Making Splunk Your Primary Information Portal

Splunk Dashboarding in Action

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Performance Engineering and Systems Monitoring, Leidos

splunk>

Disclaimer

During the course of this presentation, we may make forward looking statements regarding future events or the expected performance of the company. We caution you that such statements reflect our current expectations and estimates based on factors currently known to us and that actual events or results could differ materially. For important factors that may cause actual results to differ from those contained in our forward-looking statements, please review our filings with the SEC. The forward-looking statements made in the this presentation are being made as of the time and date of its live presentation. If reviewed after its live presentation, this presentation may not contain current or accurate information. We do not assume any obligation to update any forward looking statements we may make.

In addition, any information about our roadmap outlines our general product direction and is subject to change at any time without notice. It is for informational purposes only and shall not, be incorporated into any contract or other commitment. Splunk undertakes no obligation either to develop the features or functionality described or to include any such feature or functionality in a future release.

Referenced customers for ITSI product participated in a limited release software program that included items at no charge.

Who We Are

- Science and technology solutions leader
- Focus on national security, health, and engineering
- Government and commercial customers
- Created 9/27/13 and headquartered in Reston, VA

Leidos Leadership at the New York Stock Exchange Ringing the Opening Bell

Who Am I ?

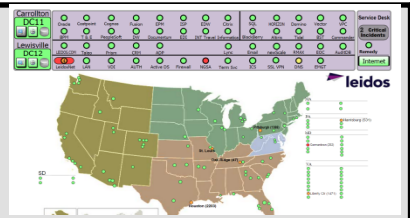
- Director of Performance Management/Monitoring at Leidos, a science and technology solutions leader, based in Reston, VA
  - Internal Leidos IT include business service management (BSM), server/cloud monitoring, application performance, and common security/network/application logging
- Career in systems/network management across many platforms and OS's; presented at numerous conferences and seminars on technology and solutions
  - 2014 Splunk .conf and Gartner infra ops conferences
  - SplunkLive events (in NYC and DC)
  - Aprisma Spectrum user conference (keynote), Netiq's Netconnect, Novell's BrainShare, Managed Object's user conference, IBM AOTC, Planet Tivoli, IBM SHARE.

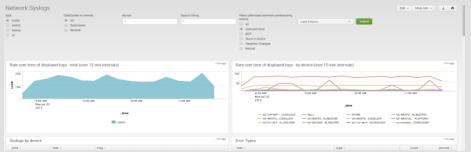
Agenda

- Our original portal and philosophy
- Overview of our Splunk core environment
- The rise of Splunk usage
- Splunk for Dashboarding

Operational Intelligence

Situational Awareness	Performance and Capacity Reporting	Common Logging and Analysis	Service Delivery Reporting





BSM

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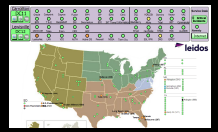
Network Management	Server Management	Infrastructure Management	Application Mgt and Synthetics	ITSM integration (ticketing, change, CMDB)

- Collaboration w/ ITSM and monitoring
- Alerting/ ticketing/dispatch on production issues
- Correlation of issues to the effect on the business IT services

- Dashboarding and reporting
- Performance and inventory reporting
- Infrastructure-wide logging

Monitoring Products

EMGTweb



Business Service Management
(Netiq Operations Center)

Network Management

NPM

Cascade Netflow

HP NA

Server Management

OEM

Exchange

Lync

Appmanager

Backups

Splunk Windows

Active Directory

Batch Services

Vcops/ vCenter

HPSim

Synthetics

ipMonitor

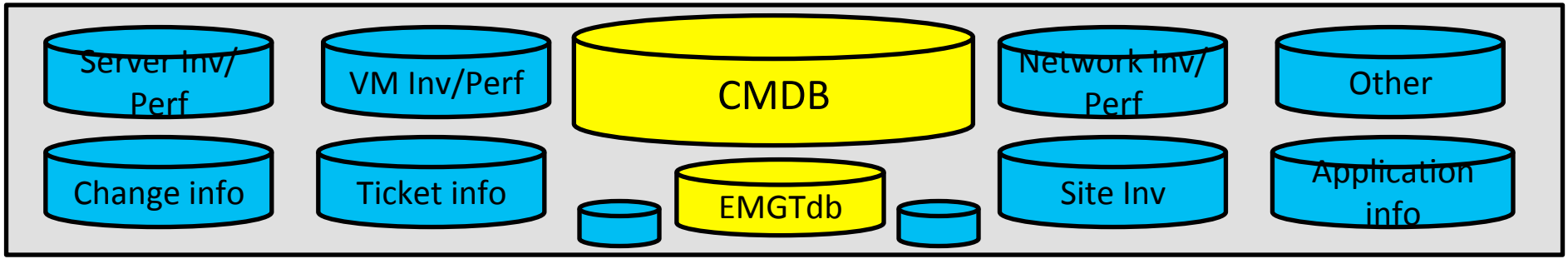
WPM

F5

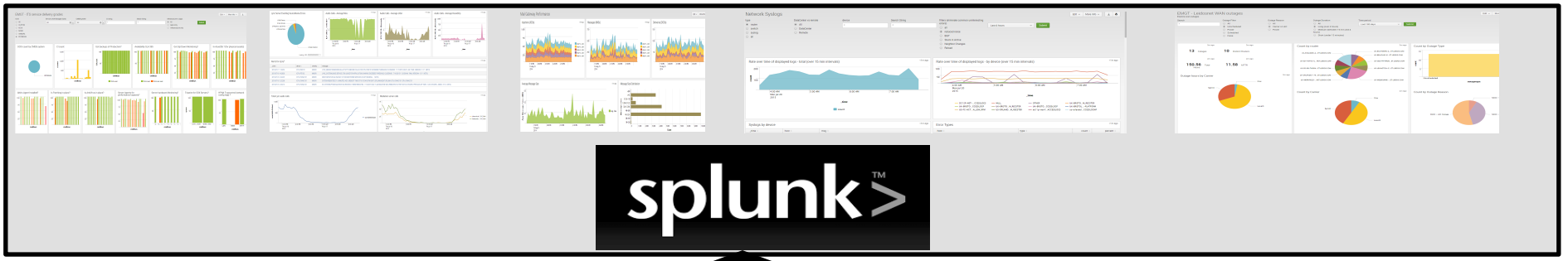
Splunk

ITops Reporting Sources

- ITIL– all services rooted in the CMDB
- Report on services from various sources (in context)
  - Already had access to all this
- The insight comes from when you combine the towers
  - Example: correlating monitoring with ITSM ticket/change



Splunk - Atop the Management Ecosystem



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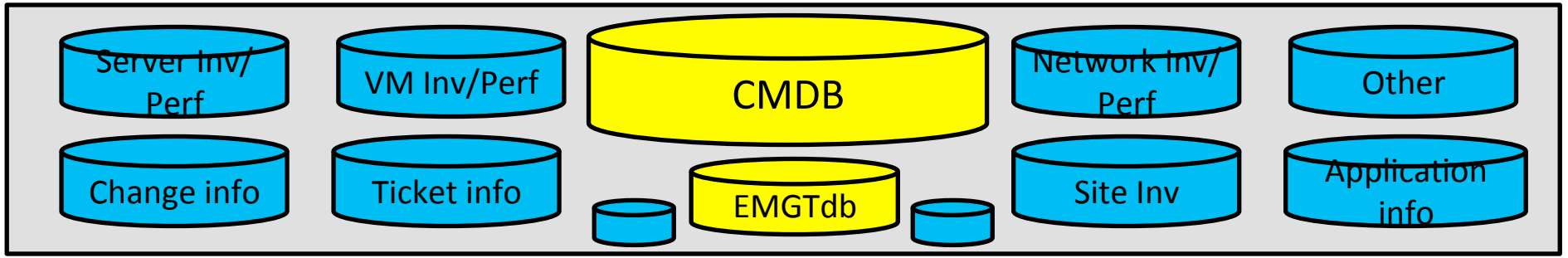
Data Flow

Logfiles, Agents
Dbconnect
Dbquery
CSV



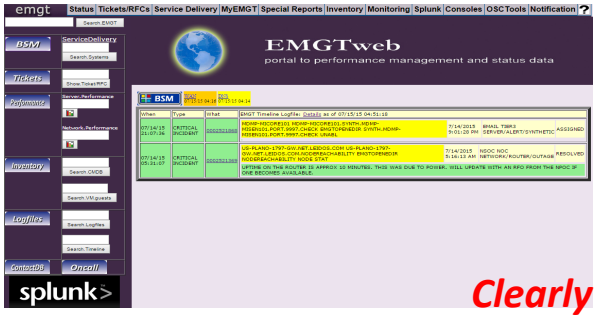
What is IT Operational Reporting?

- The need to know the state of the enterprise, across many dimensions
  - Status – including monitoring, ticketing, changes
    - (what we think is happening, what the users think, what we have changed)
  - Problem investigations (what did we know and when?)
  - Inventory
  - Performance
- Common portal access - Provide lots of varied content up and down the stack
  - From Switch port usage to ticket rates, to WAN circuits, all the way to overall service status

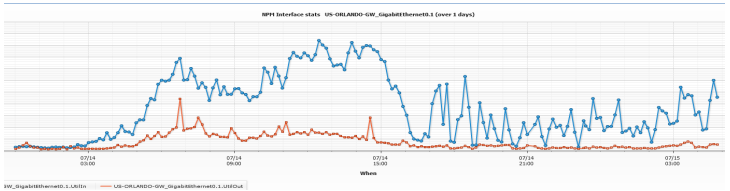
In general, we need to show and tell: list things, graph them over time, highlight anomalies, etc….

EMGT and EMGTweb

- Hand crafted / HTML based - originally circa 2000
- Displaying information from various monitoring DB's
  - Underlying heterogeneous CMDB/ inventory DB – emgtDB
  - Accesses product DB's



- HTML
  - Tables- color cells , raw scripting, with some ASP
- Cumbersome web development and adding of features
  - Time selection
  - Wide variety of interface "feels"
- Anychart for graphing



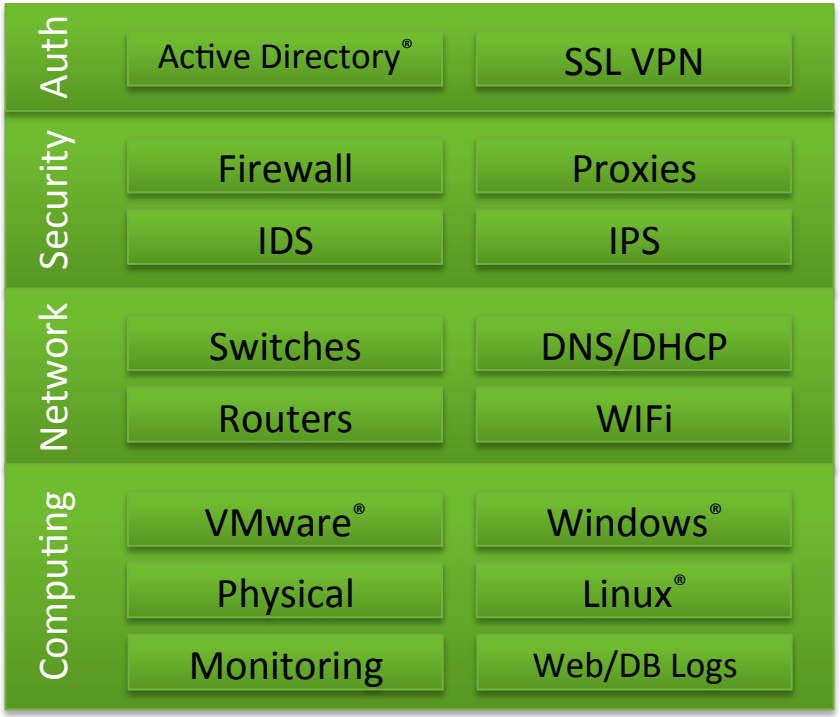
Clearly we needed to do something

Our Splunk Journey

- Pre 2010
  - Syslog servers (“tail and spit”)
- 2010 – Splunk 10GB
  - Routers, switches
- 2012 – Splunk 400GB
  - Router, switches, Firewalls, Servers
- 2013-2014 - bump to 700GB/day (then split company 400/300)
  - More servers, more networking gear , more applications

What is in our Splunk?

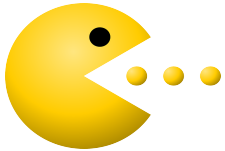
- Over 2,000 devices send data to Splunk
- Splunk consumes up to 400GB of logging and performance data daily
- Feeds alerts, ticketing, changes, performance data



DB: database
DNS: Domain Name Service
DHCP: Dynamic Host Configuration Protocol
VPN: Virtual Private Network
IDS: intrusion detection system
IPS: Intrusion prevention systems
SSL: Secure Sockets Layer
WIFI: wireless fidelity

What Splunk Brings to the Table

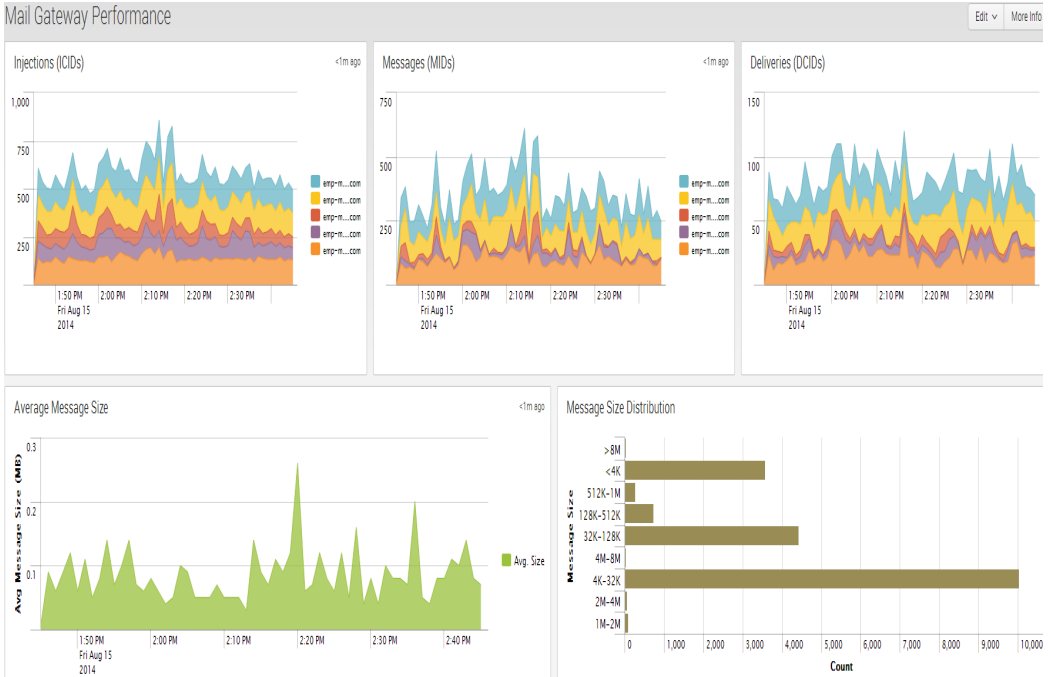
- It has all the data
  - Ability to consume all the information (logs/collectors/Dbconnect)
  - Or reach out and grab it as needed (dbquery)
  - *New mindset – gather the data and figure out a use for it later*
- Common look and feel
  - Ability to build out selection criteria (even using dynamic criteria)
  - Nice widgets to make the dashboarding more compelling
  - Shared concept of time
- Powerful graphing
  - Graph everything the same way, whether it is server cpu, user response time, router link utilization
  - Quick reframing of time



Share the data, free the people

Along Comes Splunk 6

- Easy XML dashboarding
- Dashboard editing
- Smart drilldown
- Easy prototyping
- Use of timed data
- Use of lookups

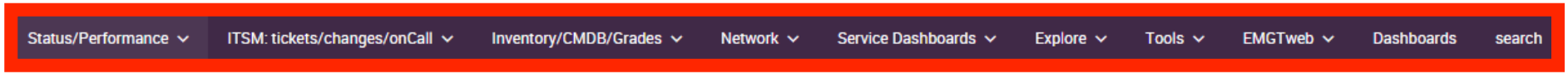


".conf session on dashboarding"

EMGT2 - The ITO Reporting App in Splunk

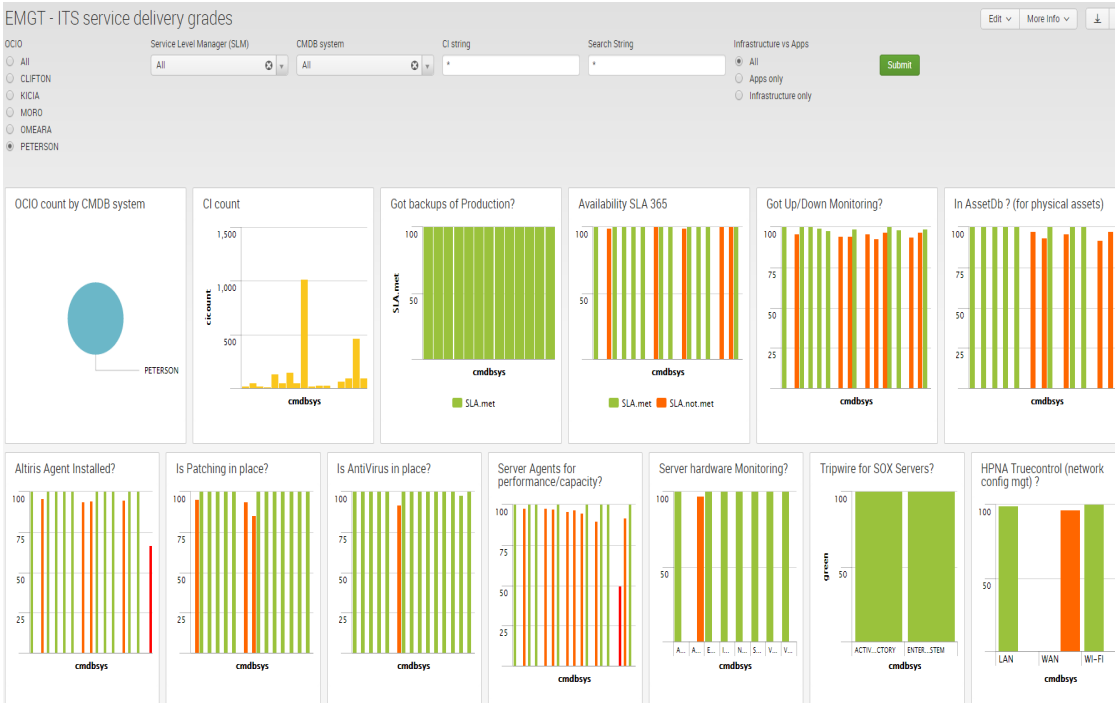
- Are we delivering quality IT services?
- How's our availability? What's happening right now?
- What happened last night? Last week?
- When was that server last rebooted
- Did the backups work?
- Did the batch jobs run? How long did they take?
- Any red flags in our Lync servers? How bad are the call quality MOS scores?
- Who is that server talking to? Is it being denied?

Currently 80+ dashboards and 30+ legacy links



Step 1 – Get Requirements

- Define the need, users, security
- Who is the audience?
- Is it appropriate?
- Do we have the data we need?
- What types of insights are we looking for?
- What happens on drilldown? (where do you want to take them)



Step 2 – Gather Your Data

Logfiles

- Syslogs
- Router/switch logs
- App logs
- Authentication logs
- Firewall logs

Classic logfile data

DB connections

- Network util, CPU
- Server metrics
- App metrics
- Synthetic metrics

Time-series structured DB queries

Lookups

- CMDB
- Network inventory
- AD user/computer info
- Altiris PC info

Status/refreshed CSV

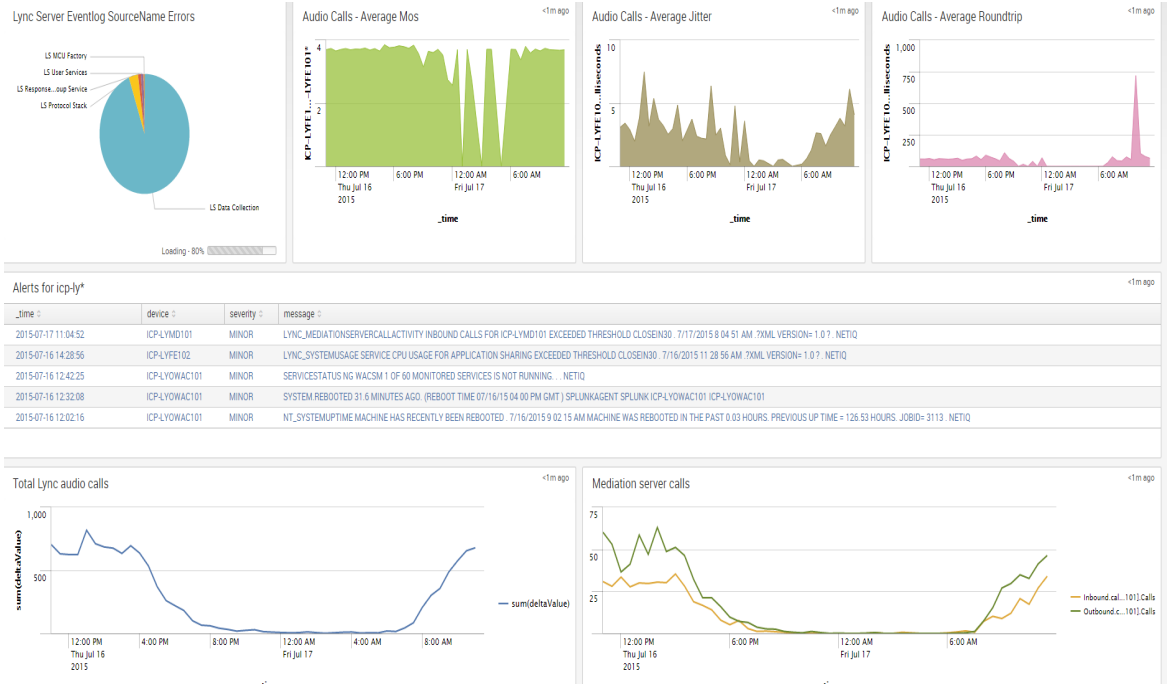
Dbquery

- BSM
- Availability reports information

External realtime DB queries

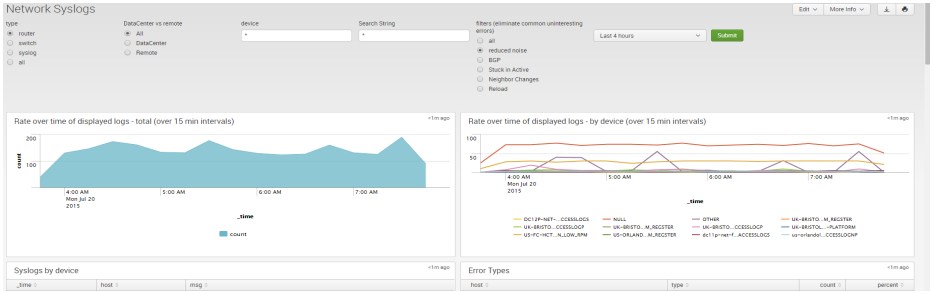
Step 3 – Design the Dashboard

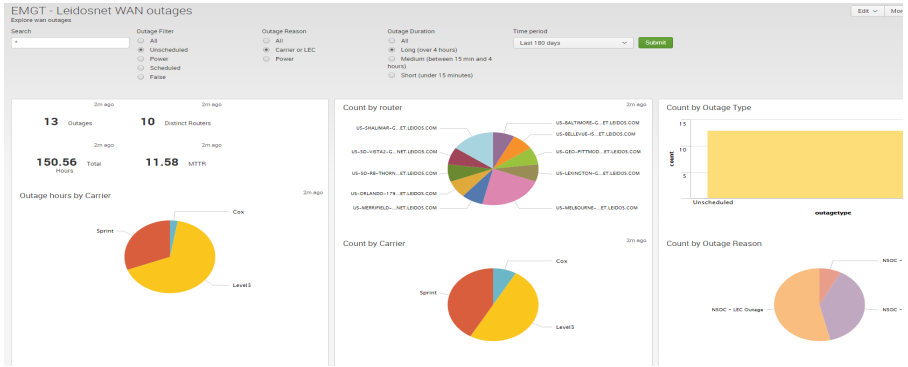
- Purpose
  - Targeted purpose (like status displays)
  - Inventory vs history
  - Explorers
- Decide on widgets
  - Tables, graphs, column/ bar/pie charts, single values
  - Prefer highly dense dashboards
    - Rows and panels



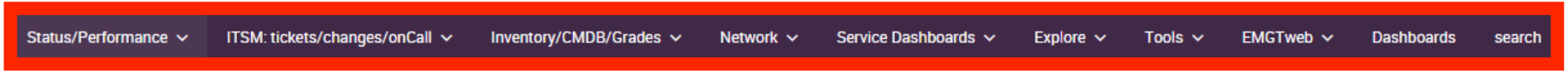
Step 4 – Publish and Iterate

- Rapid development and updates
- Anchor into menu
- Examples:
  - Syslog analysis, while issue was happening
  - Network outage reports, to quantify reimbursement requests





EMGT2 – Splunk App - Structure

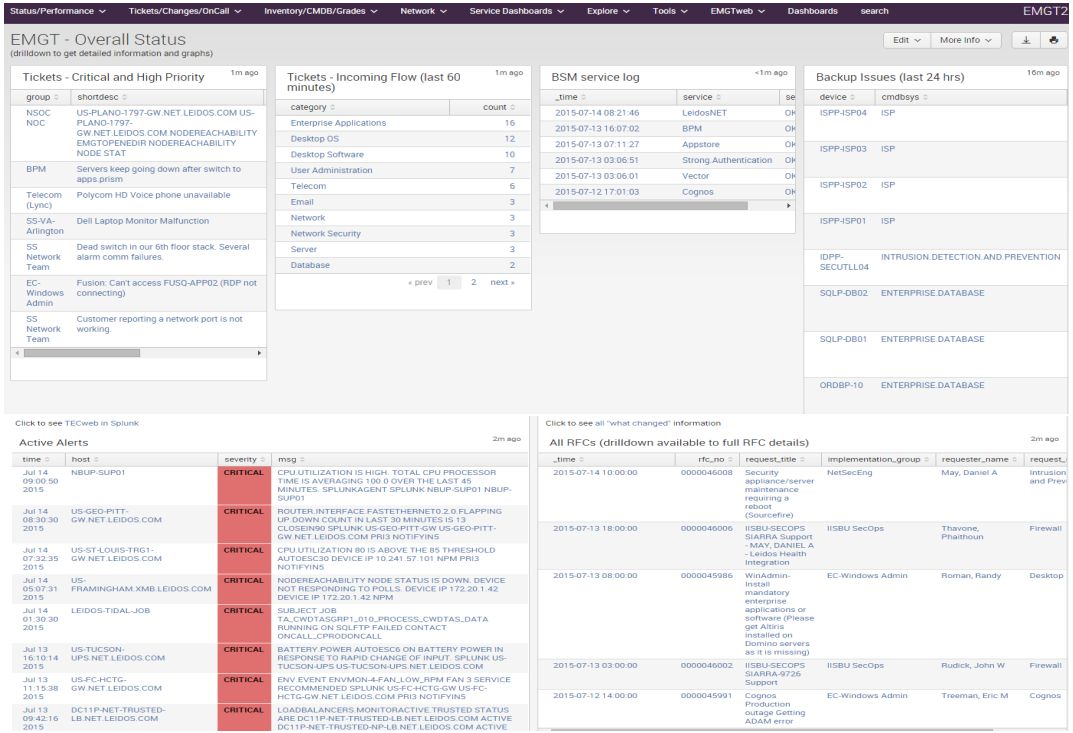


- **Status**
  - Across the board perspectives, including a summary page
  - Performance highlights and hot spots
- **ITSM**
  - Ticketing, changes, problem
- **Inventory**
  - Systems/Services, CMDB, various inventories, counts
  - Service delivery grades
- **Network**
  - Sites, inventory, alerts, performance, syslogs

- **Service** – hand build views
- **Explore**
  - Myriad of areas, including batch jobs, backups, service accounts, inventory
  - Server, synthetic, network performance
- **Tools**
  - Firewall log queries, syslog searchs, alert searches
- **EMGTweb** – misc links
- **Dashboards**
- **Search**

Status: Landing Page – What's Going On?

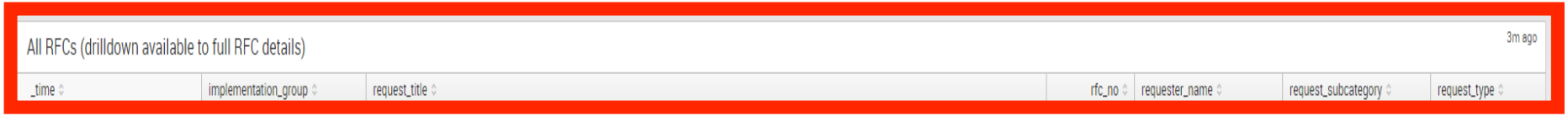
- Is anything hot right now?
  - Sev1 tickets, ticket flow, BSM
  - Major alerts, major changes
  - Spiking routers and servers
- *How:*
  - *Pull in "best of" queries from across Splunk, to show status*
  - *Drilldown*



Status: What Changed?

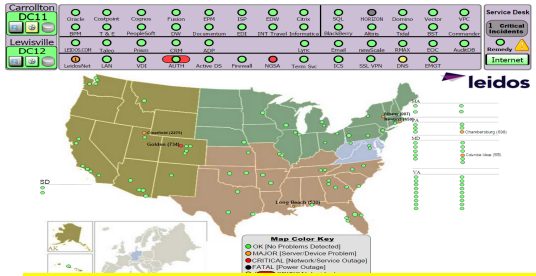
- First thing asked when major issues happen
- Put all views of “change” in one place
- *How:*
  - *Pull in all view’s of change into one dashboard*

- Approved Request for Change
- RFC suppressions
- Network config changes
- Firewall changes and content changes
- Reboots (network / server)
- Altiris installs
- Tripwire



Status: Critical Alerts and BSM

- How are we doing right now
- Alert perspective vs BSM perspective
- *How:*
  - *Dbquery to BSM / manager of managers DB*
  - *Drilldown based on column*



BSM service log

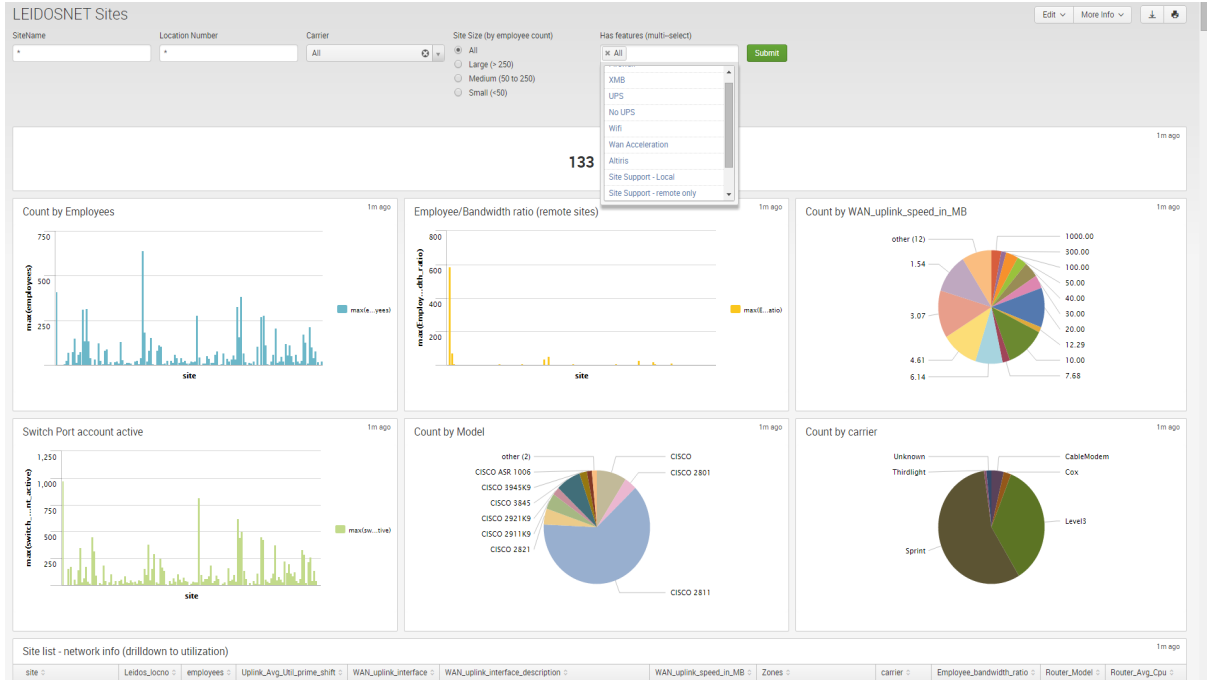
<1m ago

_time	service	severity
2015-07-27 12:45:51	BPM	OK
2015-07-27 11:32:38	LeidosNET	Minor
2015-07-27 02:04:10	Strong.Authentication	Critical
2015-07-26 20:25:39	Enterprise.Database.System	WN
2015-07-26 19:01:33	BST	OK
2015-07-26 12:05:02	Domino	OK
2015-07-25 05:40:38	Workday.Functional	OK
2015-07-25 05:09:57	Altiris	OK

```
<drilldown target="_blank">
        <link field="host">
          <![CDATA[
         /app/EMGT2/emgt__simple_log_search?form.searchstring=$row.host$
          ]]>
        </link>
        <link field="status">https://externallink1?$row.eventkey$_$row.host$</link>
        <link field="time"> https://externallink2?$row.eventkey$</link>
        <link field="severity"> https://externallink3?$row.eventkey$</link>
        <link field="msg"> https://externallink4?$row.eventkey$</link>
        <link field="ticket"> https://externallink5?$row.ticket$</link>
      </drilldown>
```

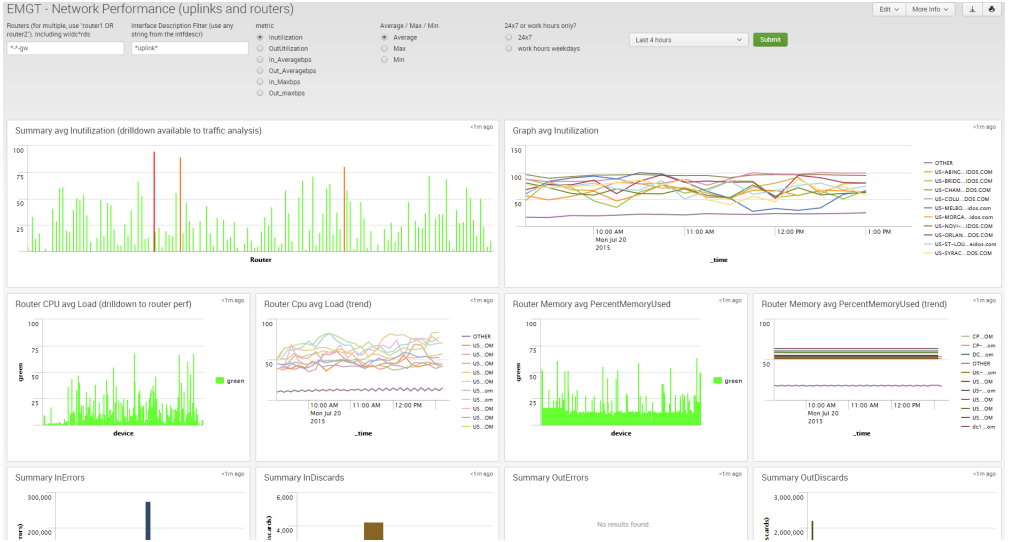
Network: Remote Site Characteristics

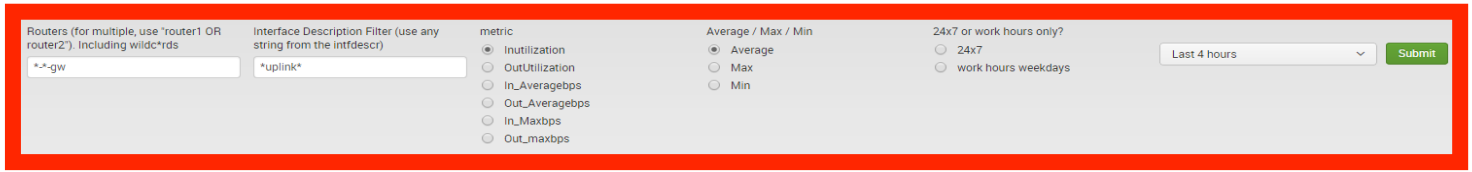
- Started with uplink, employees, site support
- Added other network capabilities, has:
  - Firewalls, DHCP appliance, UPS, wireless, etc..
- How:
  - Inputlookup csv
  - Use of multi-selection for mix/ match



Network: WAN Performance

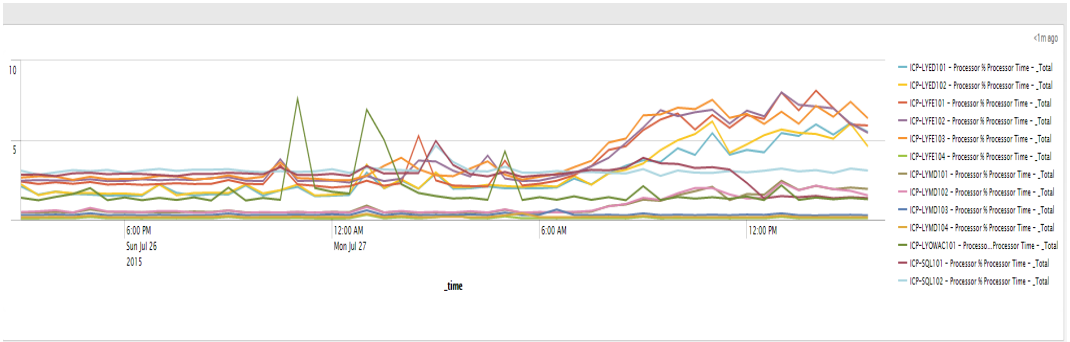
- Look at all sites together
- Look at some classic metrics for WAN's
- Use of color to highlight columns
- Drilldown to "*netflow*", history, others
- *How: DBconnect NPM metric data*





Service Profiling: Lync Servers (KHI)

- Look at all Lync server together
- Color code the metrics
- Drilldown to graphs
- *How:*
  - *Splunk Universal Agent data*
  - *Color via CSV/JS*



KHIs avg over time by server

metric	ICP-LYFE101	ICP-LYFE102	ICP-LYFE103	ICP-LYFE104	ICP-LYMD101	ICP-LYMD102	ICP-LYMD104	ICP-SQL101
LS:JoinLauncher - Join Launcher Service Failures: JOINLAUNCHER - Join Failures	1.25	1.24						
LS:MediationServer - Global Counters: - Total failed calls caused by unexpected interaction from the Proxy					28.15	26.03		
LS:MediationServer - Media Relay - Media Connectivity Check Failure					2.00	1.00		
LS:WEB - Auth Provider related calls: WEB - Failed validate cert calls to the cert auth provider	503.24	1.35	173.55					
LS:WEB - Location Information Service: WEB - Failed Get Locations Requests/Second	0.16	0.03	0.20					
Network Interface: Packets Received Discarded	3243.50	2574.37	6635.19	29.22			81.29	118.86

ServiceDash - lync - KHIs

host: icp-*

metric: Processor % Processor Time

Last 24 hours

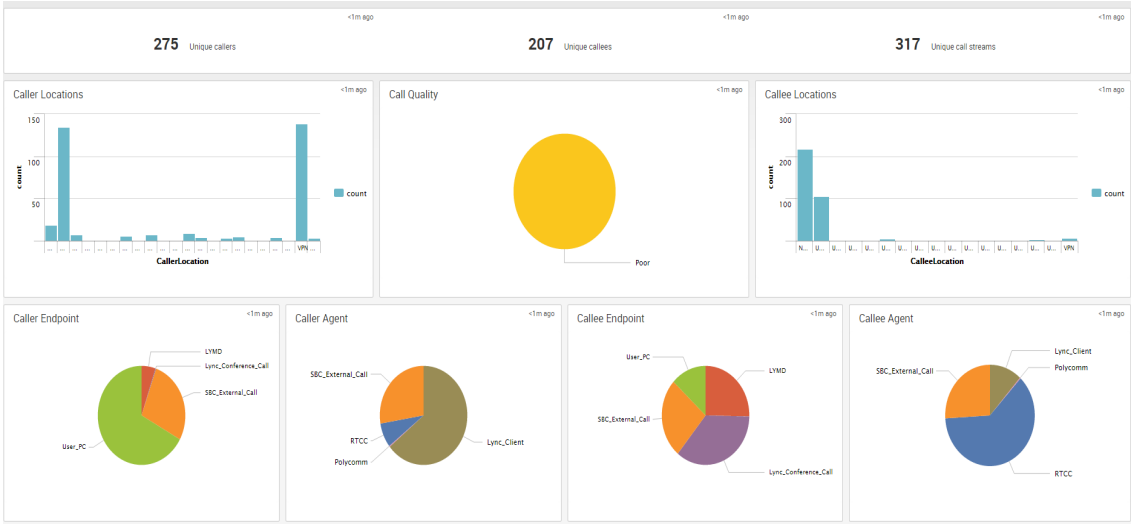
Statistic: Avg / Max / Min

Show only over threshold: No / Yes

Submit

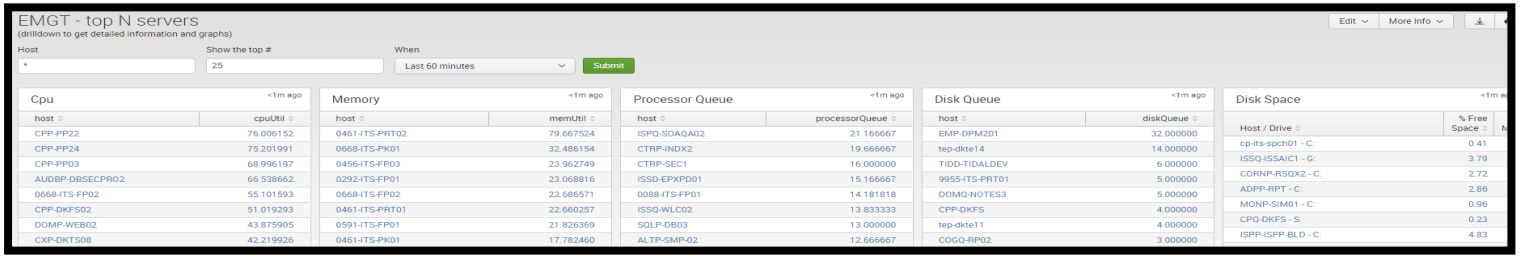
Service Profiling: Lync Call Quality

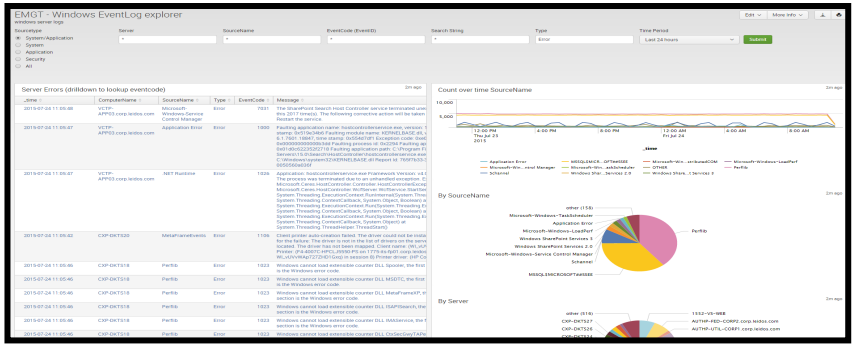
- Gather call records
- Report on service metrics and poor quality calls (and from where)
- *How:*
  - *Collect call records via DBconnect*
  - *Consume CIDR to tie Ipaddresses to locations*



Explore: Tools for Sysadmins

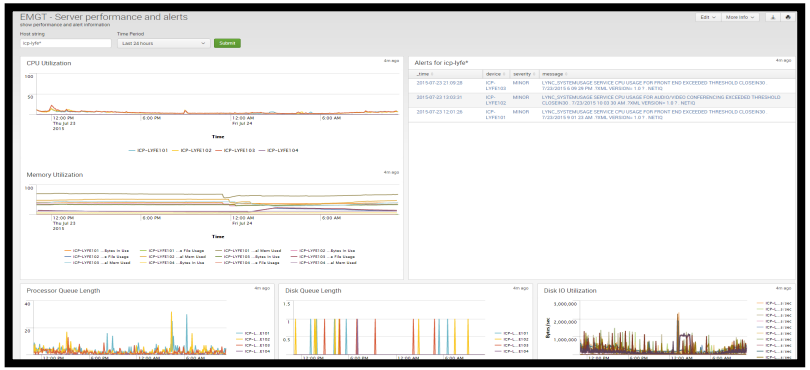
- TopN across 5 key metrics (look across all servers)
- Event logs, reboots, patching



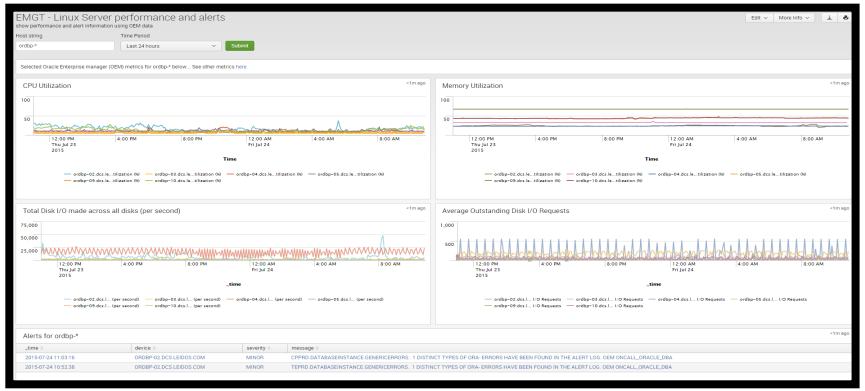


Explore: Server Profiling

- Windows:
  - cpu, memory, process queue, disk stats alerts, reboots, critical eventlogs
  - *How: Splunk universal agent (and some netiq appmanager), alert flow, eventlogs*

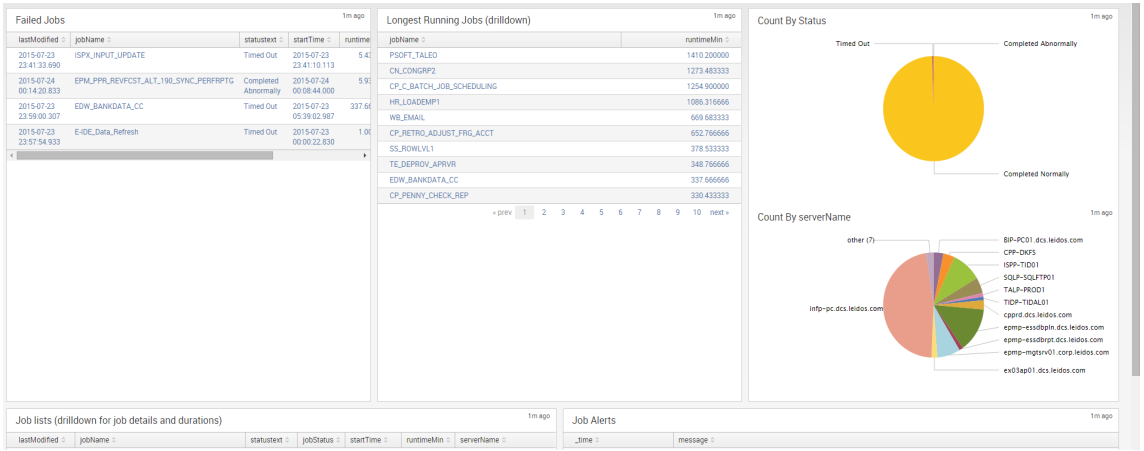


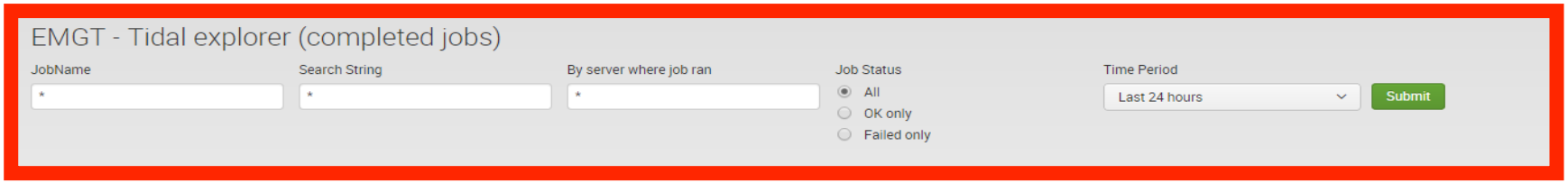
- Linux:
  - cpu, memory, process queue, disk IO
  - *How: DBconnect to Oracle OEM, alert flow*



Explore: Nightly Batch Jobs

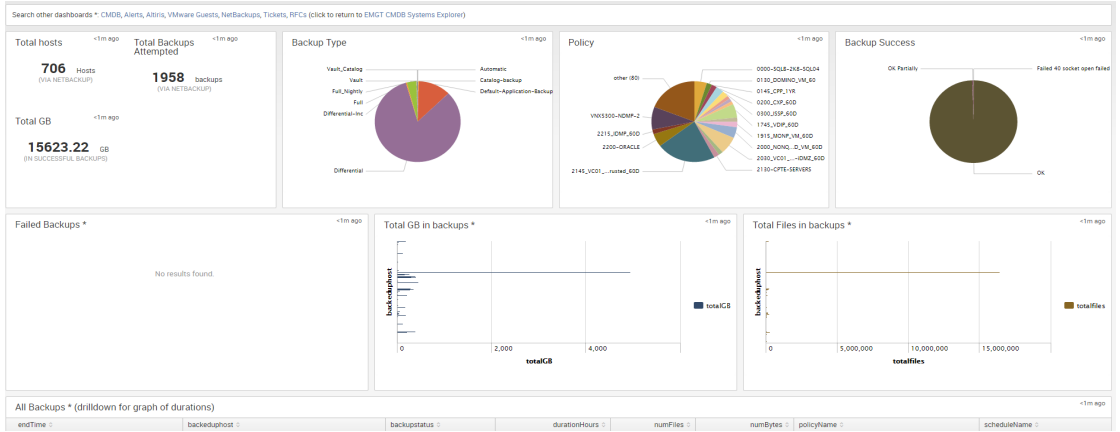
- Expose job status to those not using Tidal console
- Use of color to highlight columns
- *How:*
  - *Dbconnect: Tidal job data*

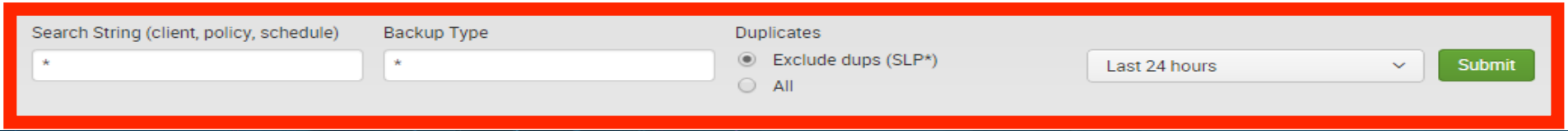




Explore: Nightly Backups

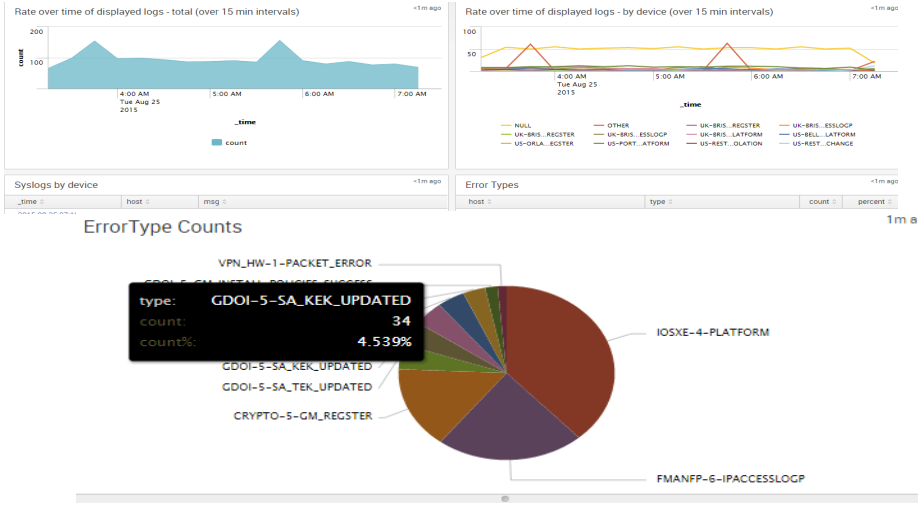
- Vitally important that backups work
- Service delivery grade for backups defined, as well as working backups
- *How:*
  - *Dbconnect: netbackup/*

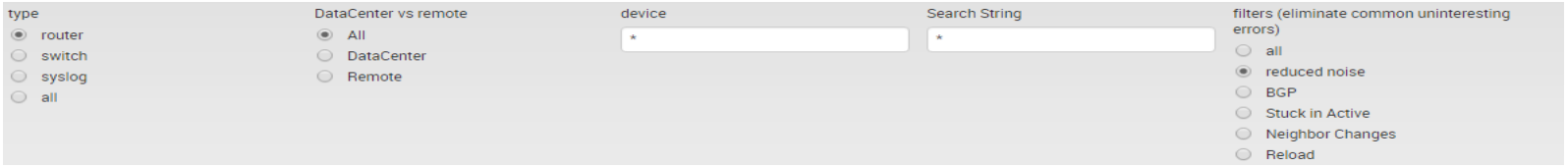




Explore: syslogs

- Allow easy inspection and trending of network (and other syslogs)
- Quick searches across device classes (routers, switches, UPS, Vmware, UCS)
- Radio buttons for known situations (BGP flaps, neighbor changes, battery issues)

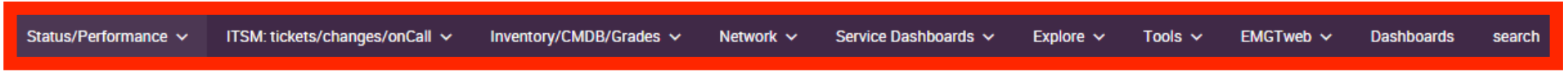




Looking Forward

- Consumption of DB/more application logs
- Splunk apps
  - Exchange
  - Active Directory®
  - UCS
  - Clearpass
- Splunk for ITops (“mom”)
- Retirement of EMGTweb v1

- Redouble efforts to get all devices and applications into Splunk
- Better use of data modelling



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Thanks

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Visit us at www.leidos.com

THANK YOU

splunk>

Abstract

- Making Splunk Your Primary IT Information Portal
  - Intermediate | Solutions & Industries: IT Operations, Log Management | Products: Splunk Enterprise | Role: IT Operations Manager, Administrator
- Speakers
  - Donald Mahler, Director Performance management, Leidos
- Over the years, Leidos IT built up a portal for management information; inventory, status, performance, logs, special reports, and more (which was badly in need of a re-design/facelift). Then along came Splunk 6, and we transformed all the critical information displays into a sleek new delivery vehicle. Come and see how.