Migration of the Mint technology platform from Oracle to Postgres
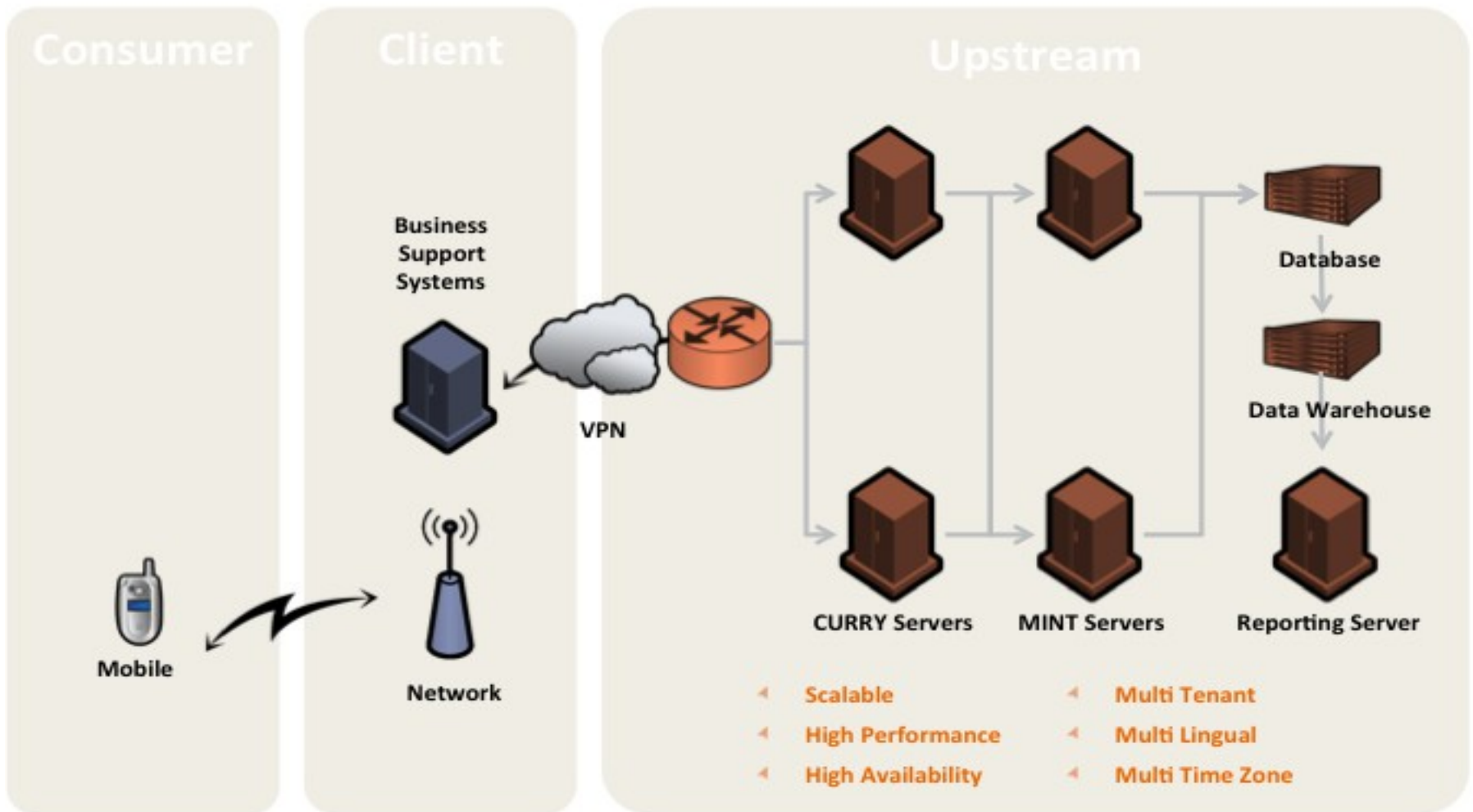
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The Mint technology platform

- Solutions for marketing promotions, loyalty programmes, content publishing and credit advance
- Integration with mobile operators' SMSCs, gateways and billing platforms
- Reporting and analytics

The Mint technology platform - Technologies

- Java EE 6, Spring, Hibernate
- Karaf, Camel
- ActiveMQ, JBoss Messaging
- Postgres, Oracle

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The Mint technology platform - Architecture

Consumer

Mobile

Client

Business Support Systems

VPN

Network

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Database

Data Warehouse

CURRY Servers
MINT Servers
Reporting Server

◄ Scalable
◄ High Performance
◄ High Availability

◄ Multi Tenant
◄ Multi Lingual
◄ Multi Time Zone

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Data Management

- 35+ live projects in several time zones
- 300-1200 tps per project
- ~1.5M rows per batch process
- ~12T live data
- ~250G new data per week
- ~300M rows in some tables
- High Availability
- Live Reporting & Analytics

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Oracle

- Oracle RAC 10g & 11g
- 3-5 nodes per cluster
- OCFS
- Oracle Enterprise Manager

Why Migrate?

- Oracle RAC licenses cost
- Upstream's investment on FLOSS & internal know-how rather than licenses

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Why Postgres?

- RDBMs vs NoSQL:
  - ➢ Minimize changes to the Mint codebase
  - ➢ Minimize operational cost
  - ➢ Much better market for DBAs

- Postgres vs MySQL
  - ➢ Complicated queries, require good planner
  - ➢ Existing know-how

- Codebase / ORM
  - Native queries
  - PL/SQL
  - Materialized Views

- Schema
  - Foreign Keys locks on UPDATE

- Queries performance
  - Batch operations & statistics
  - Hints

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- QoS
  - Horizontal Scaling
    - Processing Power
    - Storage
  - High Availability

- Operational DBA
  - Monitoring (incl. Historical data)

- Operations
  - Client app
  - Reporting on live data

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Migration issues (3/3)

- Data Migration
  - Migration scripts
  - Data size
  - Downtime

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Postgres architecture

- Standalone configuration (no clustering)
- Running in VM
- RAID 10 in SAN
- Using ESXi HA for High Availability
- Using ESXi LVM for storage expansion
- More VM resources / H/W for scaling

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Performance issues mitigation

- Explicit ANALYZE after batch operations
- VACUUM FULL during maintenance windows
- Remove FKs
- Rewrite queries

Current Status

- 2 projects migrated from Oracle → Postgres
- 15 new projects launched in Postgres
- Migration to finish by end of 2013
- Performance still the main issue

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