

Improving users' experience for a suite of DataStax products

Note: I have signed a NDA for this work, therefore would not be able to share all the details

Role

As an UX Research Intern, conducted usability testing studies to gain insights into how users make use of **DataStax (DS) products to store, manage and monitor** data on the SaaS platform.

Team

I was the only UX Intern. **Collaborated with Product Managers, UX Researchers, Software Engineers, Testing Engineering**

Duration

June - August, 2019

Skills and Tools

Tools: Google docs/slides/sheets, Eclipse JAVA IDE, NoSQL/SQL, Atlassian JIRA

Skills: Usability testing, Design thinking, Data Analysis, Building future product roadmap, Contextual Inquiry

Objective

My role in this internship involved understanding the customer environments and their usage of the software to critically better serve the customers. Some of the questions, I answered during internship include: **How do customers employ the DS clusters? Which features of DS are most used by users? To what extent do users find DS monitoring tool helpful? Are there specific features in the software that requires modification?**

Target users: Software engineers/developers; Database administrators

Process

- After receiving a brief, I discussed ideas with my hiring manager and team about how to understand user behavior while conducting remote usability testing
- Taking advantage of my technical background in **SQL and JAVA**, I got myself familiarized with the DataStax products, working on **virtual machines and installing relevant libraries and drivers**
- To get an early start, I was tasked with helping the team with video-coding data collected at a DataStax Accelerate Developer conference for a suite of DataStax products
- I also got myself acquainted with a suite of DataStax products: Appstax, DSE JAVA Drivers, Insights, Constellation (Cassandra as a service), and DataStax Desktop

Process

- Once I had created the study, I **recruited participants internally** within new hires or employees who weren't familiar with the software
- During the process I created **pre-tasks, task scenarios, post-tasks questionnaires** using design principles: collaborating with product managers, designers, and software engineers
- I conducted **independently/collaborated in carrying out over 40+ usability testing studies** for the DataStax products
- The results from these studies were analyzed and categorized based on **low/medium/high priority issues**

Key tasks include: Creating a database

The screenshot displays the Datastax Constellation web interface. At the top, the header shows the Datastax Constellation logo, the text "Your organization", and a user profile for "john.smith@datastax.com". Below the header, a section labeled "1 Database" contains a "Databases" table and a "+ Create New Database" button.

Database (Keyspace)	CPU Load	Locations	Cost/Minute	Storage (Total Raw)	Storage (Used)	Status	Actions
Test Database mykeyspace	Low	US East	TBD	1 CU - 500 GB	<div></div>	Running	View Database Connection Details Terminate

Below the table, the interface shows a breadcrumb "Databases > Test Database" and a "Status: Initializing" indicator. A "Summary" button is visible. The main content area is divided into three panels:

- Test Database:** Displays keyspace name "mykeyspace", organization "Your organization", owner "72ab5aa2-0651-4321-b405-4d8251c68bd0", and creation date "May 8, 2019".
- Size & Location:** Shows "1" capacity unit, "500 GB" total storage, and "US East (1 capacity unit)" location. It also lists "Compute Size: Small" and "Replication Factor: 3".
- Cost:** Indicates "Spent this month: TBD" and provides options for "Estimated Cost" (Per Minute or Per Month) with corresponding "TBD" values for "when running" and "when stopped".

Key-tasks: Monitoring cluster health

constellation.datastax.com

datastax_insights_demo

Summary Applications Performance Recommendations

Recommendations are based on recent cluster metrics for a period appropriate to each recommendation. After you apply a recommendation, its impact will not be reflected on this page immediately. Please check back in a few hours.

Recommendation	Reasons	Node	DC	Importance	Risk
Increase memtable_cleanup_threshold in cassandra.yaml	95% of the flushes since the last restart were under 5MB This node has memtable_cleanup_threshold set to 0.010000 in cassandra.yaml This node has never had writes blocked waiting for a full memtable to flush. Compactions are falling behind. Pending compactions increased at a maximum rate of 0.449291 per minute.	10.101.33.192	Cassandra	High	Medium
Increase commitlog_total_space_in_mb in cassandra.yaml	23% of the flushes since the last restart were triggered by a full commitlog.	10.101.33.199	Cassandra	Medium	Low

DataStax Constellation Your organization john.smith@datastax.com

datastax_insights_demo

Cluster ID: e95f6e4c-c076-4865-9d3682a3d45b DCs: 2 Nodes: 10 Workloads: Cassandra

Performance Insights

Max across all nodes: 22 Long GC Events

Total across all nodes: 453 Dropped Messages, 5 Nodes Reported, 2 Flipping Nodes

Application Insights

1 S4J Index, 4 Driver Anomalies, 0 Tombstone Warnings, 29 Tombstone Errors

Outlier Nodes

Node	DC	Dropped Messages
10.101.33.83	DC1	114
10.101.33.190	DC2	72
10.101.33.178	DC2	66
10.101.32.67	DC1	34
10.101.33.102	DC1	22

Outlier Tables

Keyspace	Table	Highest Read Latencies (P99 micros)	Keyspace	Table	Highest Write Latencies (P99 micros)
keyspace1	standard1	14218	keyspace1	standard1	1322

Process

- Later on the basis of the results got from usability sessions, reported issues **mentioned as tickets on JIRA**
- I participated in the **weekly triage meetings to resolve the issues/modifications** of the product.
- After conducting the usability testing studies, I **analyzed the results from the studies and wrote a detailed report** which was published internally.

Findings

- On the basis of the research conducted by me, the answers to the following product features were answered

For each cluster (Cluster ID, Operating System, Installation Type)

- DSE Version used
- For each datacenter

Number of nodes

Workload type: analytics, search

Graph enabled

Is it running on cloud, which region, instance type

- Variability in operation size
- Read/Write/Update/Delete Ratio
- Replication Settings

No. of destinations per cluster

How many used submitting Spark jobs

Challenges

- My internship was planned and executed well by my hiring manager, but there was a bit of a learning curve while understanding and working with DataStax products.
- Conducting, analyzing, and writing reports simultaneously was quite challenging.

Outcomes

The research provided a great deal of insight into not only how users interact with the DS products but also answered specific product features that needs work

- The key business outcomes answered in this internship include **delivering better customer engagement, create targeted marketing campaigns** and **deliver webinars** to drive early product adoptions
- Understand **customer deployments and key features** usage by customers

Summary

Given the compressed timeline, I learnt to manage time efficiently and also work collaboratively in a team setting. Moreover, **working with stakeholders and understanding business benefits** from the UX research studies was also part of my learning process. During the final internship presentations, the **usability findings were well appreciated** and were **incorporated in making product decisions**.