

Bringing Enterprise Manageability to Asterisk®

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Presented by

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Enterprise Manageability?

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 - Great scalability
 - Well-defined information base
 - Standards-based delivery

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 - Standards-based delivery
- Why does Asterisk need this?
 - We're in the enterprise now, people!
 - All the cool kids are doing it.
 - Better manageability == wider adoption.

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 - Highly domain-specific
 - Invented here, implemented here
 - Open-ended
 - Connection-oriented

Enter res_snmp

- Added by Mark Spencer and Thorsten Lockert in Asterisk 1.4
- Uses Net-SNMP library; runs as master or AgentX
- An excellent step in the right direction:
 - Generic
 - Widely implemented across disciplines
 - Strictly defined (“Simple” = only 5 operations)
 - Connectionless

res_snmp Problems

- Original MIB suited to operator console use, but not for long-term fault / performance management
 - Lots of strings, few enumerations
 - Table indices prone to shifts
 - Core Asterisk only, no application coverage
 - No traps

Lots of Strings!

- ▼ asteriskChannels
 - astNumChannels
 - ▼ astChanTable
 - ▼ astChanEntry
 - 🔑 astChanIndex
 - astChanName
 - astChanLanguage
 - astChanType
 - astChanMusicClass
 - astChanBridge
 - astChanMasq
 - astChanMasqr
 - astChanWhenHangup
 - astChanApp
 - astChanData
 - astChanContext
 - astChanMacroContext
 - astChanMacroExtension
 - astChanMacroPriority
 - astChanExtension
 - astChanPriority

Should be an enum

Should be astChanIndex and TruthValue

Should be an Unsigned32

Getting (less) Shifty

The screenshot shows a database schema tree. At the top is 'dahdiChannelTable' with a table icon. Below it is 'dahdiChannelEntry' with a document icon. Under 'dahdiChannelEntry', there are five fields: 'dahdiChanId' (with a key icon), 'dahdiChanExten', 'dahdiChanContext', 'dahdiChanBlocked', and 'dahdiChanState' (all with green circle icons).

An integer, because that works here

The screenshot shows a database schema tree. At the top is 'sipPeersTable' with a table icon. Below it is 'sipPeerEntry' with a document icon. Under 'sipPeerEntry', there are seven fields: 'sipPeerId' (with a key icon), 'sipPeerName', 'sipPeerIsRealtime', 'sipPeerSecretSet', 'sipPeerMD5SecretSet', 'sipPeerContext', and 'sipPeerSubscribeConto' (all with green circle icons).

A string, because SIP peer names are strings

Likewise IAX peer names

The screenshot shows a database schema tree. At the top is 'iaxPeersTable' with a table icon. Below it is 'iaxPeersEntry' with a document icon. Under 'iaxPeersEntry', there are five fields: 'iaxPeerId' (with a key icon), 'iaxPeerName', 'iaxPeerSecretSet', 'iaxPeerContext', and 'iaxPeerMailbox' (all with green circle icons).

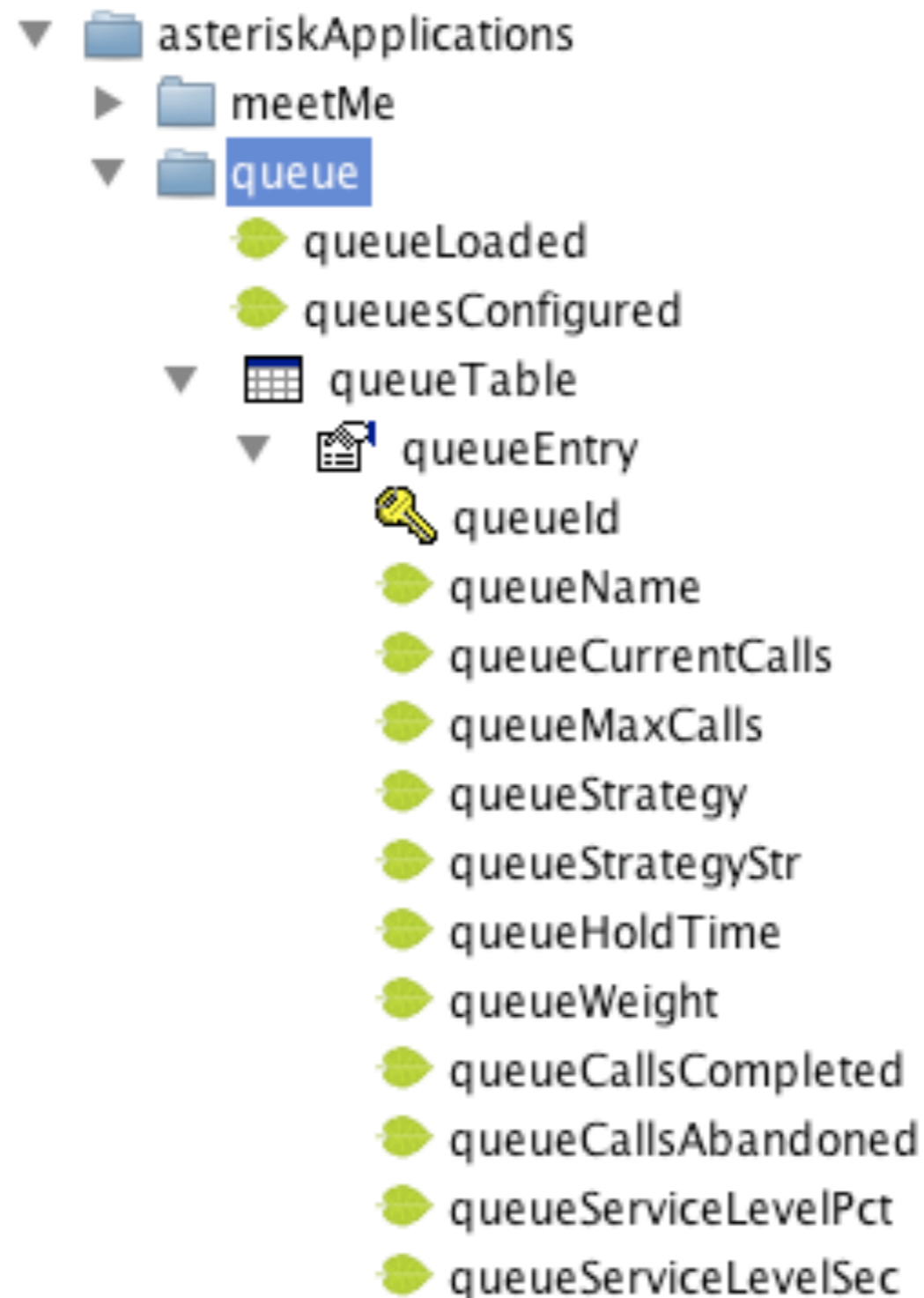
Mind the Applications

- MeetMe
- Queue
- VoiceMail / MiniVm
















Application: MeetMe

- ▼ asteriskApplications
 - ▼ meetMe
 - meetMeLoaded
 - meetMeConferencesConfigured
 - meetMeConferencesActive
 - meetMeAudioBuffers
 - meetMeRealtimeScheduling
 - ▼ meetMeConferenceTable
 - ▼ meetMeConferenceEntry
 - meetMeConfId
 - meetMeConfNumber
 - meetMeConfDescr
 - meetMeConfUsers
 - meetMeConfAdminUsers
 - meetMeConfMarkedUsers
 - meetMeConfUserLimit
 - meetMeConfRecordState
 - meetMeConfDynamic
 - meetMeConfLocked
 - meetMeConfUniqueId

Application: Queue



Cover the Codecs

- ▼  **asteriskCodecs**
 -  asteriskCodecsRecognized
 -  asteriskCodecsLoaded
 -  asteriskCodecsEncTimeRaw
 -  asteriskCodecsDecTimeRaw
 - ▼  asteriskCodecsTable
 - ▼  asteriskCodecsEntry
 -  codecId
 -  codecType
 -  codecName
 -  codecDescr
 -  codecEncTimeRaw
 -  codecDecTimeRaw
 -  codecLicensesTotal
 -  codecLicensesUsed

With these as denominator...

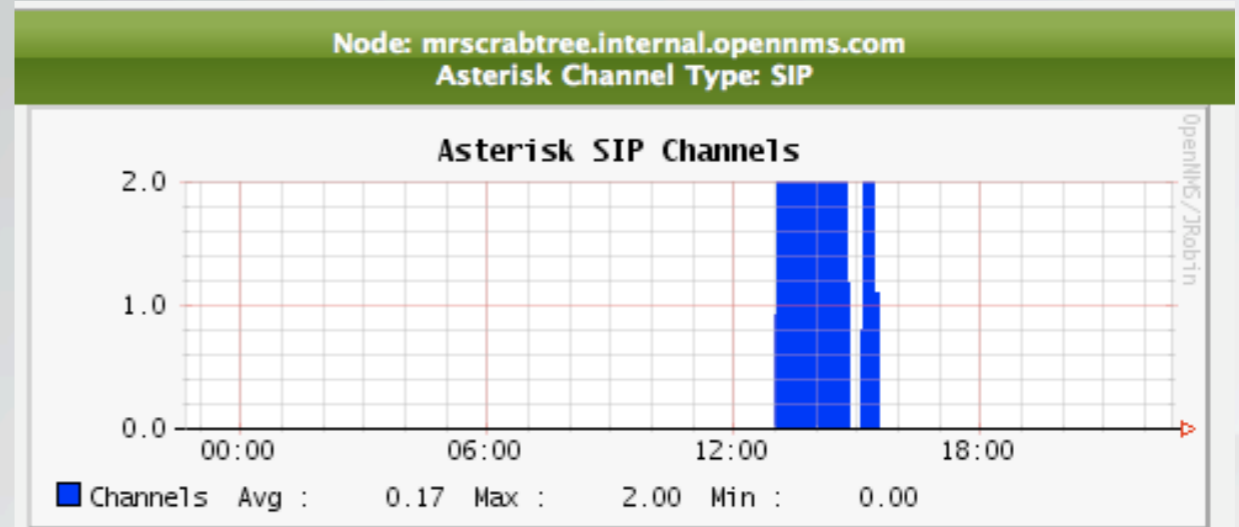
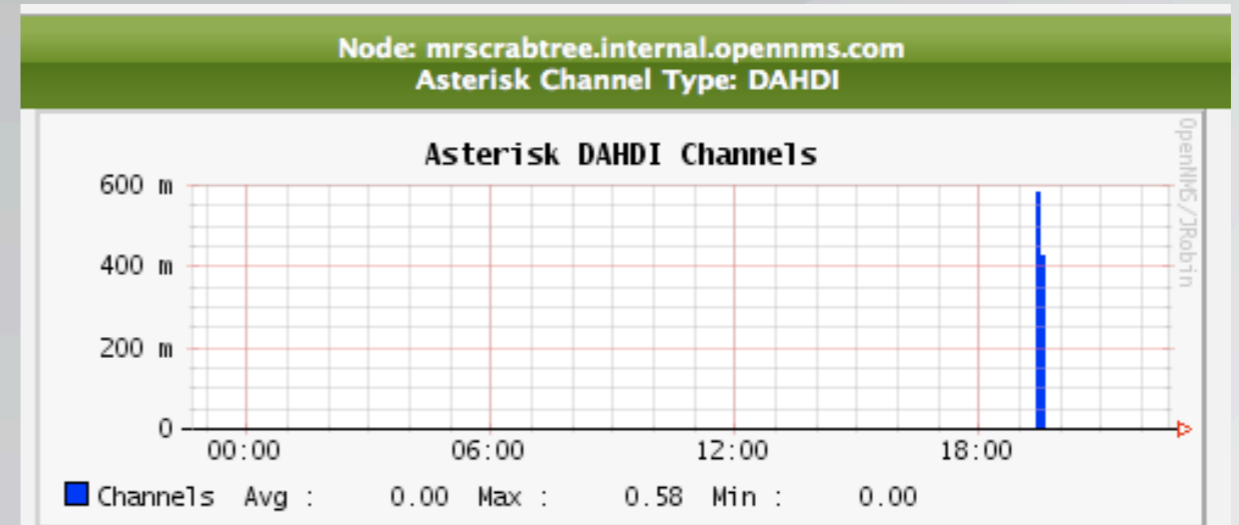
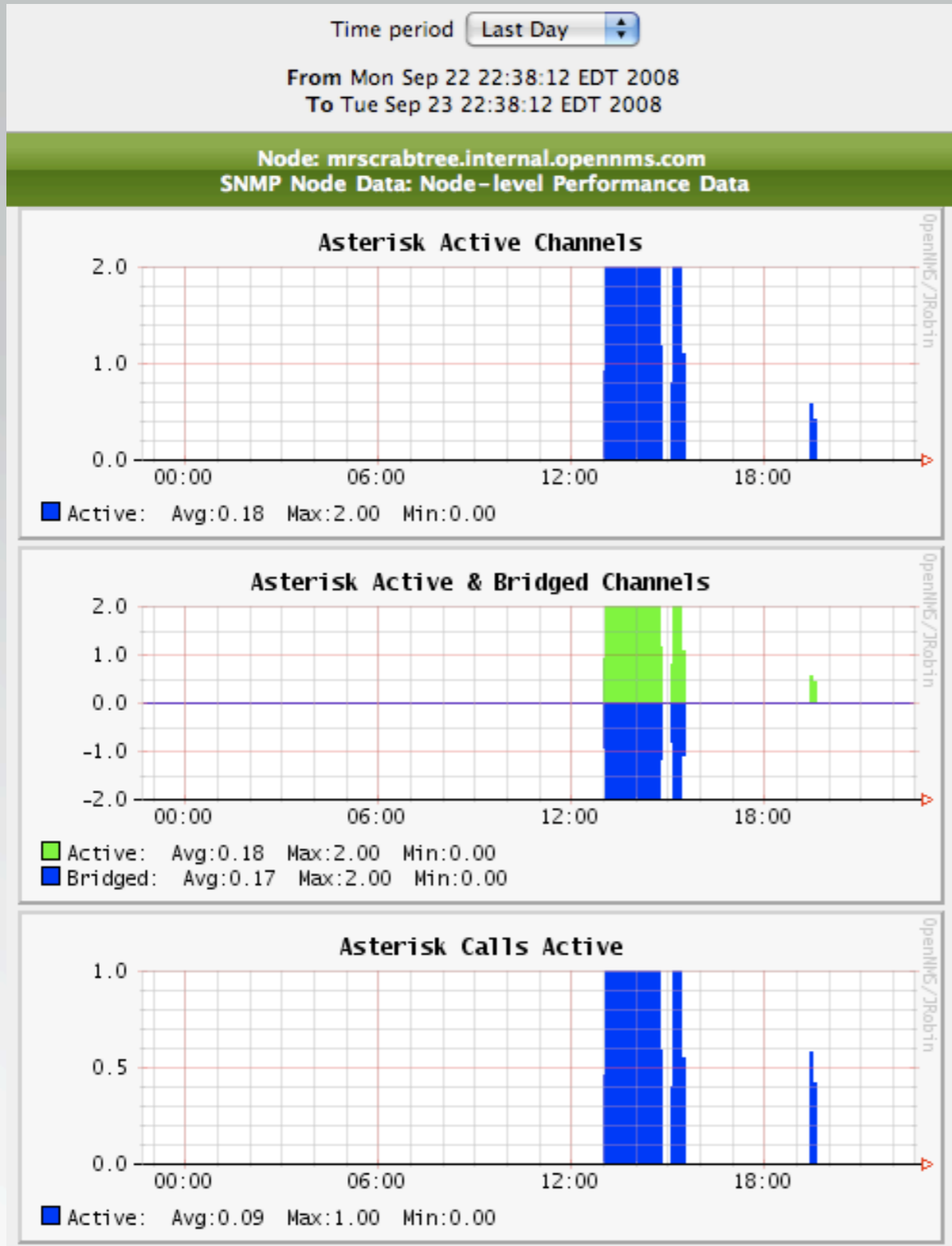
And these as numerator, derive % time spent in each codec

Derive % utilization of G.729 codec licenses from these two

It's a Trap!

- SNMP traps for noteworthy situations:
 - Peer status changes
 - DAHDI channel / span in alarm
 - Runtime module loading / unloading
 - Asterisk stop / start / reload
 - Whatever else matters
- Configured in `res_snmp.conf`

Eye Candy (today)



Picture This (tomorrow)

- Visualize and threshold to know that...
 - DAHDI channel usage peaks at 12:15pm
 - Sales queue call volume is on the rise
 - Weekly status bridge attendance is down
 - SIP latency to Geneva office is increasing
 - 84 IAX peers went unreachable today
 - G.729 encoding is eating 60% of CPU
 - You're running out of G.729 licenses :)

A Tale of Two 1.6es

- Both Asterisk and openNMS are nearing this release number
- Asterisk latest SVN rev: 144191
- OpenNMS latest SVN rev: 10645
- Times I've scowled at an idiotic question about 1.6 on opennms-devel, then realized it's actually a good question on asterisk-dev: 3

Questions?