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VoIP Transparency: Asterisk and the Economics of Monitoring

Presented By

Jeff Gehlbach
The OpenNMS Group, Inc.



What Does It Mean to Monitor?

New Oxford American Dictionary:

monitor |'mänətər|

verb [trans.]

observe and check the progress or quality of (something) over a period of time;
keep under systematic review

Asterisk definitely qualifies as *something*.

Observe

Implies that we have a way to “see” inside Asterisk.

X Scrape output of *asterisk -rx 'core show calls'*

Gets the job done, but prone to error
and breakage between Asterisk versions

 **Asterisk Manager Interface (AMI)**

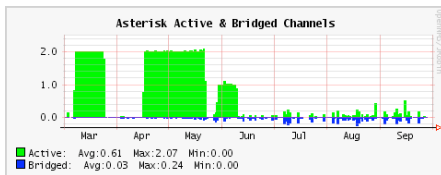
Meant as a programmatic interface and works
well, but highly domain-specific

 **Simple Network Management Protocol (SNMP)**

Widely known and implemented, but support in Asterisk is still
in progress.

Check

How can we recognize patterns in observed data?



Plot values on a chart and manually verify

Threshold values as we collect them; create alarms when exceeded

Ack	ID	Severity	Node	Interface	Service	Count	Last Event Time	First Event Time	Log Msg
<input type="checkbox"/>	58395	UI	mrrhat.internal.opennms.com	[+]	[+]	1	2/1/09 15:42:38	[<]	[>]
			172.20.1.3	[+]	[+]		2/1/09 15:42:38	[<]	[>]
			SNMP	[+]	[+]				
High threshold exceeded for SNMP datasource ifInErrors + ifOutErrors on interface 172.20.1.3, parms: da="ifInErrors" + ifOutErrors" value="7.0" threshold="1.0" trigger="2" rearm="0.0" label="Unknown" ifLabel="wan0-0018x3313ec" ifIndex="1"									


1 alarms

Event 1306674			
Severity	Warning	Node	Cisco 2621
Time	1/13/09 11:51:32 AM	Interface	81
Service			3.193
URI	uei.opennms.org/vendor/Cisco/traps/ciscoConfigManEvent		
Log Message			
Cisco Event: A Configuration Management event has occurred.			
Description			
Notification of a configuration management event as recorded in ccmHistoryEventTable.			
ccmHistoryEventCommandSource	1	commandLine(1) snmp(2)	
ccmHistoryEventConfigSource	3	erase(1) commandSource(2) running(3) startup(4) local(5) networkTftp(6) networkRcp(7)	
ccmHistoryEventConfigDestination	2	erase(1) commandSource(2) running(3) startup(4) local(5) networkTftp(6) networkRcp(7)	

Receive unsolicited notifications (e.g. SNMP traps) from monitored devices

Progress or Quality

In the context of Asterisk, these usually refer to *call progress* or *call quality*, but *quality* in particular has a broader meaning in the context of monitoring.

-  Synthetic Transactions -- originate call via AMI, measure post-dial delay, compare against SLA
- ❖ Collect Data -- Counters (calls completed), Gauges (users in a MeetMe conference), use for fault management and capacity planning
- ❖ Track call queue and agent statistics in support of staffing decisions. Set a reasonable *wrapuptime*!

Over a Period of Time

Implies time-stamped storage of collected data samples and events.

- ❖ RDBMS works well for storing events. Plan big if you have many and/or busy systems.
- ❖ Samples best stored in some round-robin format, preferably one with a configurable roll-up schedule
- ❖ Regulatory / SOX issues come into play. Don't try to use your management platform as a data warehouse!

Systematic Review

Key to the success of any network management project. Time and money spent on implementation can run into the millions of USD. Why?

- ❖ It's a hard problem. If it were easy, I wouldn't be here.
- ❖ Commercial management software is very expensive.
- ❖ Consulting in this realm runs thousands USD per day.
- ❖ The initial investment is only the beginning.

Systematic Review (cont'd)

- ❖ Trained, competent staff is essential even if your vendor provides support!
- ❖ Expect to dedicate at least one person nearly full-time
- ❖ As the character of your operations changes, the management system will need to evolve as well.
- ❖ As your environment grows, your management system may be strained. Careful planning helps, but runaway success happens!

That's Nice About Monitoring...

How about some good news on the Economics part?

- ❖ Asterisk is almost always cheaper to monitor than legacy TDM and hybrid-IP PBXes!
- ❖ The open, freely redistributable nature of Asterisk lowers the bar: no API licensing fees, cheap to have a lab full of it
- ❖ Just as voice is converging onto IP and undergoing an open-source revolution, so is network management
- ❖ Be mindful of open-source (OSD) vs. open-core software

Who Was That Guy?

Jeff Gehlbach
Senior Consultant
The OpenNMS Group, Inc.
`mailto|sip:jeffg@opennms.org`



Twitter / Identica: `jgehlbach`

