SUPPORT
APACHE CASSANDRA
IN PRODUCTION

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AGENDA

› Building In-House Support
› Case Study
› Challenges
› Best Practices
› How We Fixed It
BUILDING IN-HOUSE SUPPORT
BUILDING IN-HOUSE SUPPORT

Identify Vision
- Faster & Predictable Turnaround Time
- Cost-Effectiveness
- Open Source Contributions

Define Scope
- 24*7 On-Call Support
- Hot Fixes
- Consultancy
- Community Contributions
BUILDING IN-HOUSE SUPPORT CONT'D.

Build Competence

- **What to learn?**
  - Cassandra
  - Programming
  - Troubleshooting
  - Product

- **How to learn?**
  - Documentation
  - Trainings
  - Community
  - Product issues
  - PoCs
Setup Infrastructure

- Continuous Integration setup
- Test Lab for reproducing defects
- R&D Lab for PoCs and new Feature Evaluation
- Collaboration tools
  - Wiki
  - Mailing Lists
  - Forums etc.
Cassandra In-House Support

X Technologies is a product based organization which has decided to replace RDBMS with C* in 3 product offerings. The decision is expected to positively impact scalability, fault-tolerance & availability of these products. Moreover, the organization aims to cut its expenditure on licensing and expensive RDBMS support.
Proposed solution:
CHALLENGES
Our Biggest Challenges

- Keeping pace with Releases
- Support for EOL versions
- Insufficient/outdated docs
- Lengthy upgrades
- Compaction strategies

- Selling NoSQL concepts
  - Why Repair?
  - How deleting data can increase disk space?
  - How RF determines fault-tolerance?
Addressing Challenges

- Stability over fancy features
- Upgrades aligned with EOL
- Well tested Compaction Strategies
- CI Infrastructure for Patches
- Well documented
  - NoSql concepts
  - Operational procedures

- Be Updated
  - Mailing Lists
  - JIRAs
BEST PRACTICES
C* Operations
BEST PRACTICES

› Daily Maintenance
  - Backup
  - Clearing Snapshots

› Repair
  - Be Selective
  - Repair once:
    › Primary Range
    › Incremental

› Monitoring
  - Repair
  - Dropped Mutations
  - All time blocked
  - Read/Write Latencies
  - GC Pauses
  - Disk Usage
  - Upgrade sstables
BEST PRACTICES

› Automate
  - Scaling/Down Sizing
  - Multi-DC setup
  - Upgrades
  - Backup
  - Restoration
  - Clearing Snapshots
  - Repairs

› Security
  - SSL for JMX
  - Encryption
HOW WE FIXED IT
C* Issues & Solutions
HOW WE FIXED IT

› **GC Pauses**
  - Faster Memtable flushing
  - Aggressive compactions
  - JVM Tuning

› **Slow Table Scans**
  - Spark
HOW WE FIXED IT

› Hung Repair
  - Firewall timeout
  - TCP Keep alive

› Disk Crunch
  - Aggressive compaction
  - LCS
HOW WE FIXED IT

› Performance & OOM
  − Disable THP/Zone Reclaim
  − Max map count

› Wide Rows
  − Divide into buckets
  − Add buckets when needed
QUESTIONS ?