Email Accessibility & Reliability
Combining Dovecot and Scality to Win

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rackspace®
Who are we?

• Dan Shain
  › Heads Engineering, Development, and Operations for Rackspace Applications Services Cloud Office Division
  › 30+ years in the IT Realm with focus on large distributed systems

• Jim Perry
  › Technical Manager for Software Development
  › Responsible for all things Dovecot
  › 25 years in the software development and IT management
IN 2014 WE NEEDED TO CHANGE OUR OPERATIONAL PARADIGM
Dilemma We Faced

Open Source Dovecot with filesystem based storage

Current path would increase base product cost by 200%

Hardware Projections

CAPEX Costs
OPEX Costs
Logistical Nightmare

Status Quo
Dovecot Deployment that was...
4,500+ Assets across 3 Datacenters and in 5 physical zones

Scaling Limitations
- Compute and Storage could not scale independently
- Complicated support processes and scripts

Data Protection
- N+2 Protection for Geo-redundant failures was not reliable and very costly

Environment Management
- Hardware management was a logistical nightmare
- System Rebalancing was Managed Process

Product Impacts
- On boarding limitations caused by write width
- Cost basis rising
Our Use Case
Wide range of uses on a multi-tenant platform

- Multi-tenant environment > 800,000 Domains
- Wide variety of “Domain” level settings
- Usage patterns, although normalized, have large variances

Normal Does not cause problems, “Abby Normal” does… we have extremes…that break the normal
## Demands

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<th>Engineering/Operations Demands</th>
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<td>Happy Customers</td>
<td>Stay abreast of Vulnerabilities</td>
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<td>Improved cost margins</td>
<td>Reduce Operational Costs to run and maintain the business</td>
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<td>Value Added Customer Support Contacts</td>
<td>Stabilize Capital Expenditures</td>
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<td>No Down Time</td>
<td>Ease Supply Train Impacts</td>
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<td>Ensure Deliverability</td>
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<td>Zero Data Loss</td>
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<td>Faster Feature Delivery</td>
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DovecotPro – Scality Solution

Why did we choose this solution?

› Access Patterns
  • Very High Write, High Read, Medium Delete
  • Data after 10 days, stays… and stays

› Customer Activity Profile
  • Business Class Usage (Extremely High Daily Active Percentage)

› N+2 Architecture
  • Need multi-zone and Geo-Graphic managed solution

› Fault Segmentation (Hierarchy of failure events)

› Scaling
  • Must scale compute and storage separately

› Maintenance & Upgrade

› Knowledge of Dovecot

› Reputation of Vendors

Things WILL Fail

- Disk
- Node
- Rack
- Row
- Network
- Datacenter
Deployment Chosen

Dovecot/Scality Multi-Geo Location Deployment

DoveCot Pro Backend

Load Balancer (Local haproxy)

sproxyd

Cassandra

Cassandra

Availability Zone I

Availability Zone II

Scality Ring – Stretched over 2 Data Centers

DoveCot Pro Backend

Load Balancer (Local haproxy)

Load Balancer (Local haproxy)

Cassandra

Cassandra

Availability Zone I

Availability Zone II
Optimized Scality Infrastructure

• Leverage Scality to Optimize Hardware
  ‣ Apollo 4510 platform
  ‣ Tremendous scaling options
  ‣ Gigabyte Cost optimization
  ‣ Normalized and consistent environment

• Key – We worked with Scality to create an optimized “Email Storage Ring”
  ‣ Focus on the nature of email access patterns as well as sizing
  ‣ Do not overload the use case (We are not creating an S3 like environment)
Footprint Reduction

- Over 2,000 Assets Decommissioned to date
- Avoided ordering over 1,440 Assets and opening 1 new server room
- Vacating several rooms
- Reduced Maintenance to less than 35% of Peak (and dropping)
Storage Stability

• Scality survived hardware outages; Disk and Chassis
• Handled Massive Cassandra Rebuild Efforts
• Rack Moves & Room Reconfigurations
• Only 1 Scality Ring associated customer impacting event
  ‣ Root Cause related to HP Firmware defect
• Only a handful of special tuning needed to run to:
  ‣ Re-engage disks post hardware oddness
  ‣ Node release of expired data
• Expansion Scheduled for this Summer

Cloud services giant Rackspace brings in Scality object storage in a move that slashes 4,000 boxes from its server count as it separates compute and storage
Challenges Faced

- Interplay between DovecotPro, Cassandra & Scality
- Early adoption woes
- Initial errors in Dovecot Director Ring Configuration
- Fault Segmentation
- Too many customized plugins on our behalf
- Need to improve path to upgrade
- Allowance needed for “Bake-In”
- Tuning of the “Ring” – Overhead Reduction
- Expanded our internal knowledge base

“Optimist: Someone who figures that taking a step backward after taking a step forward is not a disaster, it's a cha-cha.”

- Robert Brault