中国电信
CHINA TELECOM

Oracle Sharding for China Telecom's WeChat IoT Application

About China Telecom

- Large-scale and leading integrated information service operator in the world
- Provides
  - Landline & mobile telecommunications services
  - Internet access services
  - Information services and other value-added telecommunication services
- As of 2016, mobile subscribers of about 215 million
- China Telecom is building Business Support System(CRM/Billing etc.) for Narrow-Band IoT (NB-IoT) network
  - Provides packaged offers, self service on account balance, call billing, number status, etc., process of problem repairs, repair progress inquiry, etc.
- WeChat Service (part of BSS ecosystem) provides customer service by WeChat
  - System will also manage 2/3/4G network users
- NB-IoT Network user base is projected to grow exponentially

Motivation for Oracle Sharding

- We took sharding into consideration for the projected large number of NB-IoT Network users
- Main benefit is scalability
  - *"We do not need to worry about what to do when we need to scale to larger number of users"*
- Evaluated Oracle Sharding, MySQL, MongoDB and Maria DB
  - *Determined that migration cost is too high if we go to other data stores*
  - *"DBAs and Developers are familiar with Oracle database. Since Oracle has sharding, why don't we use Oracle?"*
- Migrated the application from Oracle 11g RAC to Oracle Sharding
- Plan to migrate other applications of NB-IoT BSS to Oracle sharding (based on scalability, performance and availability in production)

Grand Release – Fast Verification

中国电信 CHINA TELECOM

- Oracle 12c Sharding formally announced in March 2017
  - Sharding Beta1 released in 2015
    - Generated lot of interest in China
  - In 2016 Zhejiang Mobile selected its customer center as test model
    - HuZhou as testing ground for pre-study

- On June 29, 2017, China Telecom IOT WeChat Customer Service went into production with Oracle 12c sharding
  - Application and database are both running stable after going online

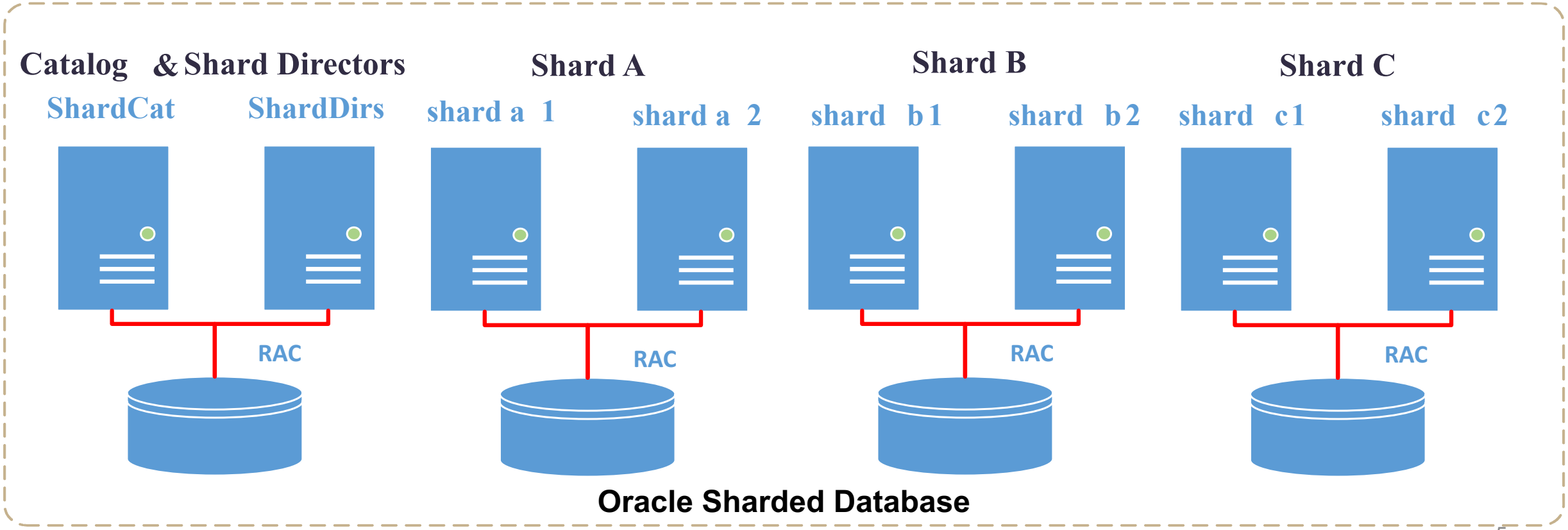
Oracle Sharding Deployment

中国电信 CHINA TELECOM

Current Oracle 12.2 sharded environment has 8 database servers

Created 4 independent databases：**Shard Catalog and Shards** across 8 nodes

Used 2-node RAC at shard-level



Future Plans

中国电信 CHINA TELECOM

- With current Oracle sharding environment, continue to deploy new applications, such as: China Telecom 10000 WeChat mini-program
- Keep in touch with Oracle experts, obtain Oracle Sharding new developments and information, upgrade to major and minor versions in time
- Increase communication with like-minded colleagues from other provincial companies, collaborate, and more widely adopt Oracle Sharding across other applications