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Indexes – a Splunk Admin´s best friend

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Indexes – an Splunk Admin´s best friend

- what stands between you and that next cup of coffee

- **Introduction** > to Betsson Group and yours truly
- **Indexes basics** > the core concepts and key variables for administration purposes
- **Principles** > the “immutable laws” behind successful Splunk governance
- **Design** > Best practices and considerations for an immaculate index & role structure
- **Execution** > how to leverage the principles and design in practice
- **Q&A** > ask me anything

Introduction

to Betsson Group and yours truly

Betsson Group – Online Gaming Company

“The best customer experience in the industry”

1
Platform

17
Brands

1700+
Employees representing 56 nationalities in 12 locations

692k+
Active Customers Q2 2018

4.72b
Revenue 2017 (SEK)

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VICTOR ROSBERG

- Leads Operational Intelligence team
- IT Ops: 12+ years, Tech & Leadership
- Splunk: 5+ years, Architect
- Co-leads Splunk User Group Sweden

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OPERATIONAL INTELLIGENCE

- Manager, Architect and 3x Engineers
- Splunk Platform capacity: 2.5TB/day, typically 365days retention including Enterprise Security & ITSI
- 700+ users spanning from operations, development, QA, NOC, SOC and more

Indexes basics

the core concepts and

key variables for administration purposes

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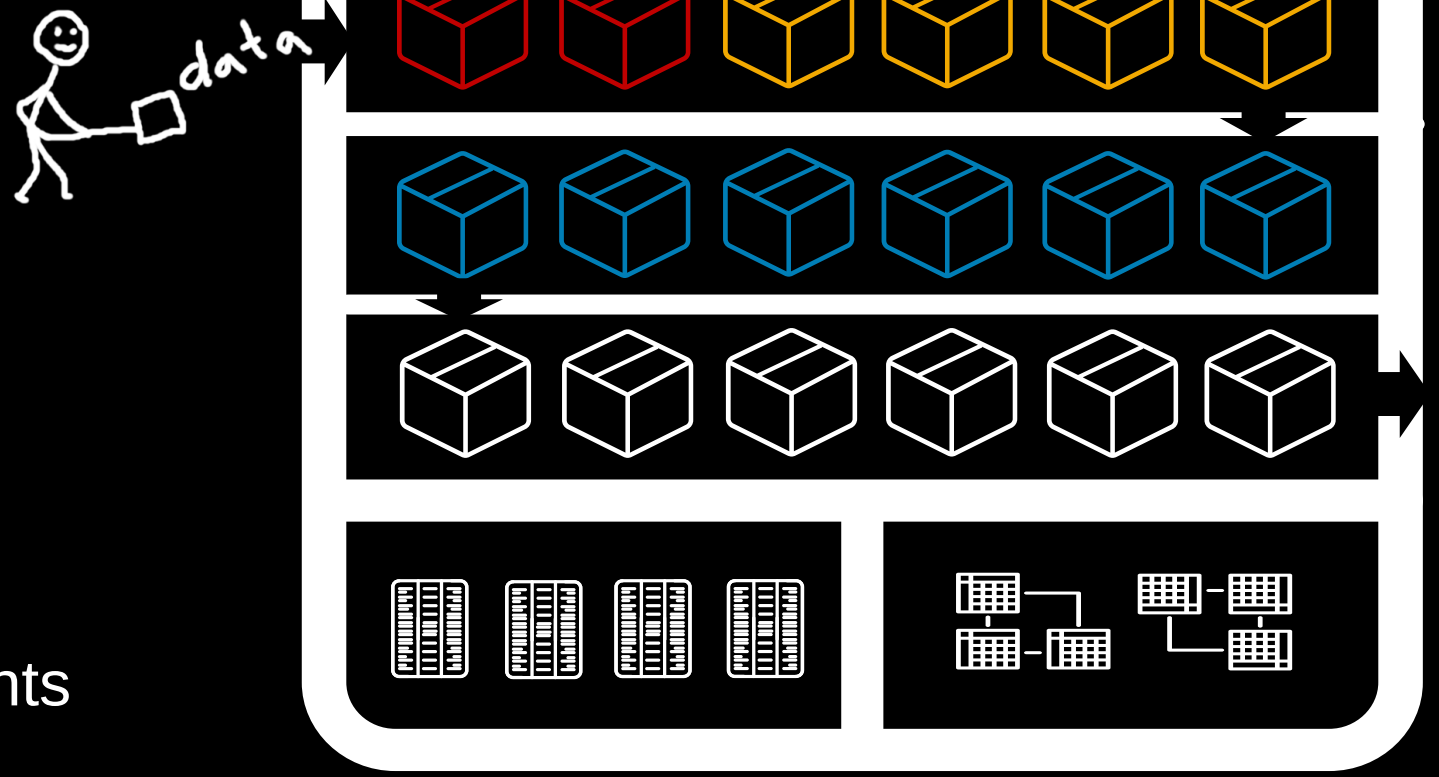
Indexes Basics > General Concept

Think of an index as a **container of data**

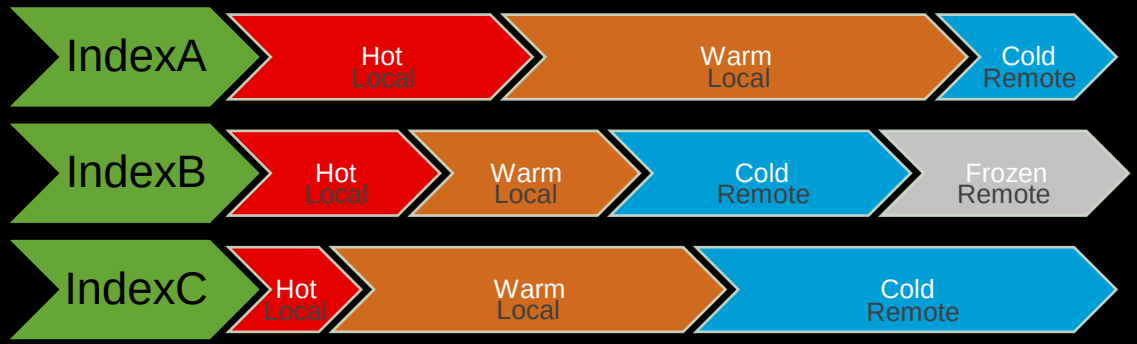


An index contains:

- ***Raw data*** stored as ***events,*** bundled into ***buckets***
- ***Meta-data*** about the events
- ***Catalogue of pointers*** to events

Indexes Basics > how buckets flow

- Buckets are **bundles of events**, received close in time **within an index**
- **Buckets** move with **age,** split **over different volumes**
  - **Hot: read/write / Warm: read-only**
    - Typically on fast local disk
  - **Cold: read-only**
    - Typically on slower storage like a SAN
  - **Frozen: archive/delete**
    - Archived data typically on persistent storage
    - Archived data not-searchable until **thawed**
    - If not Archived, data will be **deleted**



Indexes Basics > key variables

These are the key variables we´ll work with:

- **Name** > Each index have a unique name we can use
- **Roles** > Each index´s access can be controlled via Splunk roles
- **Volumes** > Each index´s buckets move through volumes, with different storage options, as they age

Principles

the “immutable laws” behind successful Splunk governance

Principle #1: clearly defined responsibilities

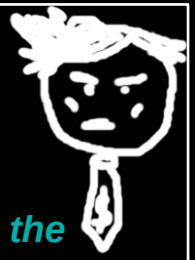
Identify these three roles within your organization

Service Provider

- *"that Splunk guy"*
- *Splunk subject matter experts*
- *Responsible for the Splunk platform; governs, supports, monitors and develops the platform*
- *Develops the processes, policies and strategy for the platform*

In our case:
Operational Intelligence

Business Owner



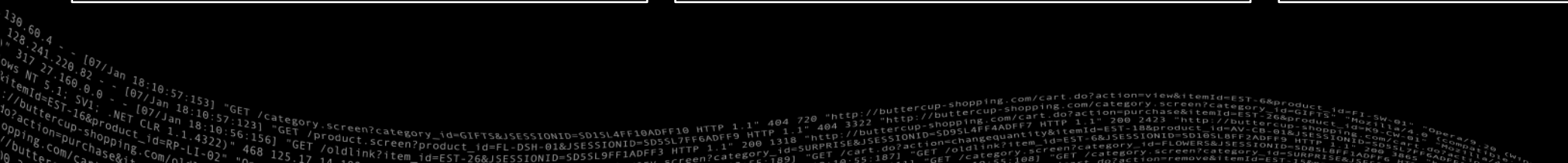
- *"Mr Moneybag"*
- *Stakeholder representing the Business*
- *Has a budget – justifies the cost*
- *Owns the data - responsible for it´s content and who gets access to it*

In our case:
Department Managers

Technical Owner

- *"Team OnCall"*
- *Splunk Super Users*
- *Service subject matter experts*
- *Interacts with Service Provider and Business Owner*
- *Delegated by Business Owner for technical execution*

In our case:
Department DevOps



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Principle #2: full data control

Answer these questions before adding any data to Splunk

"Who owns the data?"

- ***Every event should have an owner***

Useful follow up questions:

- ***Retention / archive time requirements?***
- ***Estimated volume now and future prognosis?***
- ***Expected business value for total footprint?***

"Who can access it?"

- ***Every event should be controlled securely***

Useful follow up questions:

- ***Public or restricted access?***
- ***Confidential or sensitive content?***
- ***Can parts of the data be useful without full access to the full events?***

"How will it be used?"

- ***Every event should be stored for optimal performance***

Useful follow up questions:

- ***What´s the primary use cases?***
- ***What´s the typical timeframe this data will be searched for?***
- ***Can we correlate with other data?***
- ***Do we need all or just parts of the data?***

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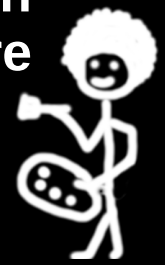
Principles - Summary

- These principles provides you with:
  - Business justification
  - Responsibility distribution
  - Expected use cases
  - User expectations
  - Footprint estimation
  - Security template

Design

Best practices and considerations for an immaculate index & role structure



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Design - #1: Design a solid index naming convention

Each index name should convey:

- **Owner** > Who owns the data?
  - Owners domain
- **Function** > What´s the source and/or purpose?
  - Sub-division within owners domain
- **Access** > Who can access it?
  - Optional for public indexes
  - Security levels like sec1/sec2/sec3

Index name example: Owner ***platform***_Function ***app***_Access ***sec1***

Design - #2: Define data configuration

Each index should be defined to reflect:

- **Retention time** > how long does the data need to exist?
  - Consider storage type, sizing and volume setup
- **Searchability** > how long does it need to be searchable / performant?
  - Consider bucket transition between volumes for optimal performance vs cost
  - Consider storing only events that's typically searched together
- **Total volume** >

  - Consider capacity and archiving options to avoid data loss

Design - #3: Integrity and admin

Each index should be tweaked to reflect:

- **Data Integrity** > Slows down performance but may be necessary for audits
  - Consider requirements around data ***At rest*** and ***In transit*** and possibly split indexes
- **Complexity** > **ended up with loads of indexes?**
  - Consider specifying ***General***, ***Volume*** and ***Index*** specific settings
  - Consolidate indexes where requirements are similar and performance a non-issue

Re-evaluate & Reiterate

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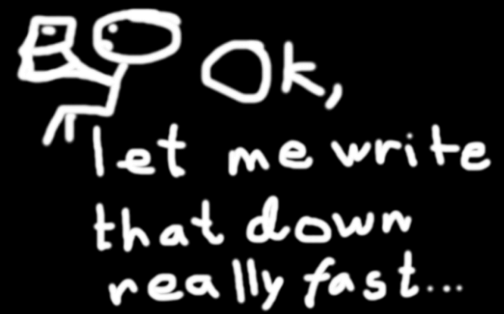
Design – example of an index definition

```
## GENERAL CONFIG FOR ALL INDEXES ##
memPoolMB = 2048
indexThreads = 8
maxTotalDataSizeMB = 4294967295
maxRunningProcessGroups = 16
maxRunningProcessGroupsLowPriority = 2
serviceInactiveIndexesPeriod = 120
frozenTimePeriodInSecs = 31556926
repFactor = auto


## VOLUMES CONFIG FOR ALL VOLUMES ##
[volume:internal]
path = /data/volumes/internal
maxVolumeDataSizeMB = 1100000
[volume:_splunk_summaries]
path = /data/_splunk_summaries
maxVolumeDataSizeMB = 1500000
[volume:cold]
path = /data/cold
maxVolumeDataSizeMB = 18000000
[volume:hot_warm]
path = /data/volumes/hot_warm
maxVolumeDataSizeMB = 14500000
```

```
## INDEX SPECIFIC CONFIG ##

[sportsbook_web_sec]
maxDataSize = 5000
maxMemMB = 10
maxHotBuckets = 10
maxWarmDBCount = 250
maxConcurrentOptimizes = 6
enableDataIntegrityControl=true
tstatsHomePath =
volume:_splunk_summaries/sportsbook/datamodel_summary
coldPath = volume:cold/sportsbook/colddb
homePath = volume:hot_warm/sportsbook/db
thawedPath = /data/thawed/sportsbook/thaweddb
```



Design #4 - Splunk Roles

Make use of three types of Splunk roles to control capabilities and access

Capabilities

- *Limits users resources usage*
- *Create or reuse default roles*
- *Set default index access for public indexes on default user role, inherit upwards hierarchy*
- *Custom roles as necessary*

In our case:
user, power, admin, dashboard

(the ninja club)

Data Access

- *Limits users event access*
- *Map to searchable indexes*
- *1 per non-public index for granularity*

In our case:
<index name>_users

App Access

- *Limits users read/write access*
- *1 per department app, assign default app*
- *1 per non-public app*

In our case:
<department name>_users

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Design - Summary

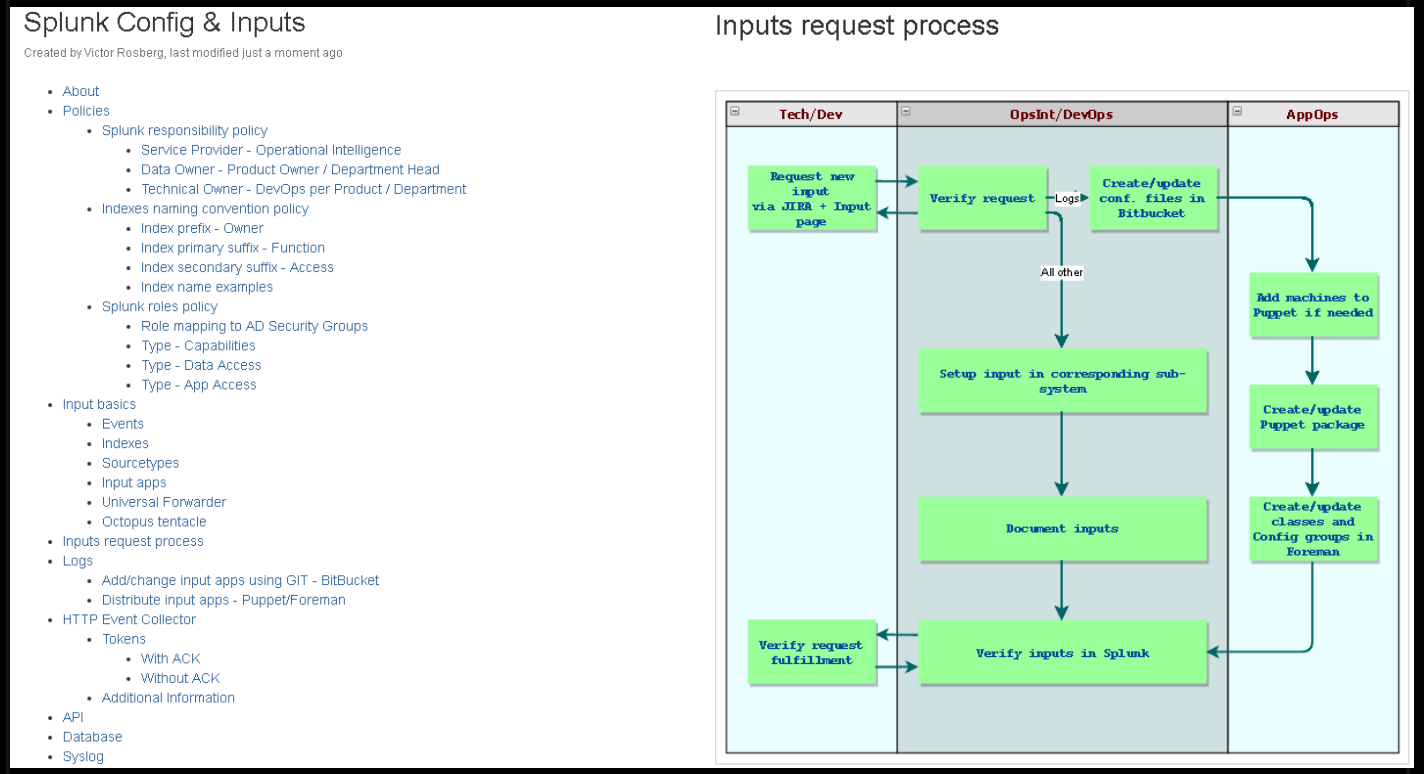
- The index and role structure should now provide:
  - Clear ownership
  - Granular data storage
  - Easy access management
  - Full resource control
  - Footprint estimation
  - Optimized search performance
  - A predictable standard

Execution

how to leverage the principles and design in practice

Execution - document

Make the structure, processes and policies transparent via documentation



- Document the structures, policies and processes
- Make it openly available
- Keep it updated

Execution – visualize

Make it easy and transparent for everyone

- Publish usage footprint
- Keep Business Owners accountable
- Optimize user resource utilization

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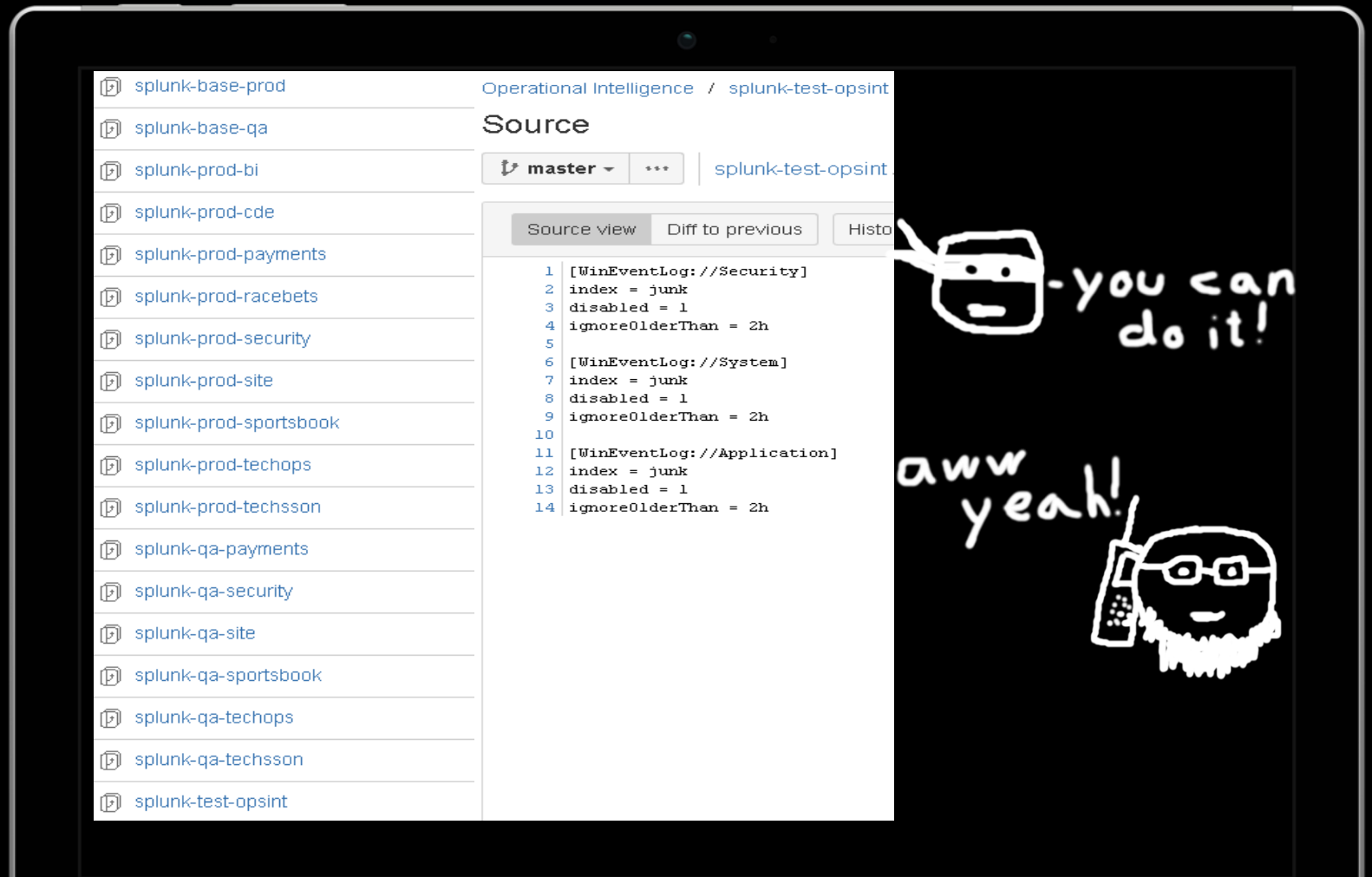
Execution – control

Take full control of all the configuration



- Central, version controlled and secure – use Git!
- Separate configuration by Owner
- Give Technical Owners access

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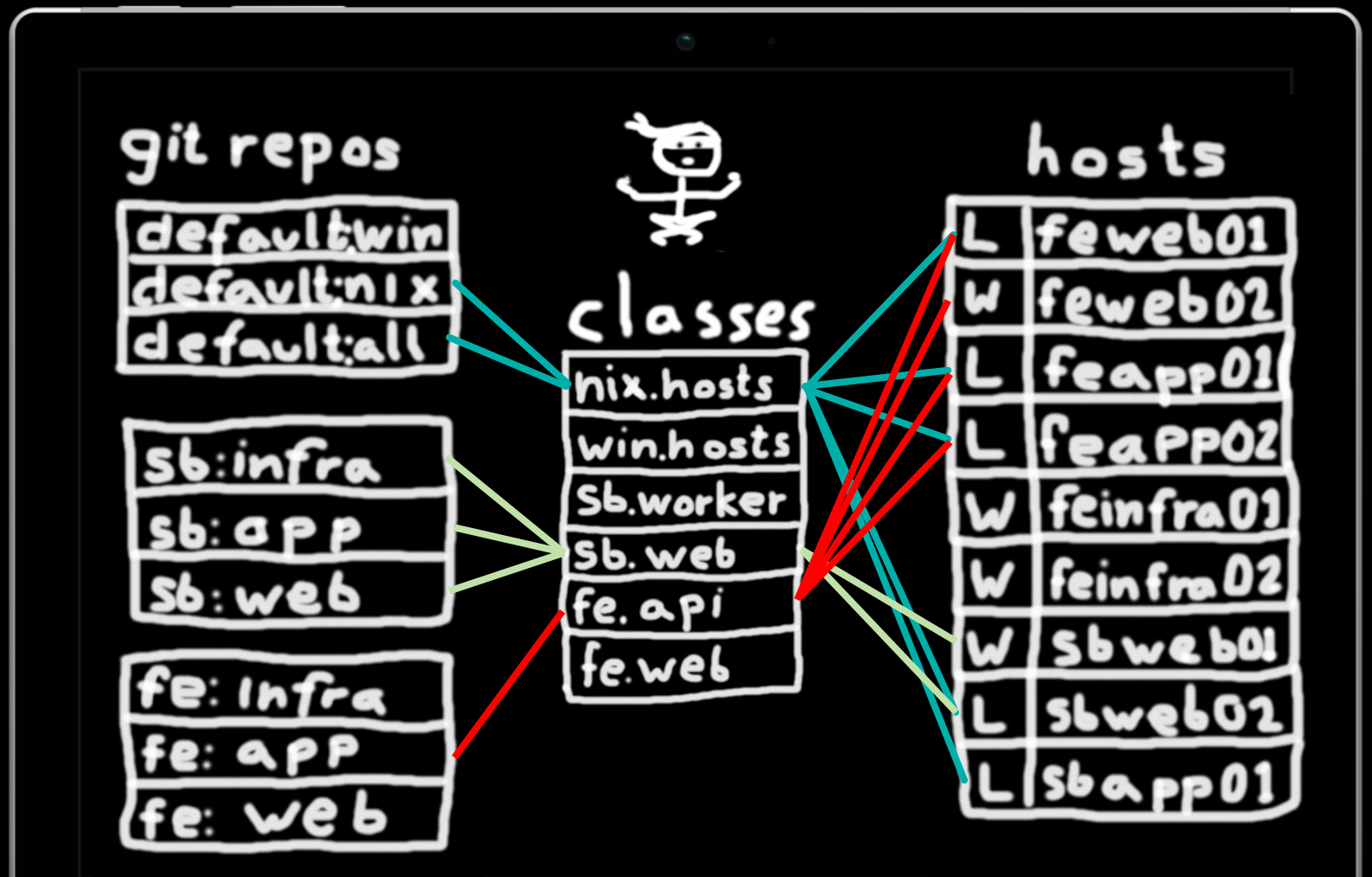
Execution – distribution & management

Make configuration distribution seamless



- Class-based system
- Automatic distribution
- Automatic remediation
- Remote management

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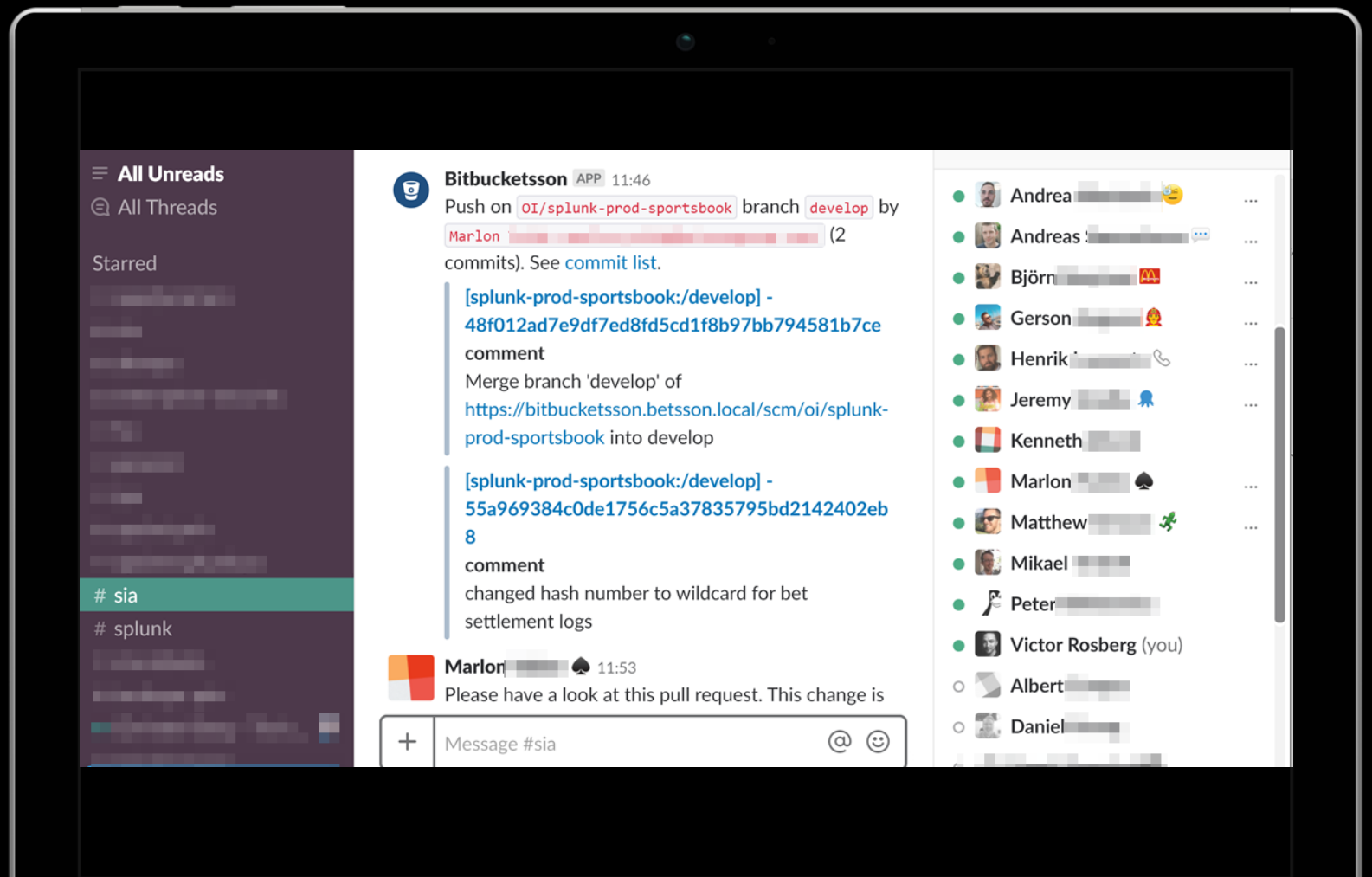
Execution – self-service data onboarding

Move towards governance rather than administration, step by step



- Standardize
- Automate
- Integrate
- Orchestrate
- Delegate
- Monitor

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Key Takeaways

- for a better Splunk admin experience

1. **Build a solid foundation –** early shortcuts will “probably” not scale
2. **Stand by your principles** – deviations will inevitable break integrity
3. **Be transparent** – play with open cards and provide constant feedback

Q&A

Ask me anything

Questions?

Psst! You can also just reach out to me during the event

…or drop me a mail:
victor.rosberg@betssongroup.com

…or connect on LinkedIn:
https://www.linkedin.com/in/victor-rosberg-7a373bb/

Thank You

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