Get?

- In general, the complexity of the action routine is relatively low if the message contains sufficient information.

- Events that require additional diagnostics or interaction with the Linux guests are difficult due to CMS single-task structure (involves worker machines to perform extended command sequences)
  - Focus on one-shot messages first.
Example

- Console message:

- PROP RTABLE:

- SPACE EXEC: sends mail to a paging service to alert a programmer
PLINUX: The Tool

- Individual action routines getting too complex to manage.
- Consolidate actions into one routine driven by CMS message repository and parser

Handle:
- Startup messages as far as runlevel 3
- Basic resource exhaustion messages at 70, 80, 90 100%
- Simple security scans
- Periodic availability checks
- SHUTDOWN/SHUTDOWN ALL CP MSG from VM operator
PLINUX Overview
PLINUX Overview

- Messages generated on console directly handled by VM PROP in PLINUX machine
  - Startup/shutdown
  - Resource exhaustion
- Messages generated by syslog are processed and displayed on VM SYSLOGD console and then processed by SCIF to PLINUX
  - Security messages
PLIing: The Plan

- Why should virtual servers have all the fun?
- Syslog is cross system and network friendly – why not expand this to be able to handle action routines operating on remote servers
Problems with PLIng

- No clean remote execution facility
  - Rexec works, but is insecure
  - No ssh for VM yet
- High volume of messages may be an issue for very large farms
  - Set IUCV MSGLIMIT very high (> 24K) for more than 1000 systems
PLIing Overview

SCIF

SYSLOG

VM SYLOGD

syslog over IP

OtherVM Services

CMS Worker
PLIng Overview

- CMS-based workers initially
- Later, Linux based workers
  - Pick up ssh support
  - Snmp query tools
- PLIng maintains control via SCIF for the workers
Summary

- PROP is very useful in developing control systems for Linux guests.
- Combined with CMS Pipelines, you have very powerful tools to build sophisticated management systems.
- PROP isn’t limited to controlling just VM guests any more.
Questions
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