

**ENGINEERED  
FOR INNOVATION**

**ORACLE  
OPEN  
WORLD**

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**Real Life Stories on Extreme Performance with  
In-Memory Database Technology**

Presented at Oracle Open World

# Converged Application Server Usage of TimesTen

Presented to:

**Oracle OpenWorld 2011**

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**WHY**

**HOW**

**WHEN**

# Introducing Telcordia

## 30 Years of Unmatched Innovation and Expertise



**2,600 Employees,  
Offices in 16 countries,  
Revenues in excess: \$750M+**

**Telcordia solutions deliver the experience  
to over one billion users around the world**  
Next Gen OSS, Interconnection, Service  
Delivery and Charging

**Leader in  
number portability  
solutions**

**Leader in service delivery and  
charging.** Telcordia customers  
took over 40% of net adds in India  
in the past year

**More than 1800  
patents issued delivering  
industry-leading technologies**

**Handles nearly 100% of toll  
free calls for United States  
and Canada**

**Deep expertise in next-  
generation networks,  
operations, and  
services**

**Leadership  
positions in  
standards bodies  
and industry forums**

# → Strategic Areas of Focus

## Service Delivery Solutions

- Service Delivery
- Charging & Policy
- Revenue Management
- Interactive Services



## Operations Solutions

- Mass Market Broadband
- Wireless
- Enterprise & Wholesale Services
- Consulting



## Interconnection Solutions

- Mobile Data
- Industry Directories
- Interconnection Services



## Advanced Technology Solutions

- National/Cyber Security
- Government
- Research & Development



# Service Delivery Solutions Fast Facts

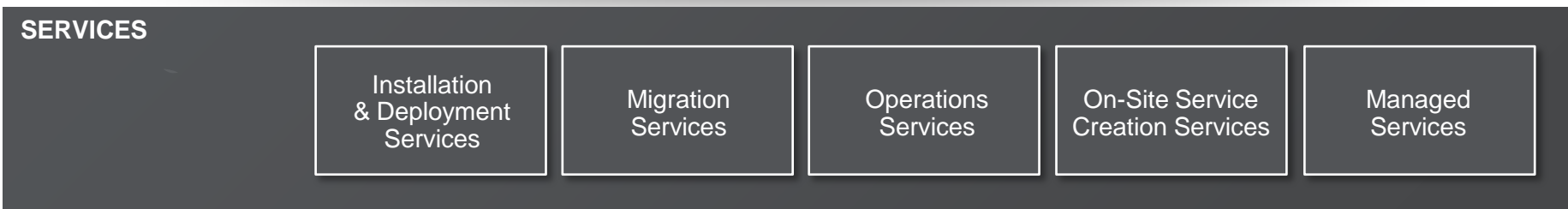
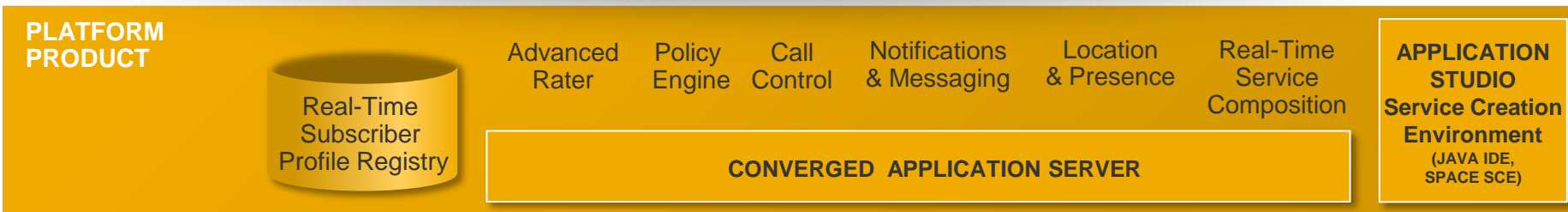
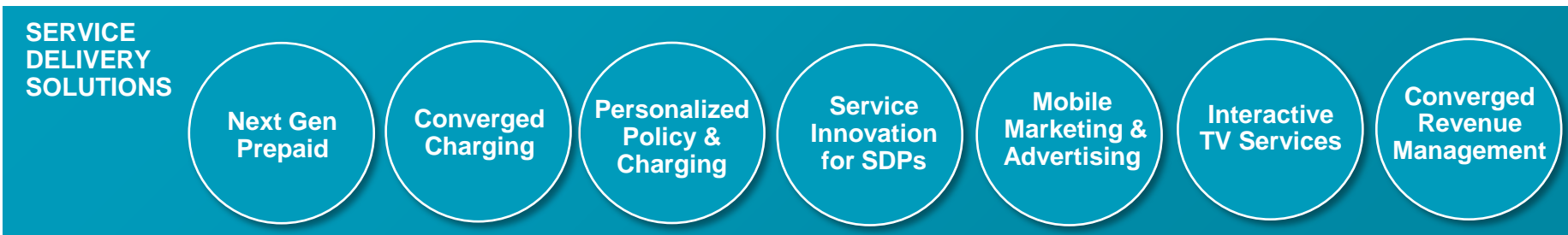
## Trusted Partner for Revenue and Service Innovation

- **Provider** of mission-critical, standards-based service delivery and charging solutions to Wireless, Wireline, Cable and NGN service providers
- **World-Wide Proven Converged Application Server:** Over **400m** subscribers around the world
  - Handles nearly 100% of the toll free calls in North America totaling over 500 million calls per day without a service interruption
  - **Carrier class and geo redundancy solution**
- **Market leader in Real-Time Charging** with over **250m** subscribers; largest customer has over **90** million
  - Serves over 190 million wireless subscribers in India, processing over 1.14 billion sessions per day
  - Serves over 36 million wireless subscribers in Brazil, processing over 560 million sessions per day
- **Fully Convergent solutions**, Voice/Data/Content ,Mobile/Fixed, Pre/Postpaid, GSM/CDMA/3G/4G/WiFi, Multi-screen TV
- **Extensible solutions:** Powerful **service creation environment** used by operators and SIs to extend our purpose built applications or develop new applications



# Service Delivery & Charging Portfolio

MARKETS MOBILE MOBILE BROADBAND BROADBAND WHOLESALE ENTERPRISE RETAIL TV



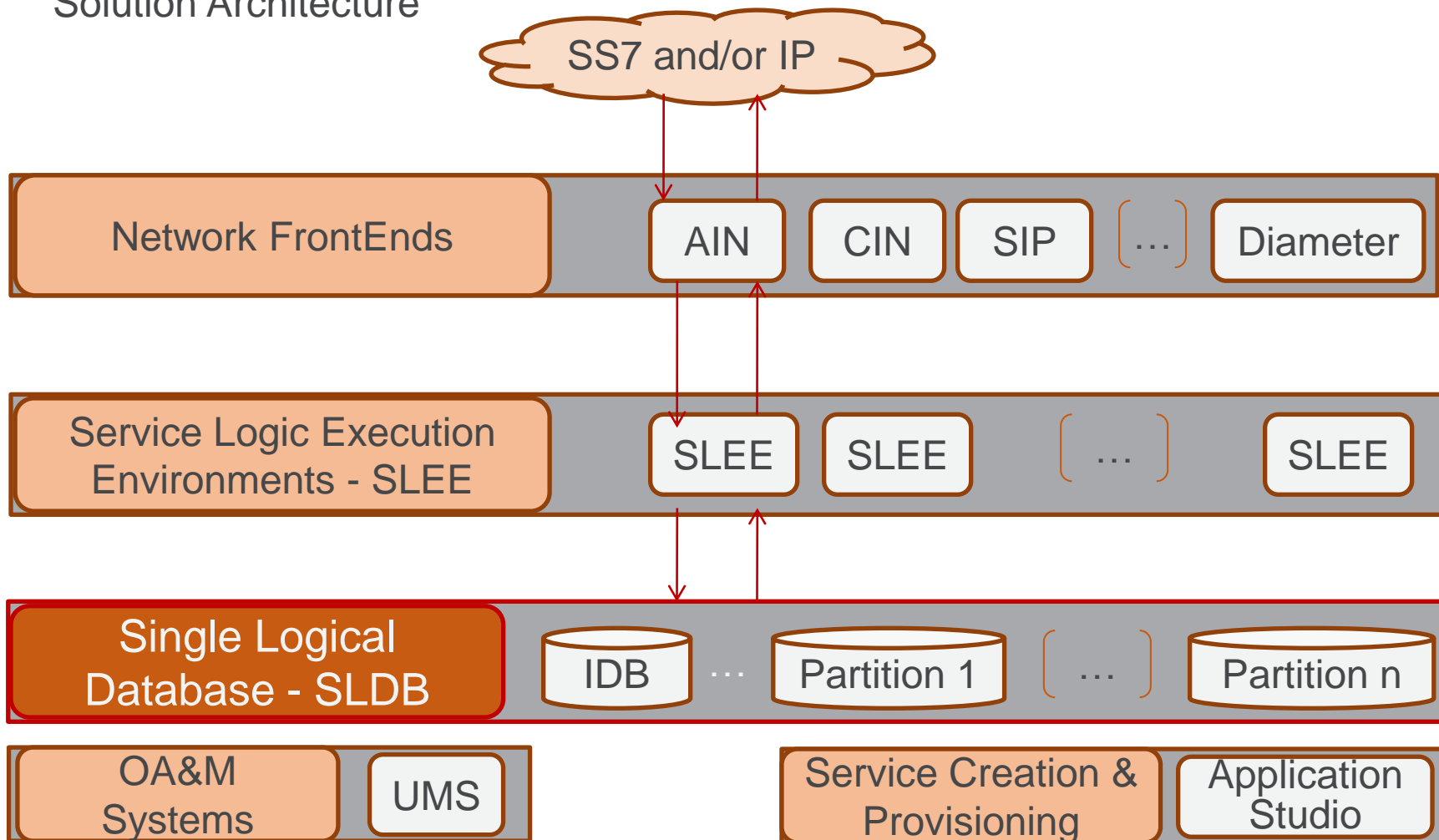
# Service Delivery Solutions Advantage

- Real-time, high-performance interactive services
- Open, extensible multi-vendor solution
- Flexible delivery and operational models
- Scalability, beyond 100M subscribers
- Delivered on a blade server cluster with near six-nines availability
- Next Gen Prepaid, Personalized Policy & Charging, Interactive TV, Enterprise, Service Innovation for SDPs
- Common Subscriber Profile Repository



# Converged Application Server

## Solution Architecture



*Index Database (IDB) is used to extend database scalability to multiple partitions of Telcordia Subscriber Profile Repository*



# → Converged Application Server

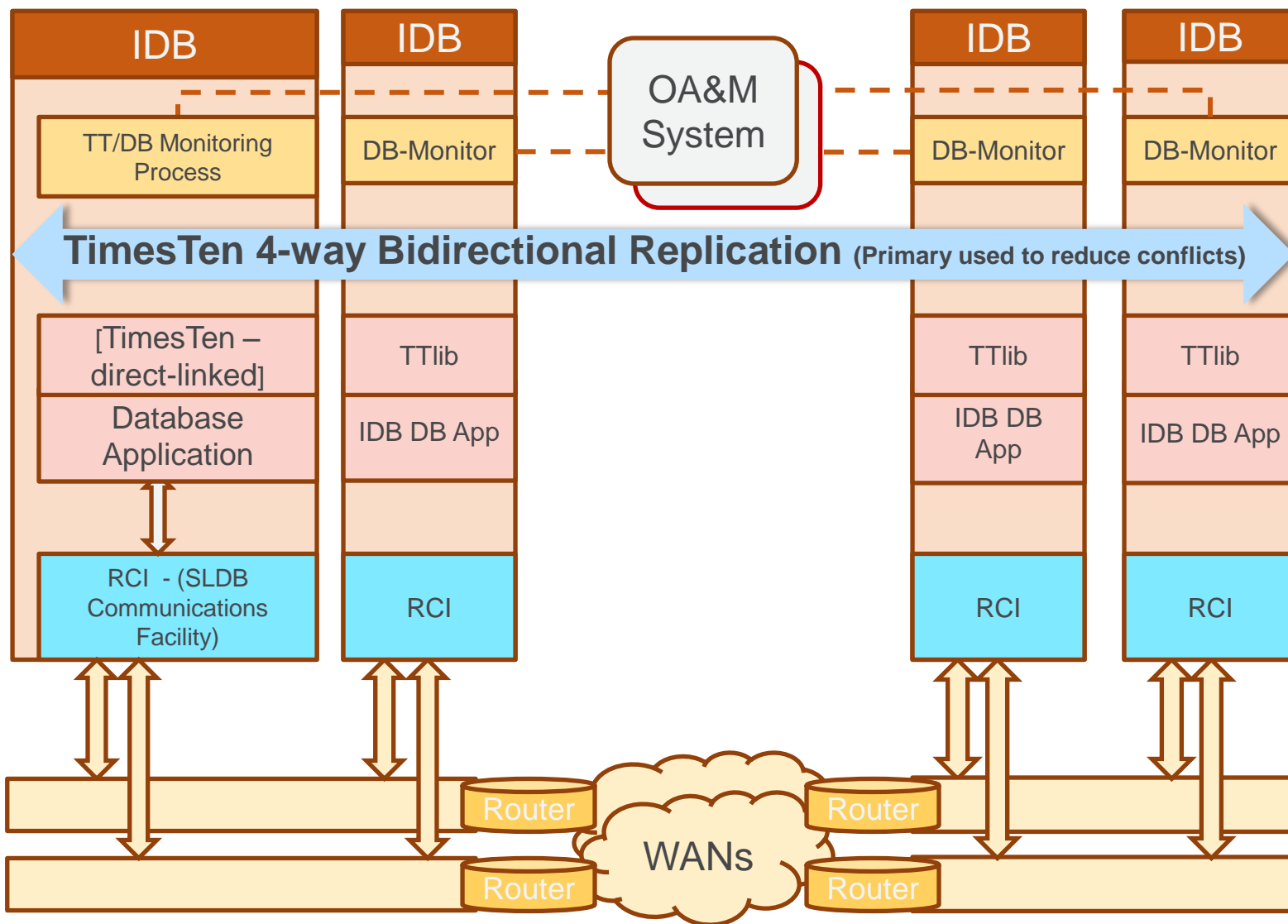
## IDB Requirements

### Large High-Performance, Scalable, Fault-Tolerant, Replicated DB

- High Performance
  - Real-Time: Low Response Times (microseconds).
  - High Rate: Reads/writes using minimal CPU resources, even with failed component(s)
  - Large Capacity + Scalability: Both DB capacity & throughput over CPU, RAM, WAN
    - Larger (denser) DB capacity lowers per-subscriber cost
    - Throughput scales well on high-core-count CPU architectures
    - Throughput remains high as db capacity grows
    - Throughput remains high with high-latency WAN (ie. lower WAN throughput)
- High-Availability & Fault Tolerance
  - Redundant Components
  - Integrated OA&M via CvAS MOC, Upgrade Server and Centralized Backup/Restore
    - Online upgrade within 6-hour MW – disk performance being a concern here.
    - Mixed-release replication support
  - Responsive 24x7 Support
  - Fault-Tolerant: Seamless failovers for all redundant components
    - Need update/insert/delete conflict resolutions in event of network/node failures
- Competitive Pricing
- If COTS – Effective Collaborative Partnership

# Converged Application Server

## TimesTen Architecture for Index Database



# → Converged Application Server

## TimesTen Configuration

- Data Manager-Only (direct-connect-only)
- Replication:
  - 4-way full-mesh compression-on replication
  - Multiple replication routes defined for multiple NICs
  - Timestamp-based conflict resolution
  - FAILTHRESHOLD sized for one day's provisioning
  - Compression-on for ttRepAdmin-duplicate
- Fully-integrated installs & upgrades
  - For support of mixed-release ttRepAdmin-duplicate, keep two instances (two releases) for major release upgrades.
- Fully-integrated live seamless backups/restores (most restores will be via ttRepAdmin-duplicate)

# → Converged Application Server

Oracle/TimesTen Partnership

In addition to the technical values of TimesTen, our technology partnership with Oracle plays a key role in our capacity to *Get it Right* and continue crafting and delivering a industry leading scalable and available solution for real-time interactive services.