Splunk & Open Source: Build vs. Buy Workshop

Jon Webster
Competitive Intelligence Manager, Splunk
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Agenda

- A Decision Framework for Choosing the right tool for the job
- Open Source is Great!
- Open Source Customer Interviews
- Open Source is Challenging!
- Total Cost of Ownership Components
- Building your TCO Model
- Customer Examples
- Q&A
Jon Webster

5 years at Splunk
Formerly:
Sales Engineer
Client Architect
jon@splunk.com
Has this ever happened to you?

Go figure out whether to use Splunk or OSS.

We’re using OSS for XYZ. Can we use it instead of Splunk?

I think you should use OSS. It has the most RAM!
How do you decide?

- Requirements: deliverables, project lifecycle, timeline, value
- Resources: staffing, end-users, training, infrastructure, time, money
- Technology: on-prem/cloud, java/C++, hadoop/SQL, web/app
- Project risk: skills, complexity, code maturity, support
- Business risks: Opportunity cost? What if the project is delayed? Fails to deliver?
- Personal risk: What does it mean to me if the project fails?
- Politics (sigh)
How do you decide?

- Stipulate the required features & services
- Estimate the costs & impact of top options
- Rank the options by cost/impact
- Build TCO/ROI model comparing top options
- Propose best option, referring to TCO/ROI comparison
# Sample Worksheet

## TCO Summary

**Splunk Enterprise**

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure On-Premise</td>
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<tr>
<td>Software License &amp; Maintenance</td>
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<td>Implementation</td>
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<tr>
<td>Admin Labor</td>
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<tr>
<td>Opportunity Cost</td>
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<tr>
<td><strong>Total</strong></td>
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<tr>
<td><strong>Cumulative</strong></td>
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</table>

**Open Source (Elastic, Logstash, Kibana)**

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
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<td><strong>Total</strong></td>
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<td>$</td>
</tr>
<tr>
<td><strong>Cumulative</strong></td>
<td>$</td>
<td>-</td>
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</tr>
</tbody>
</table>
Why Try Open Source?

- Its “free” – free Free FREE! Muah-ha ha ha ha!
  - Splunk seems cost-prohibitive
  - Don’t want to or can’t get budget for Splunk
  - Open Source seems good enough
- “Open Source First” Orientation
  - Organizational “Open Source Initiative” for cost savings
  - Open-source or build culture
- Valid Development use cases
  - Sub-second response time for application stack; web, document, or product search
Why Developers like Open Source

- Complex endless projects = Job security
- New training & skills
- Resume building – Sam Smith Sr. Developer Sr. Data Scientist
- Build reputation in OSS for future jobs/consulting
  - StackOverflow, GitHub
Why Managers like Open Source

• They’re seen as reducing costs/adding value – it’s free!
• Solve the problem without management cycles
• Shift Capex (license) to Opex (salaries)
• No budget for software, have developers on hand
• “Build it” mentality or Open Source religion
• More staff & infrastructure = bigger budget & job promotion
Who’s Most Likely to Use Open Source?

- Development teams, DevOps teams, SaaS providers
- Teams/Managers who don’t pay for infrastructure
- Teams/Managers who have lots of developers/sysadmins and can absorb the staffing costs
Open Source Customer Interviews

Interviewing Competitors’ Happy Production Customers

Production Interviews

- 9 Time-Series Use Cases:
  - 7 IT Operations Logging
  - 2 Security Operations

- 4 Non-Time-Series Use Cases:
  - 1 Custom Application Development
  - 1 Website Search Engine
  - 1 Media Document Search Engine
  - 1 Multi-Database Search Cache

User Conference Interviews

- 17 Presenters:
  - 4 IT Ops
  - 1 Sec Ops
  - 8 Custom App Dev
  - 4 Web Search

- 100 Attendees
  - 50% App Dev/Web Search
  - 50% Dev Ops/IT Ops Logging
  - Largest: 35GB/day 10 Nodes
Open Source Customer Interviews

- Almost all were under 25GB/day per 8 core, 50GB/day per 16 core
- OSS needs 5-10 servers to match a single Splunk server, plus nodes for parsing, visualization, cluster masters, client nodes, kafka, zookeeper, reverse proxy, alerting, job scheduling, monitoring, and maybe a Hadoop cluster for multi-site replication and data persistence
- OSS needs many times the disk space of Splunk
  - Yes there are ways to optimize storage, but...
  - Optimizing for infrastructure savings reduces functionality
Open Source Customer Interviews

- 1TB/day and larger takes 6-18 months to develop & deploy
- Multiple clusters needed for large use cases – additional tooling
- Additional persistent datastore usually required (hadoop)
- Ingestion is a bottleneck – time consuming and fragile (maintenance!)
- Visualization is limited – many deployments build their own UI
- 90% of large deployments implement message bus (kafka, redis, MQ)
- End-user requests create dev backlog
Why so Much Storage?

JSON format, index every field, redundant “message”, “_source”, & “_all” fields.

Splunk: 297 chars, 1 index, 1 TB raw = ½ TB on disk

ELK: 1910 chars, 56 indexes, 1 TB raw = 4.8 TB on disk (including GeoIP & Identity data)

Splunk Data is enriched at search time so no extra data is stored or indexed!

Want to enrich ELK data?

Green: Original syslog event
Orange: Identity data added
Red: GeoIP data added
Why so Much Storage?

Storage optimization – at what cost?

Recommendations:

- Delete the original “message” field
- Disable the “_all” field
- Disable the ”_source” field
- Set optimal index/analyze options in schema for each data source
- Use best_compression option to reduce disk space

Which means:

- Affects Compliance & Debug Uses
- No Full-Text Search Capabilities
- Not practical for deployments with 100s – 1000s of data sources
- More infrastructure required to maintain performance
- Disables update API, on the fly highlighting, & reindex API
Why so many Servers?

Memory requirements drive server explosion

Experts pointed us to these hosting services for best practices:

• ObjectRocket provisions 0.125 GB memory for each GB of disk

• Compose.io (an IBM company) provisions 0.1 GB memory for each GB of disk

• Bonsai provisions 0.1 GB memory for each GB on disk
  – [https://bonsai.io/pricing](https://bonsai.io/pricing)

• Qbox provisions 0.05 GB memory for each GB of disk
  – [https://qbox.io/pricing](https://qbox.io/pricing)

• Elastic.co’s Elastic Cloud provisions 0.043 GB memory for each GB of disk
  – [https://www.elastic.co/cloud/pricing](https://www.elastic.co/cloud/pricing)
Why so many Servers?

1 TB/day for 90 days – 635 Servers?!

Experts pointed us to these hosting services for best practices:
1TB/day, 90 days retention, 350% raw/disk ratio, 3 total copies of data = 945,000 GB total disk

<table>
<thead>
<tr>
<th></th>
<th>Elastic.co</th>
<th>Qbox</th>
<th>Bonsai</th>
<th>Compose.io (IBM)</th>
<th>ObjectRocket</th>
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</thead>
<tbody>
<tr>
<td><strong>Total Disk</strong></td>
<td>945,000</td>
<td>945,000</td>
<td>945,000</td>
<td>945,000</td>
<td>945,000</td>
</tr>
<tr>
<td><strong>Ratio</strong></td>
<td>0.043</td>
<td>0.05</td>
<td>0.1</td>
<td>0.1</td>
<td>0.125</td>
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<tr>
<td><strong>GB Memory</strong></td>
<td>40,635</td>
<td>47,250</td>
<td>94,500</td>
<td>94,500</td>
<td>118,125</td>
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<tr>
<td><strong>Total Servers @ 64GB/node</strong></td>
<td>635</td>
<td>738</td>
<td>1,476</td>
<td>1,476</td>
<td>1,845</td>
</tr>
</tbody>
</table>
Our Dimensions for 1TB/day, 30 days retention:

- Seven clusters for event feeds (grouped by feed type)
- 60+ Linux virtual servers: 12 core, 96 GB, 6TB Disk, plus:
  - 192 TB SAN
  - 1.6 PB of longer-term snapshot storage
- 16 servers (4 Shippers & 12 Parsers)
- 4 Kafka Servers (96 partitions), plus 3 Zookeeper Servers

Total: 83 Servers, 192 TB SAN, 1.6 PB Add’l Storage
Elastic Infrastructure alone almost equals Splunk’s TCO

<table>
<thead>
<tr>
<th>Year 1</th>
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<td>$806,550</td>
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<td>$1,162,129</td>
<td>$800,049</td>
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<td>$2,762,226</td>
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<tr>
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<td>$1,962,178</td>
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<table>
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<tr>
<th>Year 1</th>
<th>Year 2</th>
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<th>Total</th>
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<tr>
<td>$3,486,846</td>
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<tr>
<td>$3,486,846</td>
<td>$4,943,053</td>
<td>$6,399,259</td>
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</tr>
</tbody>
</table>

Prices displayed are list price
ELK for 2.7 TB/day, 50 days retention:

- 128 Servers: 8 core, 64 GB, 6TB Disk 768
- 50 Hadoop Servers: 24 core, 256 GB, 20TB Disk
  - Retain raw data in HDFS in case of data loss in elasticsearch
- No mention of additional Logstash, Message Bus & other Servers

Total: At least 178 Servers, 1768 TB Disk
Elastic Infrastructure alone almost equals Splunk’s TCO

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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<tr>
<td>$26,000</td>
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<tr>
<td>$440,550</td>
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<td>$440,550</td>
<td>$1,321,650</td>
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<td>$1,817,576</td>
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<table>
<thead>
<tr>
<th>Open Source (Elastic Stack)</th>
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<th>Total</th>
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<td>$650,200</td>
<td>$1,950,600</td>
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<tr>
<td>$5,866,684</td>
<td>$2,237,084</td>
<td>$2,237,084</td>
<td>$10,340,851</td>
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</tr>
</tbody>
</table>

Prices displayed are list price
A customer meeting, where we:

• Share what we’ve learned from dozens of Open Source Production Deployments
• Discuss the customer’s actual Open Source experience and metrics
• Translate the customer’s metrics into real costs
• Prepare a Build vs. Buy Total Cost of Ownership Model
• Have the Customer validate and own the Model
• Deliver a CFO-Ready Business Case
Business Value Consulting Services

Additional Common Customer Deliverables:

• CFO-Ready Business Cases
• Value Realization Studies
• Data Source & Use Case Analysis
• Customer and Industry Benchmarks
• Enterprise Adoption Roadmaps
• Skills & Staffing Readiness
## Business Value Consulting Services

Customize your value assessment by including the services that apply.

<table>
<thead>
<tr>
<th>Service</th>
<th>Description</th>
<th>Duration</th>
<th>Contact Person</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value Stack</strong></td>
<td>Align Splunk capabilities with key objectives and pain points</td>
<td>60 minutes</td>
<td>Stakeholders</td>
</tr>
<tr>
<td><strong>Value Quantification</strong></td>
<td>Quantify current and/or future value by use case</td>
<td>60 minutes per value center</td>
<td>Splunk Admin</td>
</tr>
<tr>
<td><strong>Success Stories</strong></td>
<td>Document 2-3 real life value stories from your deployment</td>
<td>45 minutes per story</td>
<td>Splunk Admin</td>
</tr>
<tr>
<td><strong>Data Source Analysis</strong></td>
<td>Uncover use cases to drive more value from your data</td>
<td>30 minutes per team</td>
<td>Splunk Admin</td>
</tr>
<tr>
<td><strong>Multi-Year Roadmap</strong></td>
<td>Plan a deployment based on value and data sources</td>
<td>60 minutes</td>
<td>Splunk Admin</td>
</tr>
<tr>
<td><strong>Center of Excellence</strong></td>
<td>Assess key roles, responsibilities and skills</td>
<td>60 minutes</td>
<td>Splunk Admin</td>
</tr>
<tr>
<td><strong>Demand Matrix</strong></td>
<td>Uncover key groups that will benefit from Splunk</td>
<td>3 hours onsite</td>
<td>Splunk Admin</td>
</tr>
<tr>
<td><strong>TCO Analysis</strong></td>
<td>Assess TCO for Cloud vs. On-Premises or Splunk vs. ELK</td>
<td>1 hour</td>
<td>Splunk Admin</td>
</tr>
</tbody>
</table>

### For More Details:
- [Value Stack](#)  
- [Value Quantification](#)  
- [Success Stories](#)  
- [Data Source Analysis](#)  
- [Multi-Year Roadmap](#)  
- [Center of Excellence](#)  
- [Demand Matrix](#)  
- [TCO Analysis](#)
Appendix: Build vs. Buy Workshop Executive-Ready Business Case
Splunk vs. Open Source: 3 Considerations

1. **Time to Market**
   - Value is achieved faster with a platform vs. the time required to build it

2. **Benefit Realization**
   - A solution’s ability to produce proven customer success increases likelihood that benefits will be realized
   - A platform built from 10,000+ customers will yield more value than a solution built entirely from scratch

3. **Total Cost of Ownership**
   - Open source software is not free
   - Production deployments can easily exceed 4-10x Splunk cost
Consideration 1: Time to Market

- Value is achieved faster with a **purpose-built platform** vs. the time required to build it (even basic functions)
- **Pre-built apps** speeds deployment (SplunkBase has 1000+ apps)
- **Time** impacts how much value will be realized
- **EXAMPLE: Applying this consideration**
  - Assuming $1.2M/year of projected benefits from a deployment
  - If Splunk takes 2 months to deploy, it delivers $1M of value in year 1
  - If Open Source takes 10 months to deploy, it delivers $200k of value in year 1
  - Assuming the same end result, Splunk delivers $800k MORE value in year 1
  - TCO would show $800k as “lost opportunity cost” in the Open Source calculation
Real Example: Splunk vs. Open Source

From a Fortune 50 Telecommunications Company

**Project:** Executive dashboard for near real-time TV Programming Analytics

Open Source Build

- Multiple open source solutions manually stitched together
- Took 6 people 6 months’ effort
- Modifications are small development projects

Splunk delivered in **92% less calendar time with 99% less effort**

“Buy” w/Splunk

- Took 1 person 2 weeks’ effort
- Modifications are made by users on the fly
Consideration 2: Benefit Realization

**Splunk**
- 12,000+ production customers
- Vibrant user community
- 1000+ Splunk apps
- Proven customer success
- Documented benefit benchmarks

**Open Source**
- Unknown # of production customers
- Vibrant development community
- No pre-built app store
- No published benchmarks

**EXAMPLE: Applying this consideration**
- An IT Operations project is expected to reduce incident investigation time
- Splunk’s documented benchmarks show the customer will achieve 70-90% reduction
- Since all functionality must be built for Elastic Stack, it may not achieve the same benefit level
- In doing a TCO analysis this must be considered. It would be added as a “lost opportunity cost” to the Open Source calculation
Consideration 3: Total Cost of Ownership

• Consider all the components of cost
  – It’s more than just license fees

• Evaluate production-grade deployments
  – Small side projects may hide true costs

• Scalability and efficiency impact infrastructure and admin costs
  – Hardware, people, etc.

• Different skill sets are required to build vs. configure
  – Highly compensated and scarce open source developers vs. general admins more widely available and affordable
There are Many Components of TCO

License costs are only one of them...

- Server, network, workstation hardware
- Software license
- Installation and integration
- Purchasing research
- Warranties and licenses
- License tracking – compliance
- Migration expenses
- Risks – vulnerabilities, upgrades, patches, failure
- Facility and power
- Testing costs
- Downtime, outage and failure expenses
- Diminished performance (users having to wait, etc.)
- Security (breaches, loss of reputation, recovery and prevention)
- Backup and recovery process
- Technology training
- Audit (internal and external)
- Insurance
- Technology staff
- Management time
- Replacement
- Future upgrade or scalability expenses
- Decommissioning
- ...

License costs are only one of them...
Realities of Production Grade Deployments
Considerations for platform selection – *Infrastructure, people, and time*

- Single platform and solution
- Rich, powerful query language
- Lower cost, available level 1 or 2 resources
- Architecture optimized for scale
- Community of pre-built ‘apps’
- Rapid time to value

- Multiple separate, open source products
- Limited query capabilities
- Highly paid, scarce, level 3 or 4 resources required
- Infrastructure costs at 5-10x Splunk
- Significant development effort required
- Lost opportunity cost due to slow time to market
Splunk vs. Open Source TCO Model
Full detailed comparison of Splunk vs. Open Source costs based on Customer’s numbers

• Hardware acquisition and maintenance
  – Servers, storage, load balancers, data center costs

• Software licensing and maintenance
  – Perpetual, subscription, including renewals

• Professional services
  – Implementation, configuration

• Splunk training / education
  – Includes ongoing recommendations

• Ongoing administration support
  – Sysadmin, architect, developer, power user, Splunk admin

• Opportunity Cost
Sample TCO Summaries

TCO for 3 Years
30 day retention

<table>
<thead>
<tr>
<th>Storage</th>
<th>Splunk</th>
<th>OSS</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>10TB</td>
<td>$20,000,000</td>
<td>$20,000,000</td>
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</table>

TCO for 3 Years
60 day retention

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<tr>
<td>200GB</td>
<td>$5,000,000</td>
<td>$5,000,000</td>
</tr>
<tr>
<td>1TB</td>
<td>$10,000,000</td>
<td>$10,000,000</td>
</tr>
<tr>
<td>5TB</td>
<td>$15,000,000</td>
<td>$15,000,000</td>
</tr>
<tr>
<td>10TB</td>
<td>$20,000,000</td>
<td>$20,000,000</td>
</tr>
</tbody>
</table>
Yearly Schedule
This chart represents the cumulative results over 5 years for OnPremesis, Splunk Cloud, and AWS.
Security Matters

- Open source is community driven; source code is public
- Lack of true product management, software development and test/QA opens real vulnerabilities

threat post

“Hackers have taken an interest in Elasticsearch...”
Splunk vs. Open Source

Summary of the 3 considerations

**Splunk**
- **Time to value**
  - Realized in less than three months
- **Benefit realization**
  - Documented benchmarks and proven customer success
- **TCO:** $2,860,251

**Open Source**
- **Time to value**
  - Realized 6 to 12+ months
- **Benefit realization**
  - No published benchmarks or proven customer success
- **TCO:** $5,577,184
THANK YOU