Best Practices for Workload or Infrastructure Licensing

Jeff Meyers & Burch

Splunk, Inc.

Latest Slides: http://splk.it/conf20-PLA1520

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splunk> .conf20

Learning Objectives

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1. When this licensing model is a proper fit

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2. How this licensing model will adjust your incentives and usage of Splunk

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1. When this licensing model is a proper fit
2. How this licensing model will adjust your incentives and usage of Splunk
3. Best Practices that will save you money AND clean up your platform

Background

Splunk's Flexible Licensing Options

Get the most out of Splunk depending on your data needs and capabilities

Predictive

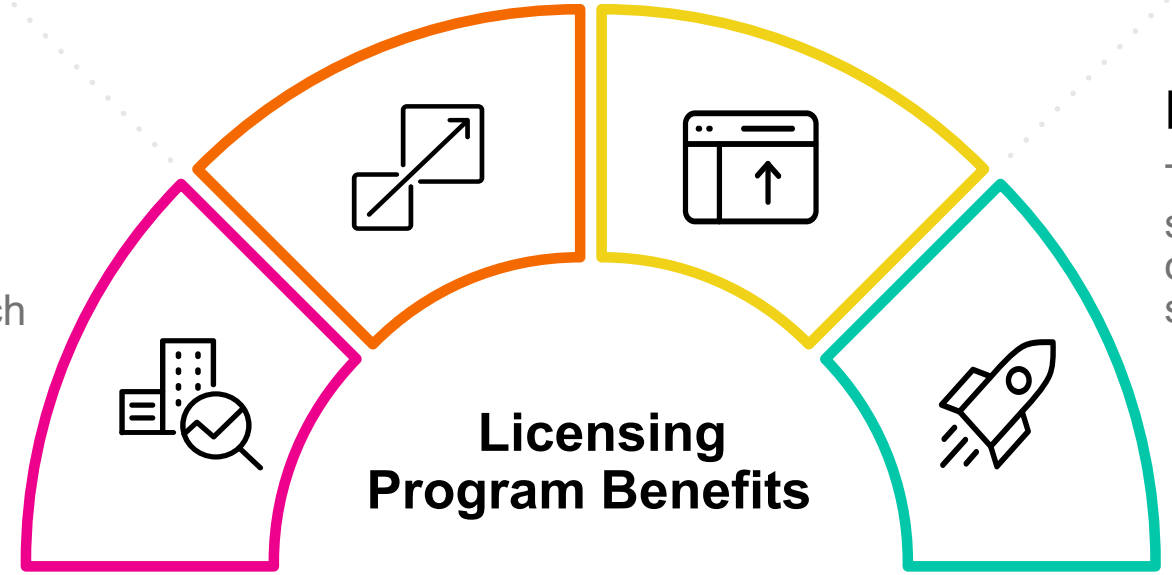
Tranches offer lower price points based on your use cases today with opportunity to grow

Ingest

Well known: Add users, increase activity/searches all for free – max value from ingested data without added cost

Workload or Infrastructure

Value oriented metric aligns spend with search activity, not ingest



Rapid Adoption

Try Splunk with your smaller data sets for IT or Security use cases to see if it is right for you

Workload or Infrastructure Licensing Model

Key things to know

Cloud: Workload Licensing (SVC)

On Prem: Infrastructure Licensing (vCPU)

Workload Licensing is an alternative for Splunk Cloud, Splunk Enterprise & Premium Solutions that is based on the compute required to run Splunk

Workload or Infrastructure Licensing Model

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Workload Licensing is an alternative for Splunk Cloud, Splunk Enterprise & Premium Solutions that is based on the compute required to run Splunk

Available to new and current Cloud or On Prem customers – measured in SVCs for Cloud and vCPUs for On Prem

Workload or Infrastructure Licensing Model

Key things to know

Cloud: Workload Licensing
(SVC)

Utilization

On Prem: Infrastructure Licensing
(vCPU)

Allocation

For you if...

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You do not want ingest limits to force selection between important data

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You do not want ingest limits to force selection between important data

You want a cost model tied to value (search, analytics and insights)

You want the flexibility to adjust workloads based on compute capacity

You want to index all or most of your datasets and source types in Splunk

You have datasets outside of Splunk that can help build additional use cases

Metric Drivers

Metrics
Deliver:

This is possible because...

Metric Drivers

Metrics
Deliver:

Customer control

This is possible because...

Splunk CPU utilization is primarily driven by search load and not ingest amount

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Value orientation → Value is *typically* achieved at search time, not index time

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Metric Drivers

Metrics
Deliver:

Customer control	→	Splunk CPU utilization is primarily driven by search load and not ingest amount
Value orientation	→	Value is *typically* achieved at search time, not index time
Logical way to access high and low priority data	→	Many customers have a lot more barely used data than frequently used data

This is possible because...

Metric Drivers

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Customer control	→	Splunk CPU utilization is primarily driven by search load and not ingest amount
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Logical way to access high and low priority data	→	Many customers have a lot more barely used data than frequently used data

Require:

Dedicated passion for Splunk administration	→	Bring in as much data as you want and pay based on how much compute your searches require.

This is possible because...

Splunk Licenses Logical Cores (Not Usage)

On Prem only, not Cloud

Your Configuration

What Splunk Counts

Splunk Licenses Logical Cores (Not Usage)

On Prem only, not Cloud

Your Configuration

Bare Metal Server with no hyperthreading

(no. of logical cores = no. of physical cores)

What Splunk Counts

Physical CPU cores

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Your Configuration	What Splunk Counts
Bare Metal Server with no hyperthreading *(no. of logical cores = no. of physical cores)*	Physical CPU cores
Bare Metal Server with hyperthreading *(no. of logical cores = no. of virtual cores)*	Virtual CPUs

Splunk Licenses Logical Cores (Not Usage)

On Prem only, not Cloud

Your Configuration	What Splunk Counts
Bare Metal Server with no hyperthreading *(no. of logical cores = no. of physical cores)*	Physical CPU cores
Bare Metal Server with hyperthreading *(no. of logical cores = no. of virtual cores)*	Virtual CPUs
Public Cloud/Virtualization	Virtual CPUs

In pseudo-SPL:

```
| rest splunk_server=* /services/server/sysinfo
| eval logical_cores = coalesce(numberOfVirtualCores ,
numberOfCores)
| table splunk_server logical_cores numberOfVirtualCores
numberOfCores
| search splunk_server IN ("searchhead", "indexer" )
```

In pseudo-SPL:

splunk_server	logical_cores	numberOfVirtualCores	numberOfCores
indexer	2	2	1
searchhead	4	4	2
indexer	2	2	1
indexer	2	2	1
indexer	2	2	1
indexer	4	4	2
indexer	2	2	1
searchhead	2	2	1
indexer	2	2	1
indexer	1	1	1
indexer	4	4	2

Sizing Premium Solutions

Splunk IT Service Intelligence™

Splunk Enterprise Security™

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Premium percentage =

premium data volume / total data volume

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Splunk Enterprise Security™

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Premium Logical Cores =

Premium search head cores +

(premium percentage * total logical cores)

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Splunk Enterprise Security™

Premium percentage =

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Premium Logical Cores =

Premium search head cores +

(premium percentage * total logical cores)

Example:

- Near max of about 1TB of total data
- 250GB is for Security
- Therefore, premium percentage is 25%

Sizing Premium Solutions

Splunk IT Service Intelligence™

Splunk Enterprise Security™

Premium percentage =

premium data volume / total data volume

Premium Logical Cores =

Premium search head cores +

(premium percentage * total logical cores)

Example:

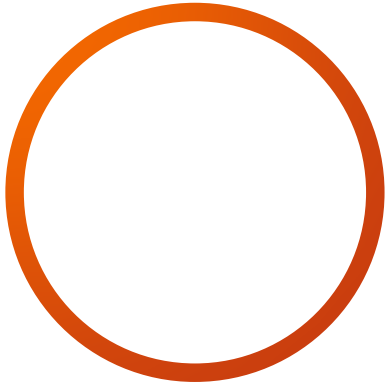
- Near max of about 1TB of total data
- 250GB is for Security
- Therefore, premium percentage is 25%

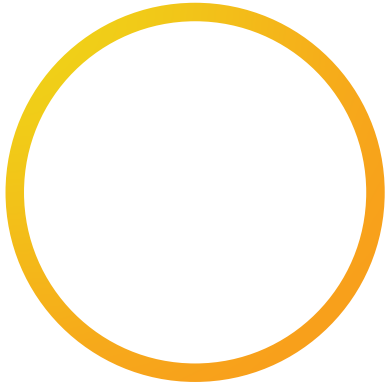
- 125 total cores
- 1 ES host at 24 cores
- = 24 premium cores + (25% * 125 cores)
- = 57

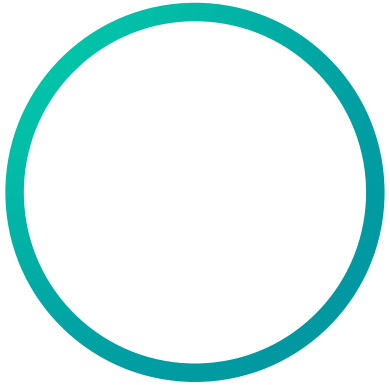
Keep Everything You Love about Splunk

Keep Everything You Love about Splunk

Compatible across portfolio







Use for Enterprise, ES, ITSI

Keep Everything You Love about Splunk

Compatible across portfolio

Use for Enterprise, ES, ITSI

How it's licensed

Based on entitlement: cloud – utilization or on prem – deployed logical cores

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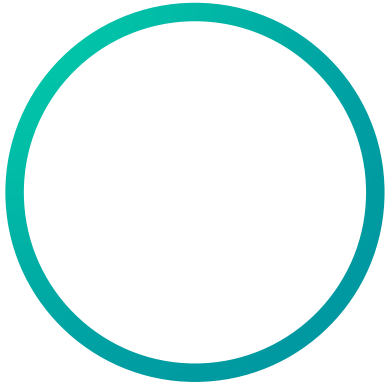
Account for...

Prod, non-prod, DR/failover....



Keep Everything You Love about Splunk

Compatible across portfolio

Use for Enterprise, ES, ITSI

How it's licensed

Based on entitlement: cloud – utilization or on prem – deployed logical cores

Account for...

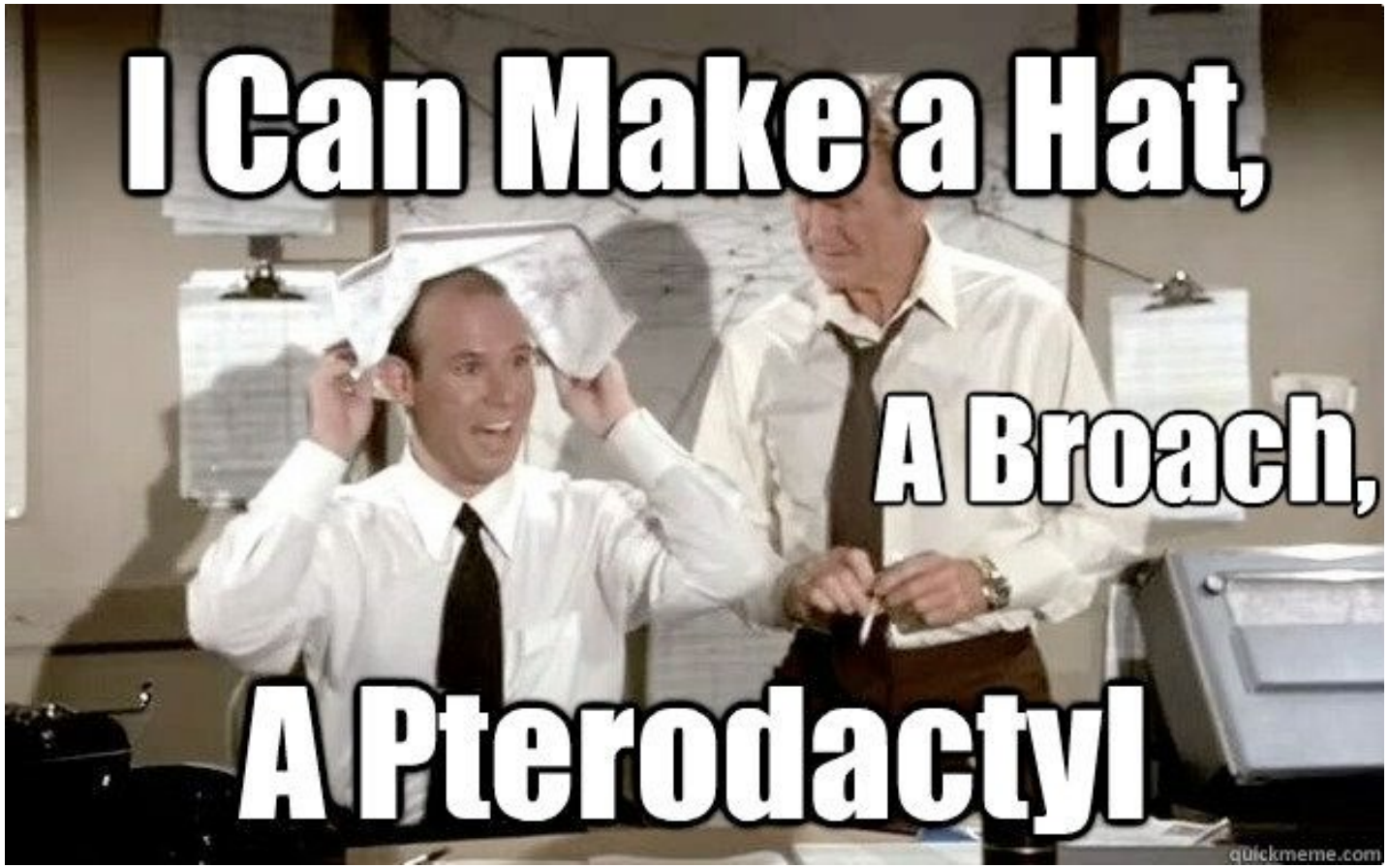
Prod, non-prod, DR/failover....

Entitlement Hardware

Only SH and IDX count towards entitlement

Licensing

Hey Jeff, How Do I Size?



License Files: Don’t Trip

Ingest license reporting is wrong and messages can be ignored

Splunk Enterprise - vCPU License - Term stack Learn more

Licenses	Volume	Expiration	Status	
Splunk Enterprise - vCPU License - Term	512,000 MB	Jun 1, 2021, 1:59:59 AM	valid	Delete
Splunk Enterprise - vCPU License - Term	512,000 MB	Jun 1, 2022, 1:59:59 AM	FROM_THE_FUTURE	Delete
Splunk Enterprise - vCPU License - Term	512,000 MB	Jun 1, 2023, 1:59:59 AM	FROM_THE_FUTURE	Delete
Effective daily volume	**512,000 MB**			


```xml
<?xml version="1.0" encoding="UTF-8"?>
<license>
  <signature>
  bIann71CcSG305oJtirAlsg7v9sa3mCC75GCciR5en4R7PIz3tIZxKF6+rDCDMHrZnOI
  1m+VOnm4ysl0Z1EWKoSwl0YfY9iB0URQZfxWH15XUi7q8fi3cPxavAQI/zj27y+saqqQ
  +21VNImOMHK7CBRGDyrexFQDFisNcZxfxHIegFLPyp4KONPiaNLityxO/SUv4fluQoEr
  <payload>
    <type>enterprise</type>
    <group_id>Enterprise</group_id>
    <quota>429496729600</quota>
    <max_violations>5</max_violations>
    <window_period>30</window_period>
    <creation_time>1597502000</creation_time>
    <label>Splunk Enterprise Term Non-Production vCPU License</label>
    <expiration_time>1597561199</expiration_time>
    <subgroup_id>DevTest</subgroup_id>
    <features>
      <feature>Auth</feature>
      <feature>FwdData</feature>
      <feature>RcvData</feature>
      <feature>LocalSearch</feature>
      <feature>DistSearch</feature>
      <feature>RcvSearch</feature>
      <feature>ScheduledSearch</feature>
      <feature>Alerting</feature>
      <feature>DeployClient</feature>
      <feature>DeployServer</feature>
      <feature>SplunkWeb</feature>
      <feature>SigningProcessor</feature>
      <feature>SyslogOutputProcessor</feature>
      <feature>CanBeRemoteMaster</feature>
      <feature>SubgroupId</feature>
    </features>
    <optional_features>
      <feature>DisableQuotaEnforcement</feature>
    </optional_features>
    <sourcetypes/>
    <guid>8949BC12-DEC0-4A83-88DC-C53D6904B42F</guid>
  </payload>
</license>
```

License Combinations

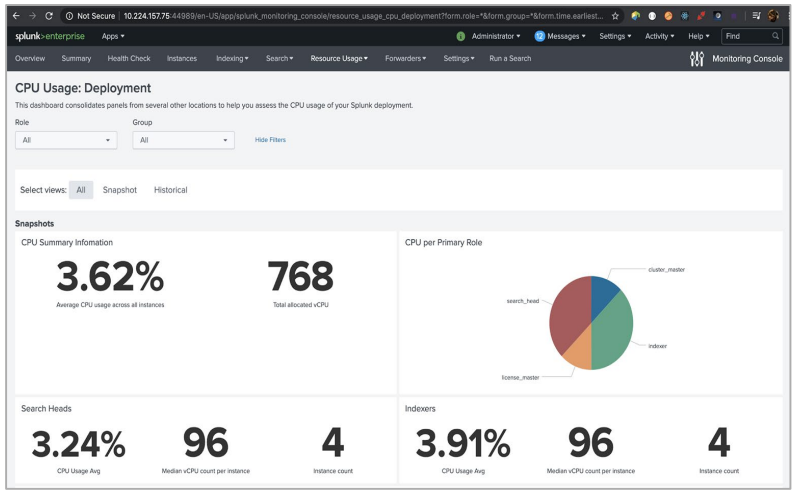
Monitor Usage in Cloud or On-Prem

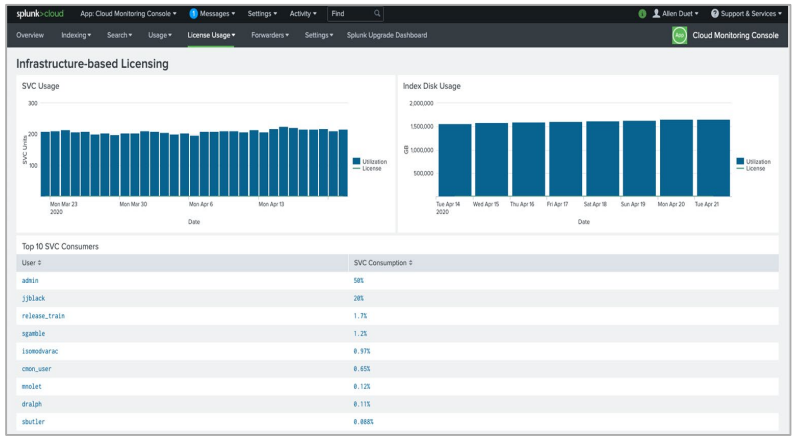
Use the Cloud Monitoring Console (Cloud) or Monitoring Console (On-Prem)

Benchmark and identify peaks in SVC/vCPU use

Identify top consumers and consuming indexes

Monitor distribution across search types, apps, and workload pools to triage & adjust





Best Practices for Infrastructure and Workload Licensing

Workload Drives Compute

The importance of vCPU Yield as a metric

A

3000 GB/day

700K searches/day

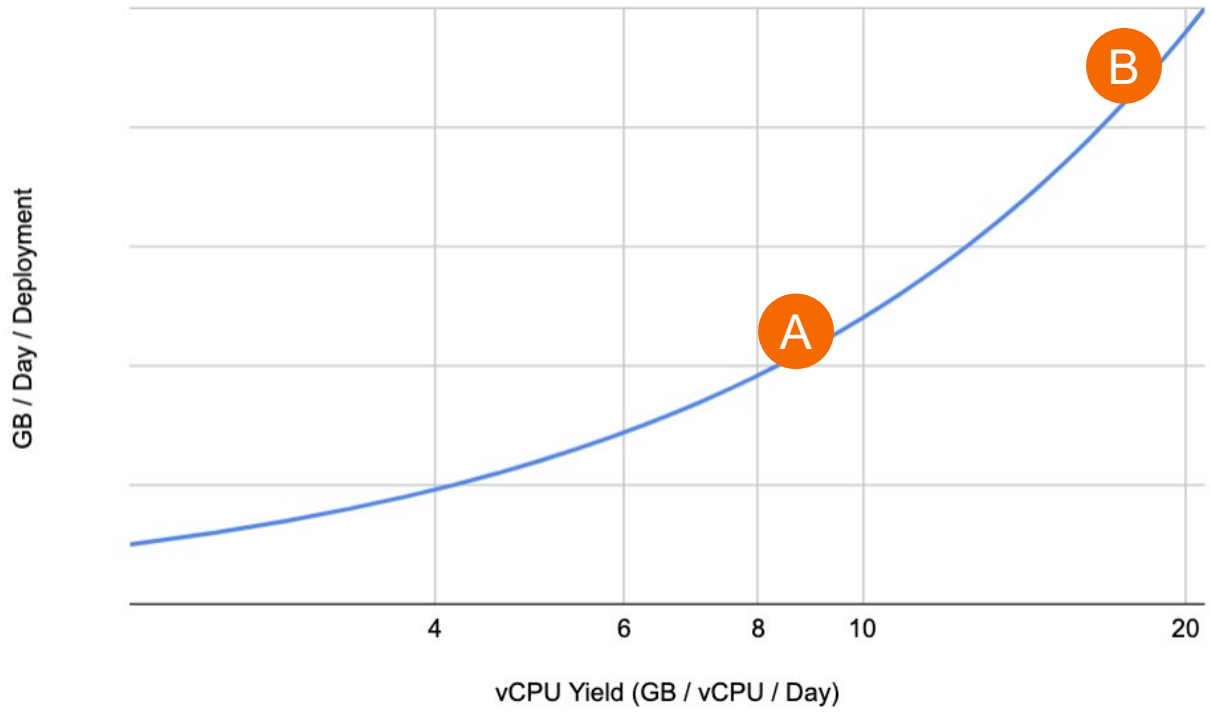
→ **312 vCPU** (~9.7 GB / vCPU / Day)

B

3000 GB/day

35K searches/day

→ **168 vCPU** (~17.9 GB / vCPU / Day)



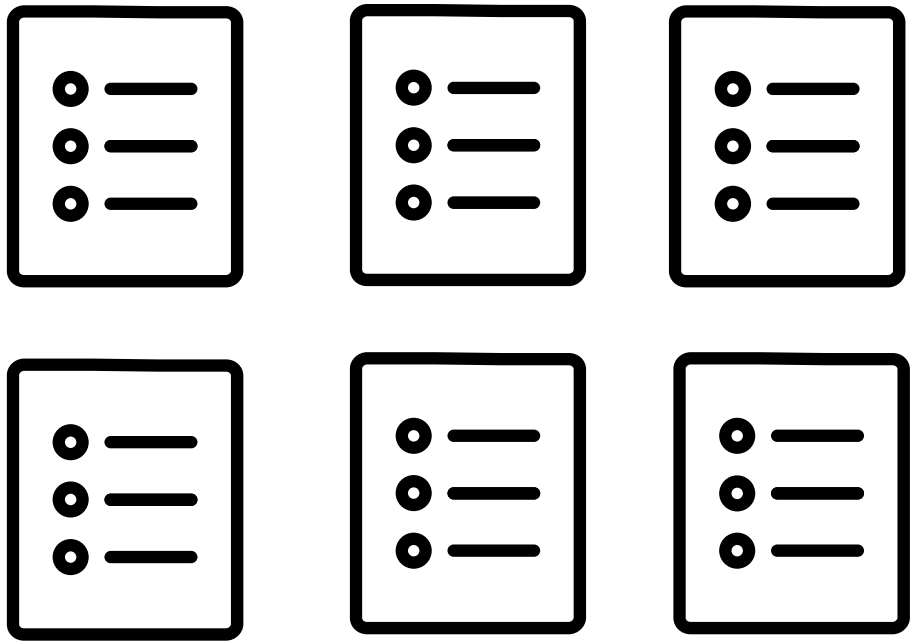
For example, keeping all other factors the same, when search is not consuming CPU, more data can be ingested by the same # of vCPUs.

Oh No, is That a Dent?!

Focus on the Big Picture

Slow Performance Trap

Slow Performance Trap



Add Indexers!

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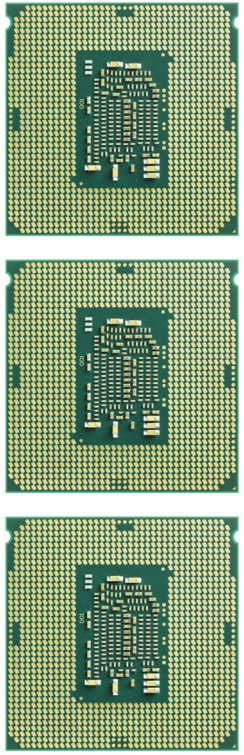
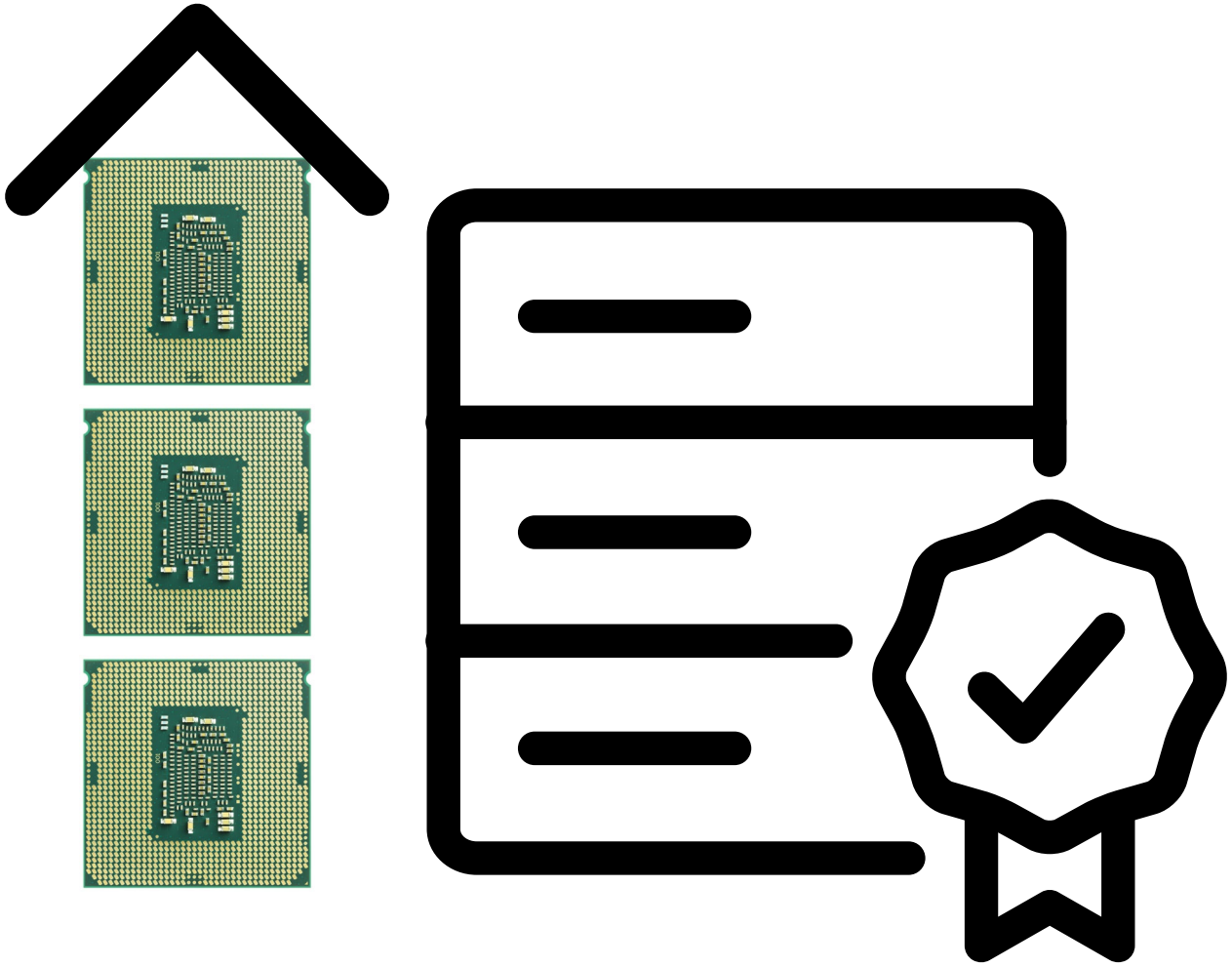


Add Indexers!



Themes for the Best Practices

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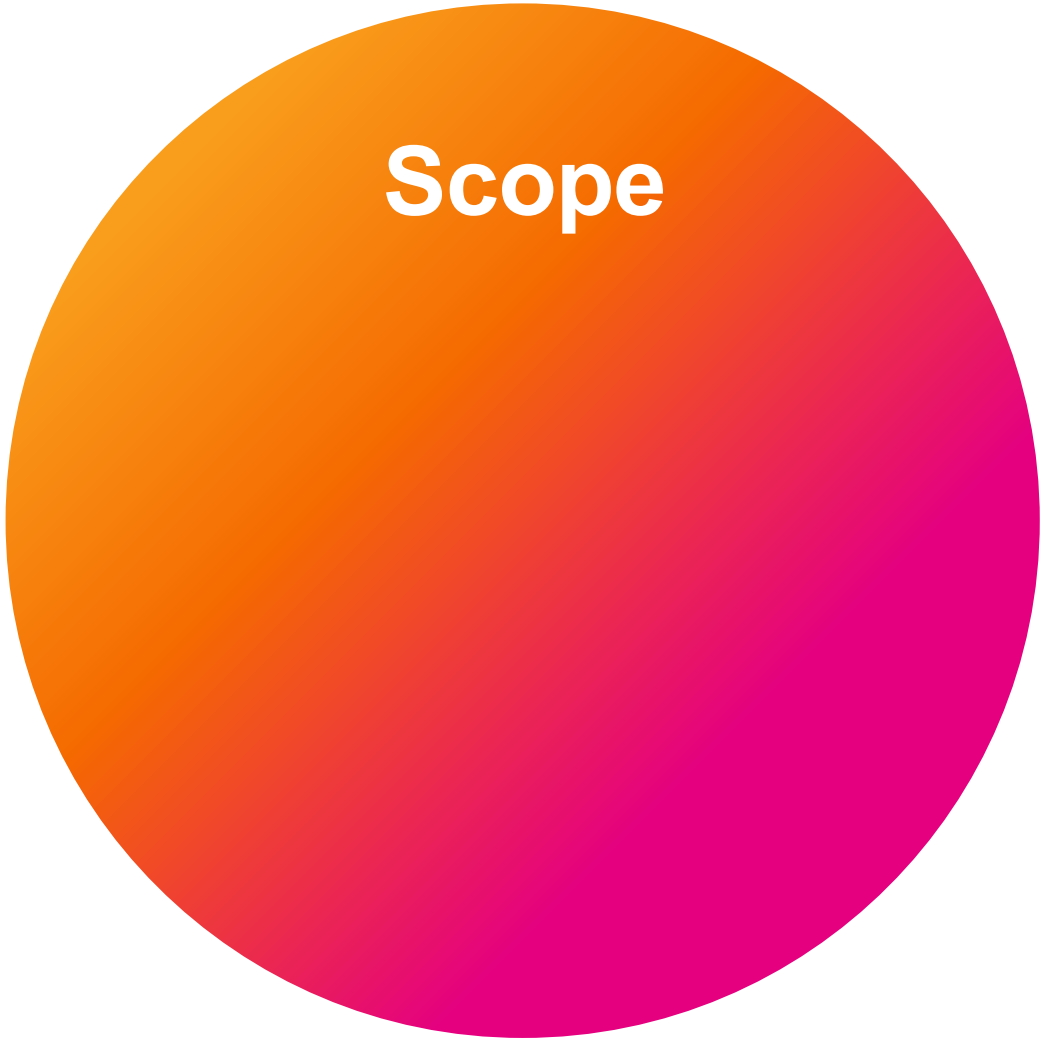

Themes for the Best Practices

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Not Scope

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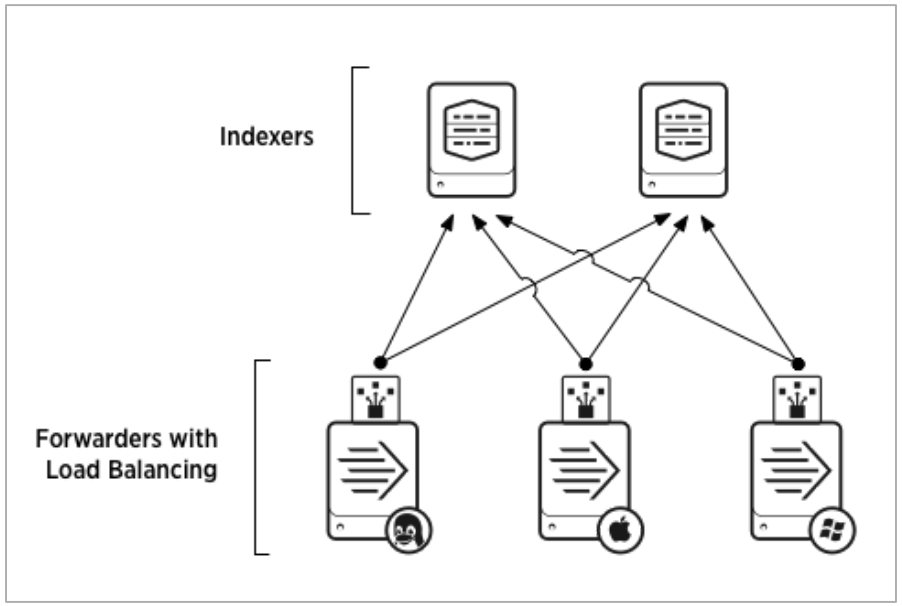
Best Practices

1. Equal Data Distribution
2. Efficient Data Onboarding
3. Restrictions on User Search
4. Well Defined Searches
5. Increasing Parallelization
6. Workload Management (WLM)

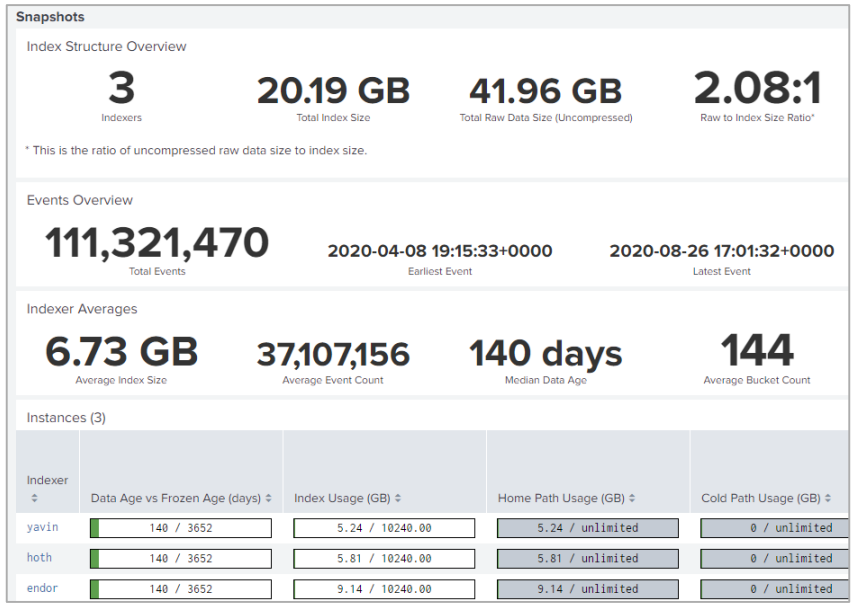
Equal Data Distribution

Common when sending from HF to Cloud; Parallelization; indexer data rebalance

“Configure load balancing for Splunk Enterprise”



“Indexing: Indexes and Volumes”



Snapshots

Index Structure Overview

3	20.19 GB	41.96 GB	2.08:1
Indexers	Total Index Size	Total Raw Data Size (Uncompressed)	Raw to Index Size Ratio*

* This is the ratio of uncompressed raw data size to index size.

Events Overview

111,321,470	2020-04-08 19:15:33+0000	2020-08-26 17:01:32+0000
Total Events	Earliest Event	Latest Event

Indexer Averages

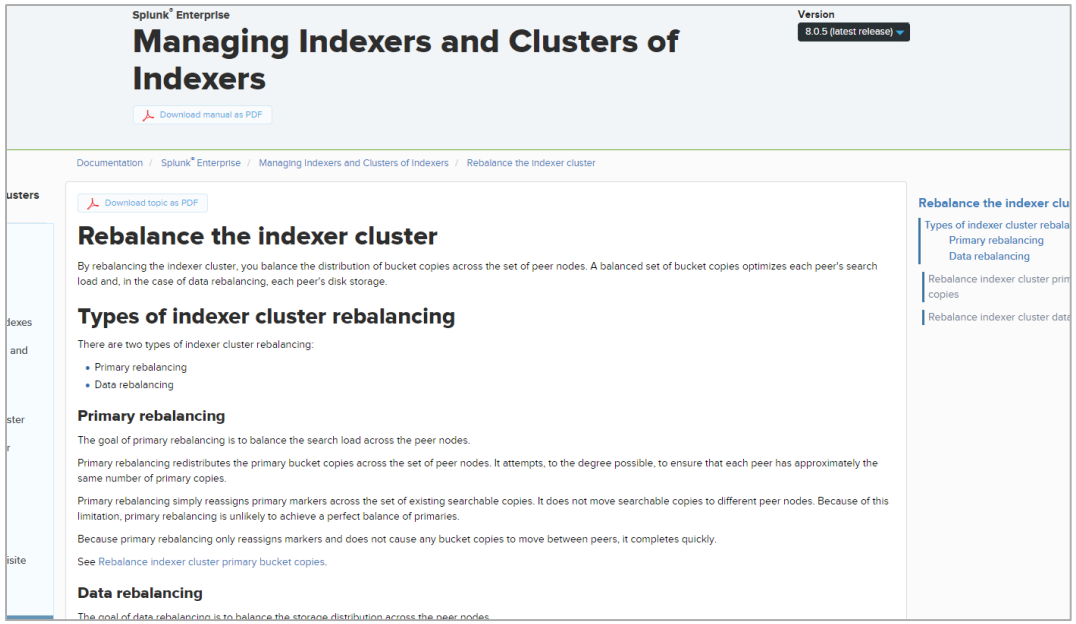
6.73 GB	37,107,156	140 days	144
Average Index Size	Average Event Count	Median Data Age	Average Bucket Count

Instances (3)

Indexer	Data Age vs Frozen Age (days)	Index Usage (GB)	Home Path Usage (GB)	Cold Path Usage (GB)
yavin	140 / 3652	5.24 / 10240.00	5.24 / unlimited	0 / unlimited
hoth	140 / 3652	5.81 / 10240.00	5.81 / unlimited	0 / unlimited
endor	140 / 3652	9.14 / 10240.00	9.14 / unlimited	0 / unlimited

Equal Data Distribution

“Rebalance the indexer cluster”



Splunk® Enterprise

Managing Indexers and Clusters of Indexers

Version 8.0.5 (latest release)

Download manual as PDF

Documentation / Splunk® Enterprise / Managing Indexers and Clusters of Indexers / Rebalance the indexer cluster

Download topic as PDF

Rebalance the indexer cluster

By rebalancing the indexer cluster, you balance the distribution of bucket copies across the set of peer nodes. A balanced set of bucket copies optimizes each peer's search load and, in the case of data rebalancing, each peer's disk storage.

Types of indexer cluster rebalancing

There are two types of indexer cluster rebalancing:

- Primary rebalancing
- Data rebalancing

Primary rebalancing

The goal of primary rebalancing is to balance the search load across the peer nodes.

Primary rebalancing redistributes the primary bucket copies across the set of peer nodes. It attempts, to the degree possible, to ensure that each peer has approximately the same number of primary copies.

Primary rebalancing simply reassigns primary markers across the set of existing searchable copies. It does not move searchable copies to different peer nodes. Because of this limitation, primary rebalancing is unlikely to achieve a perfect balance of primaries.

Because primary rebalancing only reassigns markers and does not cause any bucket copies to move between peers, it completes quickly.

See Rebalance indexer cluster primary bucket copies.

Data rebalancing

Rebalance the indexer clu

Types of indexer cluster rebala

Primary rebalancing

Data rebalancing

Rebalance indexer cluster prim copies

Rebalance indexer cluster data

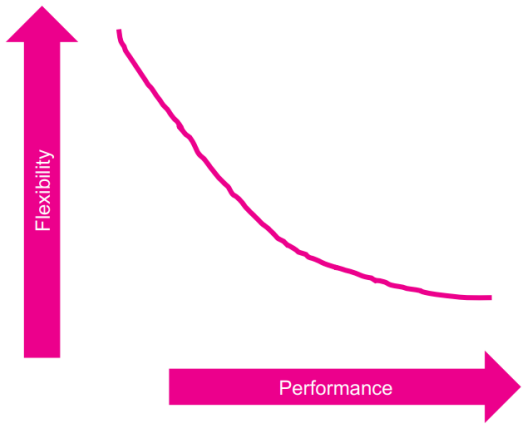
Only for…

- On Prem
- Indexer Clusters
- People that like rules of 3 ;)

Efficient Data Onboarding

Learn more at .conf online: “PLA1486C – Understanding Splunk Performance and Making Hardware (Virtual/Physical) Choices”

Flexibility Trade-Off



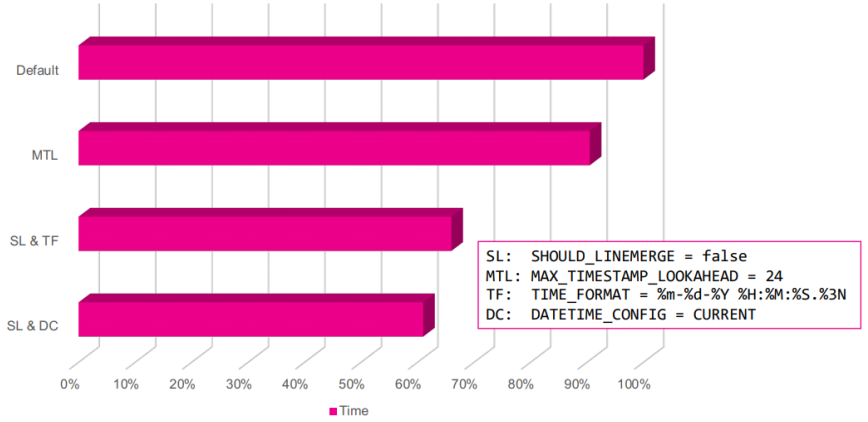
- All pre-indexing pipelines are expensive at default settings
  - Price of flexibility
- If you’re looking for performance, minimize generality via props.conf’s

```
LINE_BREAKER
SHOULD_LINEMERGE
MAX_TIMESTAMP_LOOKAHEAD
TIME_PREFIX
TIME_FORMAT
```

splunk> .conf19

Parsing Pipeline Workloads

Relative to Default



splunk> .conf19

Restrictions on User Search

Search for “Create and manage roles with Splunk Web” on SplunkDocs

Role search job limit

Set a limit for how many search jobs that all users with this role can run at the same time.

Standard search limit: 0

Real-time search limit: 0

User search job limit

Set a limit for how many search jobs that a single user with this role can run at the same time.

Standard search limit: 3

Real-time search limit: 6

Role search time window limit

Select a time window for searches for this role. Inherited roles can override this setting.

Unset

Disk space limit

Set the maximum amount of disk space, in megabytes, that search jobs for a specific user with this role can use.

Standard search limit: 100 MB

Searches consume compute

-> protect against new users

Learn about incentives @:

.conf online “FN1054 - Best Practices and Better Practices for Admins”

Lantern: “Enabling users with incentives”

Well Defined Searches

Monitoring Console's "Search Usage Statistics: Deployment" dashboard

Splunk® Enterprise

Search Manual

Download manual as PDF

Hide Contents

Documentation / Splunk® Enterprise / Search Manual / About search optimization

Search Manual

- Search Overview
- Using the Search App
- Search Primer
- **Optimizing Searches**
  - About search optimization
  - Quick tips for optimization
  - Write better searches
  - Built-in optimization
  - Search normalization

Download topic as PDF

About search optimization

Search optimization is a technique for making your search run as efficiently as possible.

When not optimized, a search often runs longer, retrieves larger amounts of data from the indexes than i
Multiply these issues by hundreds or thousands of searches and the end result is a slow or sluggish syst

There are a set of basic principles that you can follow to optimize your searches.

- Retrieve only the required data
- Move as little data as possible
- Parallelize as much work as possible
- Set appropriate time windows

To implement the search optimization principles, use the following techniques.

Long-running Searches

Report Name/Search String	Search Runtime	Search Start	Earliest Time	Late
search13	5.67s	08/20/2020 17:52:10 -0400	Thu Aug 20 17:52:00 2020	Thu
search15	5.64s	08/20/2020 17:52:10 -0400	Thu Aug 20 17:52:00 2020	Thu
search12	5.59s	08/20/2020 17:52:10 -0400	Thu Aug 20 17:52:00 2020	Thu
search16	5.59s	08/20/2020 17:52:10 -0400	Thu Aug 20 17:52:00 2020	Thu
search14	5.55s	08/20/2020 17:52:10 -0400	Thu Aug 20 17:52:00 2020	Thu
search6	5.54s	08/20/2020 17:52:10 -0400	Thu Aug 20 17:52:00 2020	Thu
search11	5.49s	08/20/2020 17:52:10 -0400	Thu Aug 20 17:52:00 2020	Thu
bundle_rep_log_base	5.47s	08/20/2020 17:52:10 -0400	Thu Aug 20 17:52:00 2020	Thu
search10	5.04s	08/20/2020 17:52:10 -0400	Thu Aug 20 17:52:00 2020	Thu
search5	5.01s	08/20/2020 17:52:10 -0400	Thu Aug 20 17:52:00 2020	Thu

Increasing Parallelization

Search “Parallelization settings” in the SplunkDocs

Increasing Parallelization

Search “Parallelization settings” in the SplunkDocs

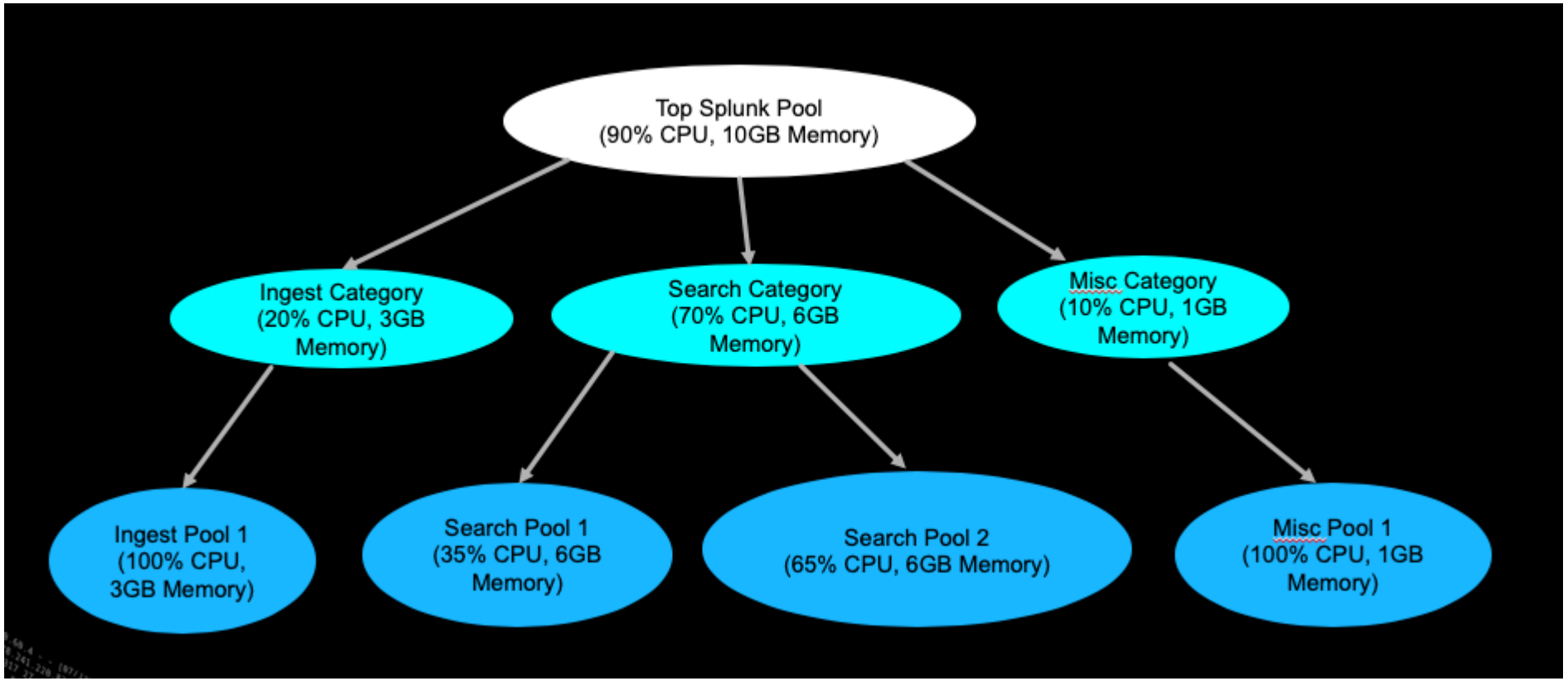
Cloud Managed. But on prem HFs.

Could drive up utilization, which is good for on prem

Could be impacting if insufficient resources available

Workload Management (WLM)

Search “About workload management” on SplunkDocs



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Closing

Legal Blah

Public legal definitions of licensing can be found at *Splunk Offerings Purchase Capacity and Limitations* on splunk.com: https://www.splunk.com/en_us/legal/licensed-capacity.html

Infrastructure based licensing is described publicly on the *Data-to-Everything Pricing FAQ* page on splunk.com: https://www.splunk.com/en_us/software/pricing/faqs/data-to-everything.html#infrastructure-pricing

Success plans are outlined on the support and services page on splunk.com: https://www.splunk.com/en_us/support-and-services/vcpu-plans.html

Call to Action

1. Collaborate: #licensing
   - Sign Up @ http://splk.it/slack
2. Monitoring Console
3. PLA1486C – Understanding Splunk Performance and making hardware (virtual/physical) choices
4. PLA1826C – Taming wild resources. Tips to manage and remediate busy Splunk instances.
5. PLA1582C – Cloud Monitoring Console Tips and Tricks for the Splunk Cloud admin
6. On Demands Services like “Ask an Expert"
   - https://www.splunk.com/pdfs/legal/splunk-on-demand-services-catalog.pdf

Thank You

Please provide feedback via the

SESSION SURVEY