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IT Service Intelligence At Fiserv

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

Agenda

Who is Fiserv?

Fiserv's Monitoring Opportunity

What is IT Service Intelligence?

IT Service Intelligence Opportunities

IT Service Intelligence Challenges



- Financial Services technology provider:
 - Core Account Processing, Electronic Billing, Card Based Transactions, Online Banking, Mobile Banking, Check Processing, Lending Solutions, Risk Management solutions, Person to Person Payments, etc...
- More than 1 in 3 U.S. financial institutions rely on Fiserv for core processing services
- More than \$1 trillion moves through Fiserv solutions annually
- Fiserv supports:
 - 145 Million deposit accounts
 - 21 Million debit accounts
 - 75 Million online banking end users
 - 14 Million mobile banking end users
 - Nearly 25 million active bill payment end users
 - More than 180 patents issued and pending for innovative financial services technology solutions
- If you're a mobile banking user or pay your bills online – if you interact with a financial institution at all – chances are you're more familiar with Fiserv than you realize.



- Robert Goolsby – Director, Operations Enablement
 - Robert.Goolsby@Fiserv.com
 - Responsible for overall Enterprise Monitoring strategy
- Abrar Fakhri – Manager, Splunk Monitoring
 - Abrar.Fakhri@Fiserv.com
 - Responsible for Splunk vision, roadmap, planning & roll-out



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Our Opportunity

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Monitoring Improvement Initiative

- Inconsistent monitoring approach for a particular application
- Many different log files, locations and logging formats across many different servers spanning multiple tiers of infrastructure
- Triage required specific application knowledge
- Too many tools – trigger event or condition is “visible” but support teams are looking in the wrong place

Solution – deploy Splunk to collect and process data that can feed into existing incident management process.



Splunk Dashboarding Challenges

- The trigger event is in the logs is there but no one is aware until ***after*** client is impacted
- How can we quickly react to changing environment conditions to ***alert and prevent reoccurring events?***
- How do we perform continual education across business units, across support tiers and across shifts on the latest dashboards that looks for ***specific*** client impacting conditions?
- How do we approach creating dashboards for a variety of applications, infrastructure teams and generate FI specific views and not suffer from ***analysis paralysis?***
- ...and a 90 day deliverable date from inception to delivery.



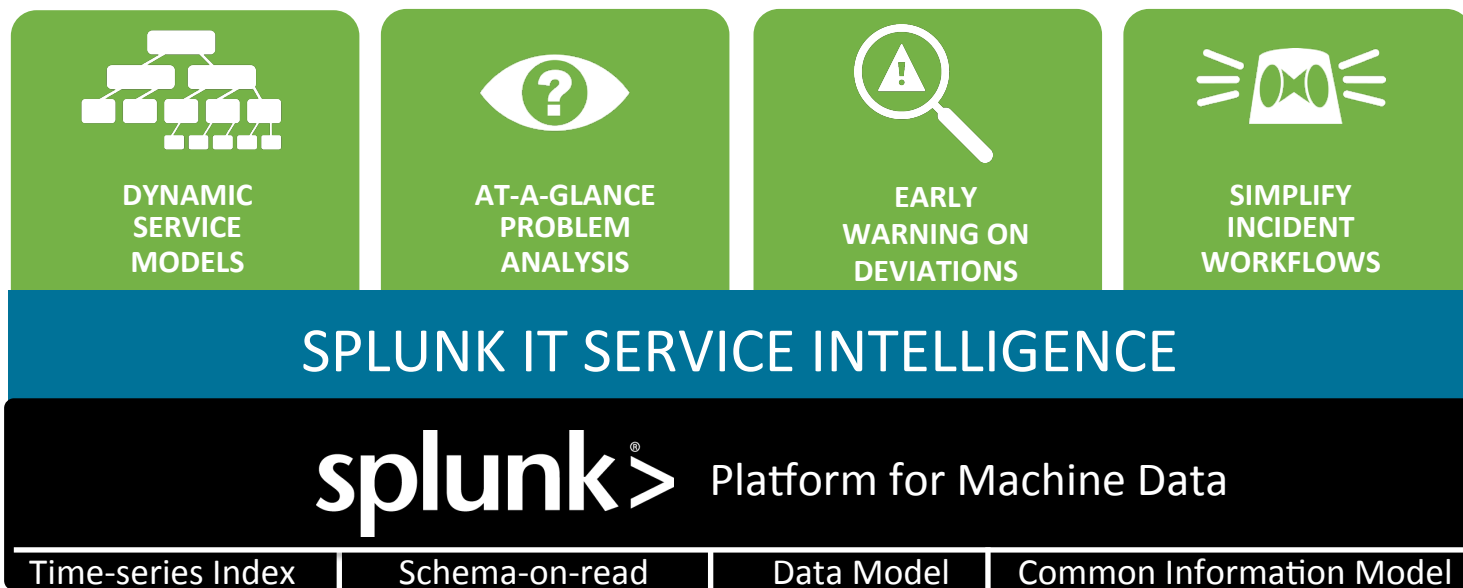
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What is IT Service Intelligence?

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Splunk IT Service Intelligence

- ITSI is a Splunk premium solution that enables us to model our business services and measure them against defined service levels
- Splunk ITSI monitors service health, enable alerting, assist in triage and ultimately root cause analysis



Splunk IT Service Intelligence At Fiserv

**Server-based to
Services-based
monitoring**

Top-down and deep-
dive service insights

**200+ services and
1500+ KPIs
monitored**

Flexible creation and
modification of
services and KPIs

**Alerting on service
KPI's instead of
server performance**

Real-time, holistic
and proactive
“client” view

Configuration and Planning Tips

Prior to any technical work in Splunk or IT Service Intelligence

- Understand expectations
- Plan your service hierarchy
- Standards - define services & KPIs
- Understand how your users plan on interacting with IT Service Intelligence
- End User Training Plan

IT Service Intelligence Key Concepts

Service – a component of the system that key to business success.

It can be:

- An application or group of applications;
- An infrastructure tier (such as web, database, or network tier);
- A business service, such as an online marketplace, which might include multiple infrastructure components (web servers, databases, business applications, load balancers, and so on);
- A single process, such as one instance of an application running on a host.
- Really anything that you define

A Service usually contains **Entities** or is dependent on other **Sub-Services**

IT Service Intelligence Key Concepts

Entity

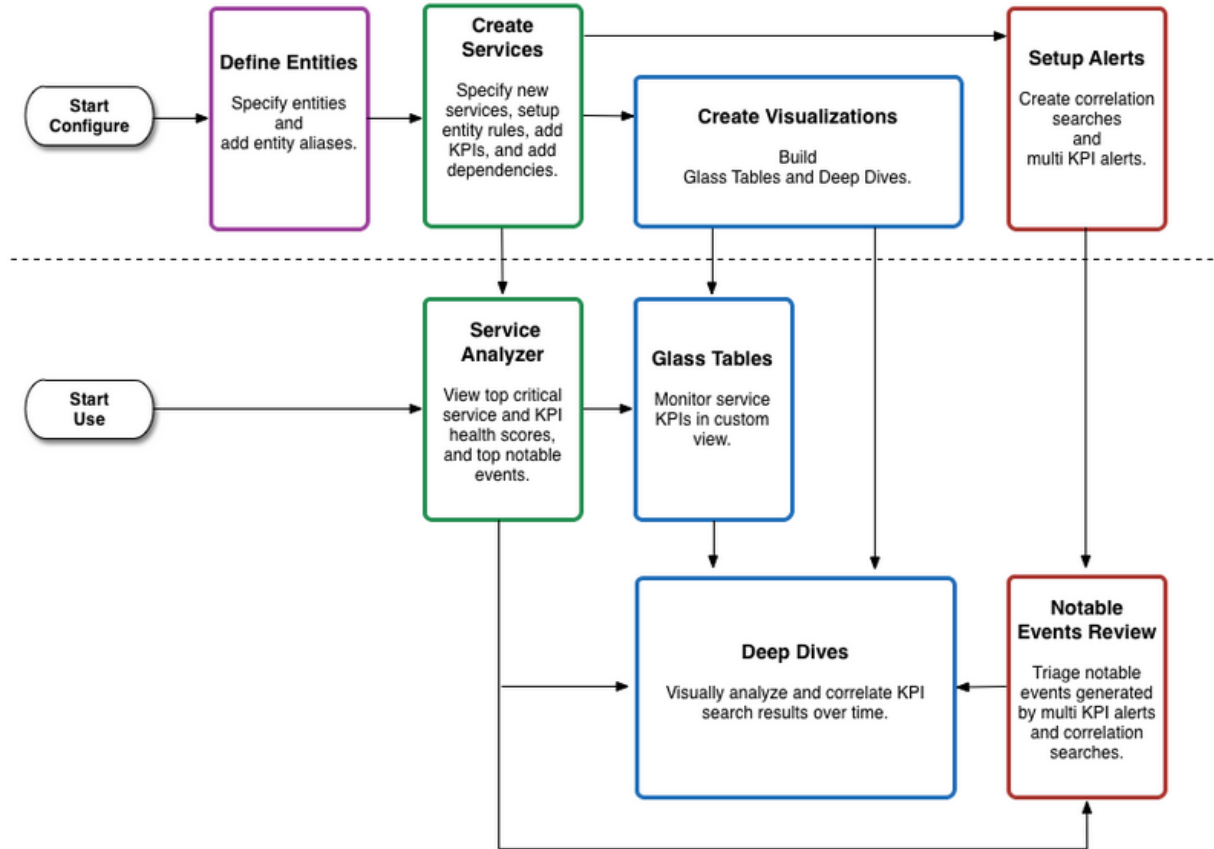
- Entity is an IT component that requires management in order to deliver an service
- Each entity has specific attributes and relationships to other IT processes that uniquely identify it
- Examples:
 - Server or Host
 - URI
 - Processes
 - Software Application

KPI

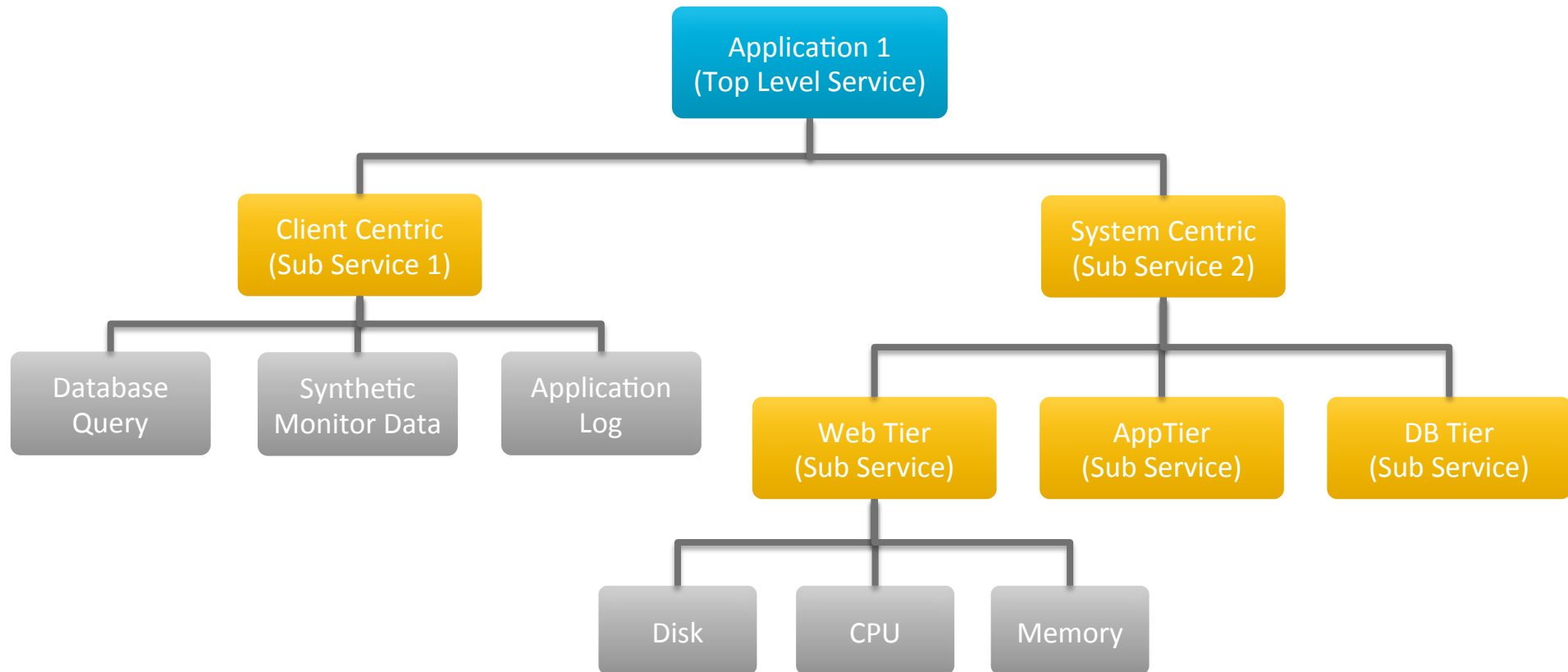
- KPI (or Key Performance Indicator) is a metric that defines the expectable behavior of a service and the threshold by which we may learn of problems with the service
- Splunk assigns a **Service Health Score** (scale 0 to 100) to each Service based on KPIs

IT Service Intelligence Process Flow

Configure and Use ITSI



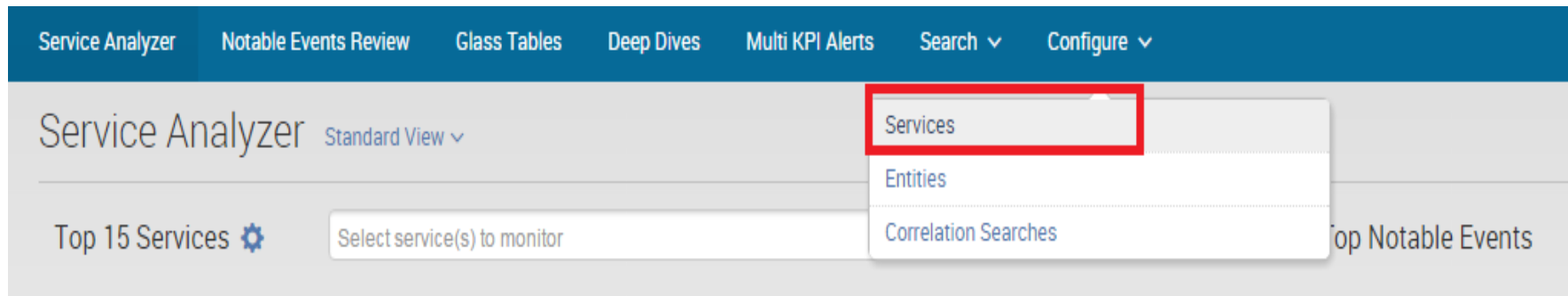
ITSI Service Hierarchy



Service Creation

Services can be created

- Manually
- CSV File
- Modular input



Service Info

Service Info

- We primarily used host names or URLs for entities
- Plan your entities ahead of time!
- After saving you are taken to KPIs config...

Name: Website service

Description:

Contains entities: ☒ Yes ☐ No

Entities match any of the following:

× Entity title matches sr-centos2.sv.splunk.com

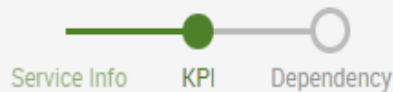
1 entities matched. [Recheck](#)

[+ Add Rule](#)

1 entities matched. [Recheck All](#) [Browse all entities](#)

[Save](#) [Cancel](#)

Service Definition



Save & Next >

Key Performance Indicators

KPIs

Import

New ▾

Create a KPI

Generic KPI

Templates

Count Based Ad Hoc KPI

Percentage Based Ad Hoc KPI

Percentage Data Model KPI

Discrete Value Based KPI

HTTP Response Time KPI

Service Definition



Save & Next >

Save & Exit

Key Performance Indicators

KPIs

Import

New ▾

mem_used

web requests

mem_free

Name

Name

mem_used

Description

web server memory usage over 5 minute intervals

Search

Search Type **Data Model** Ad hoc

Data Model **Performance**

Objects

All Performance

OS

System Uptime

Time Synchronization

Network

Storage

☒ Memory

Facilities

CPU

Fields

dest_bunit

dest_category

dest_priority

hypervisor_id

resource_type

tag

host

source

sourcetype

mem

mem_committed

☒ mem_free

mem_used

swap

swap_free

swap_used

dest

Filters ?

× host

Equals ▾

sr-centos2.sv.splunk.com

+ Add filter

Entity Alias Mapping

× All_Performance.dest

Enter one or more search fields that you want to map to the values of entity aliases. (For example, "host", "dest", etc.)

Entity Alias Filtering

× host

Enter the specific aliases (associated with the entity value) that you want to use in the generated KPI search. (For example, "host", "ip_address", etc.). This filters out all other entities associated with the service.

Unit

GB

Specify the unit of measurement to display in KPI visualizations. (For example "GB," "Mbps," "secs", etc.).

Generated Search

```
| tstats prestats=t  
avg(All_Performance.Memory.mem  
_free) FROM  
datamodel=Performance WHERE  
(All_Performance.dest="sr-  
centos2.sv.splunk.com") host="sr-  
centos2.sv.splunk.com" BY
```

Run Search

Search

Search Type

Data Model

Ad hoc

Search

```
sourcetype=stream:http time_taken=*  
eval  
target_itsi_entity=if(isnotnull(""),"ERROR_ALL_SEARCH_FIELDS_NULL") |
```

Threshold Field

time_taken

Entity Alias Mapping

✕ host

Enter one or more search fields that you want to map to the values of entity aliases. (For example, "host", "dest," etc.)

Entity Alias Filtering

✕ host

Enter the specific aliases (associated with the entity value) that you want to use in the generated KPI search. (For example, "host", "ip_address", etc.). This filters out all other entities associated with the service.

Unit

ms

Specify the unit of measurement to display in KPI visualizations. (For example "GB," "Mbps," "secs", etc.).

Generated Search

```
sourcetype=stream:http  
time_taken=* | eval  
target_itsi_entity=if(isnotnull(""),"ERROR_ALL_SEARCH_FIELDS_NULL") | lookup itsi_entities entity_value  
AS target_itsi_entity OUTPUT  
entity_key entity_title | search
```

Run Search [🔗](#)

Setting Thresholds

Threshold

Threshold Type ☐ Aggregate ☐ Per Entity ☐ Both

Aggregate Threshold Values

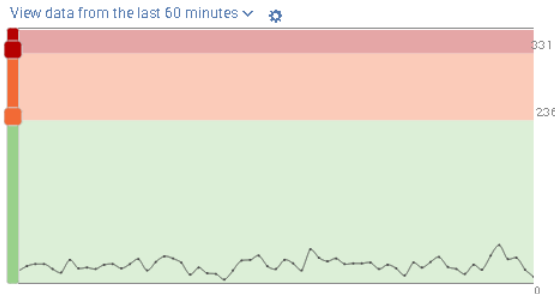
☐ Critical

☐ High

☐ Normal

[+ Add Threshold](#)

[Generate Suggestions](#)



Per Entity Threshold Values

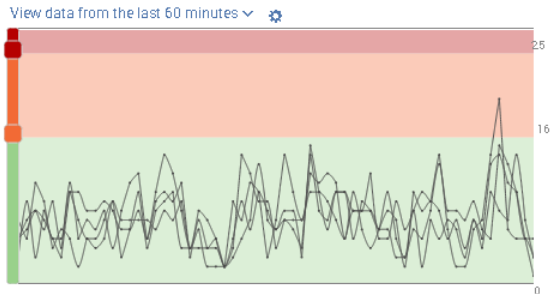
☐ Critical

☐ High

☐ Normal

[+ Add Threshold](#)

[Generate Suggestions](#)



Treat Gaps in Data as ☐ Unknown

Setup KPI severity level thresholds

Method

☒ Fixed Intervals

☐ Percentiles

☐ Standard Deviation

Severity ordering: higher values are more critical



For fixed intervals, thresholds are set as % multiples of the preview chart range

☐ Critical %

303.295

☐ High %

242.855

☐ Medium %

182.05

☐ Low %

121.245

☐ Normal %

60.805

[Cancel](#)

[Apply](#)

Weighting

Monitoring

Importance

Calculation Count ▾ Last Minute ▾

KPI Search Schedule Every Minute ▾

Monitoring

Importance

Calculation Count ▾ Last Minute ▾

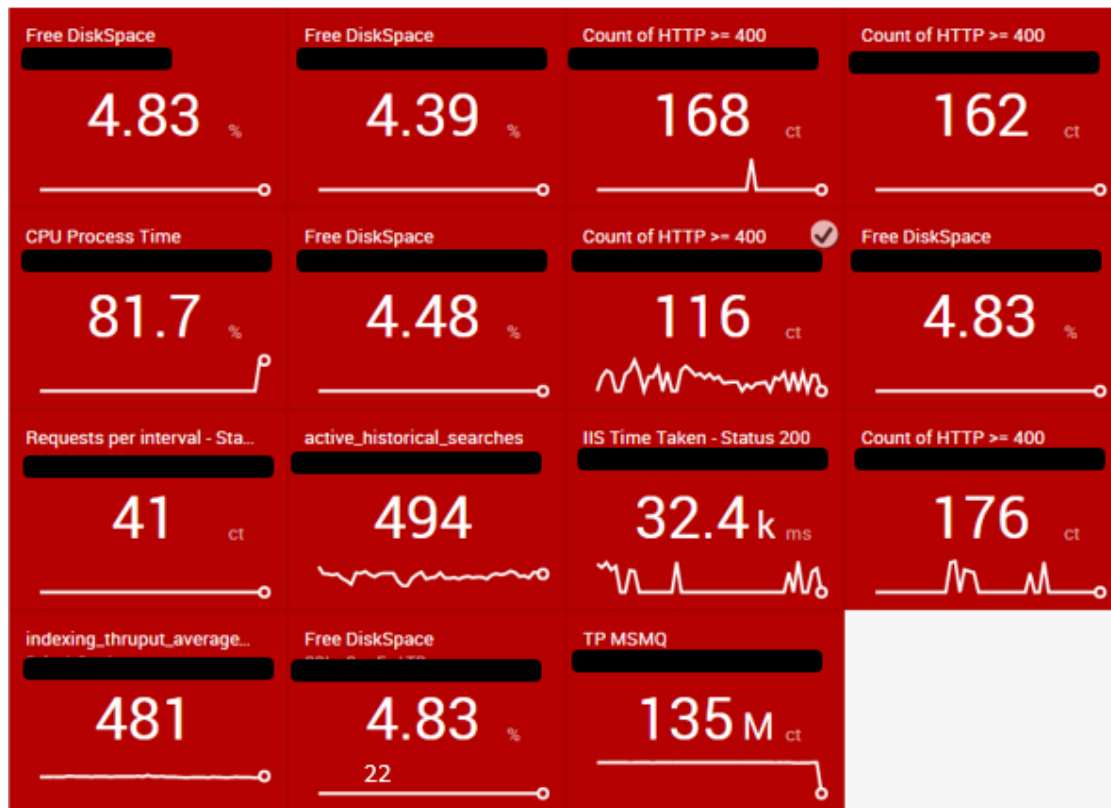
KPI Search Both

Threshold Both

Aggregation view data from the la

- Average
- ✓ Count
- Distinct Count
- Maximum
- Minimum
- Sum
- Standard Deviation
- Median
- Duration
- Latest

Service Analyzer



Example

Now ▾

View

Edit ▾

Clear

Revert All Changes

Auto Layout

Save

Services <

filter

Ad hoc Search

[Create New Service](#)

Add an icon

search

All

Application

Splunk

Network

General



Active Dire...



Application



Cloud



Data Model



Datacenter



Datacenters



Datastore



Datastores



Desktop



Directory



Document



Envelope

Internet Traffic



Load Balancer



Web Teir



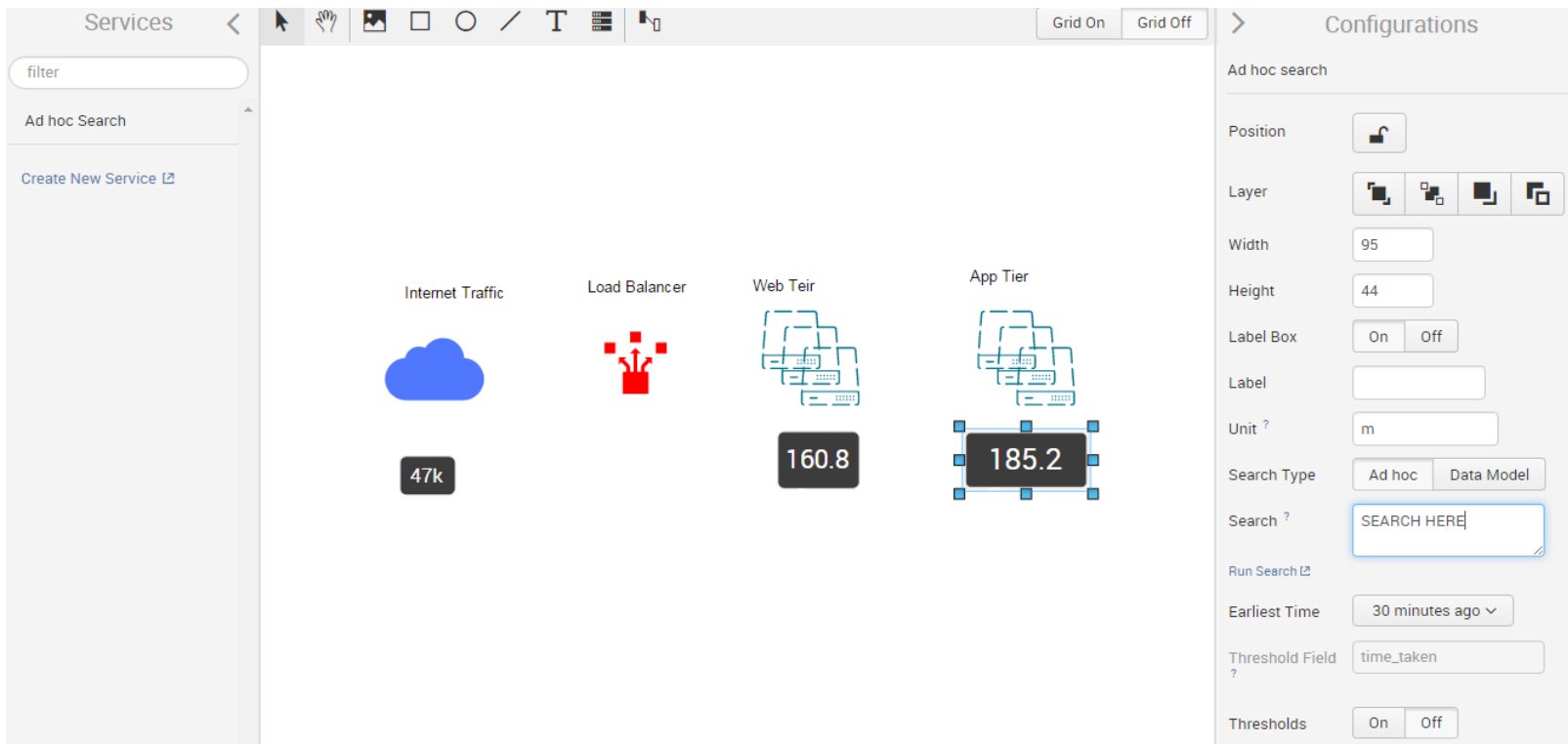
App Tier



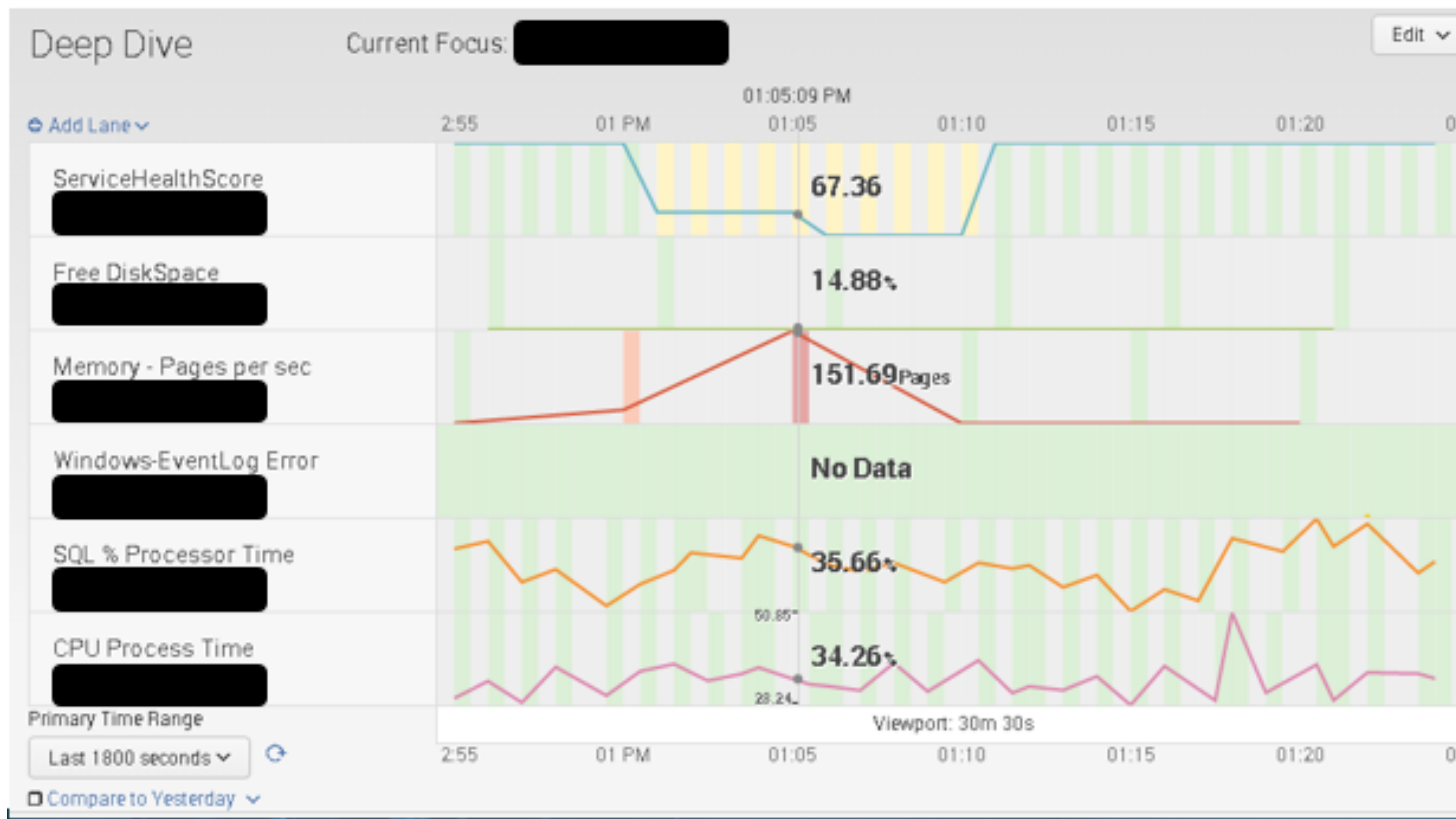
> Configurations

Please select a figure to populate configurations on this panel

Building a Glass Table



Drill Down





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ITSI Opportunities ...and challenges

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ITSI Opportunities

Speed

we were able to deliver service based monitoring in a much shorter time frame

Empower Users

Able to empower a tier 1 user with a tool kit to triage and act as a higher tier

Agility

Develop model out of a problem review to add new KPIs to roll into the service as a hole

Triage

Ability to easily correlate issues through a drill down and determine cause vs effect and then dive right into the logs

Challenges

- Manual effort - 100+ services and 200+ KPIs (and growing!)
- Standards - Define default KPIs/Metrics ahead of time and develop standards... if not rework will be required
- Search Head & Indexer Sizing – each KPI and service increases the load on the system
- Training and Operational Activities – new tool requires training and ongoing education for the staff



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THANK YOU

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