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REPLICATION SERVER 15.2
DO MORE WITH YOUR DATA

INCREASES OPPORTUNITY. DECREASES RISK.

DIAL IN NUMBER: 888-769-8716 PASSCODE: SYBASEONE
BEGINS AT 1:00PM ET / 10:00 AM PT

MAY 5, 2009

HOUSE KEEPING

Live questions —
    save questions for live Q&A
    at end of session

- **Online questions** —
    select "Questions" tool on meeting console
    submit anytime during broadcast

- **Presentation** —
    select "handouts"

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REPLICATION SERVER 15.2
DO MORE WITH YOUR DATA

BILL ZHANG, PRODUCT MANAGEMENT
DATA MANGEMENT GROUP SYBASE

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Why Customers Are Buying
Key Product Facts

- Sybase Replication Server is recognized as one of the most mature, robust products in the market
  - Separate, enterprise-grade product (not built into ASE)
  - Rep Server is used by over several thousand customers worldwide in a wide variety of industries
  - Proven in mission-critical, mixed database environments
  - Sybase has over 18 years experience providing replication solutions to customers

Sybase Replication Server is a Wall Street-class data movement solution to distribute and synchronize transactions between mission-critical applications in real time

What Are Customers Using Replication Server For?

- Provide **multi-site DB disaster recovery** for high availability
- Guarantee **real-time DW updates** for reporting and analytics
- **Distribute data changes geographically** among related applications in business processes
- **Synchronize applications** to eliminate costly discrepancies
- **Automatically maintain up-to-date data** among distributed databases
- Offload and **consolidate operational reporting** to preserve performance of production systems
- Enable **efficient migrations** of data to new platforms

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Replication 15.2 Market Opportunity

Segments & Needs

Strategy:

- Data/transaction volumes continue to grow (doubling every 2 years for critical apps), putting continuing pressure on performance & scalability capabilities of database replication products (In our survey, 35% of customers doing report require real-time capability 15 min or less today)

- Ongoing global adoption of business applications will drive growing demand for data distribution due to factors like application localization, need for improved local performance, distributed business operations, and data privacy/regulatory issues (In our survey, nearly 38% replication users desire replication as a data distribution capability in heterogeneous environments today)

- Enhance performance to reduce replication latency – benefit 100% replication customers

- Support all current versions of major database platform – including Oracle, MS SQL, IBM UDB and Sybase

- Improve ease-of-use to reduce entry barrier for new replication users - to increase replication penetration

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RS 15.2 FEATURES

REQUIREMENT	NEW FEATURE	ADVANTAGE
Performance	DSI Bulk Option (also available in RS 15.1 ESD #1)	•Bulk copy-in to improve performance when replicating large batches of insert statements on the same table. •DSI uses bulk-lib in OC/OS rather than SQL insert command. •This feature also improves the performance of subscription materialization
	SQL Statement Replication	•Complements log-based replication •Replicate SQL statement instead of individual row changes. •Requires ASE 15.0.3 and later
	Non-blocking commit	•Leverage delayed commit feature in ASE 15.x to improve replication performance •Supports replication into Oracle 10gv2 or later as Oracle supports functionality similar to delayed commit.

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DSI Bulk Library Options

- Takes advantage of OCS bulk library functionality
  - RS15.2 uses bcp to apply transaction to target DB
- Best performance improvements demonstrated when transaction profile is insert heavy on primary db:
  - BCP
  - Insert select
  - Or large batches of inserts
- Available ONLY for ASE target DBs
- Avoids the standard/slow DSI language protocol and parsing
- Target ASE depends on bulk insert support for "array insert"
  - Allows bulk copy operations to be embedded in multi-statement transactions
  - Bulk copy-in preserves database transaction integrity

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DSI Bulk Library Options

- Configuration Parameters:
  - dsi_bulk_copy
    - To turn on/off bulk copy-in feature
    - Legal value: on, off
    - Default: off
    - If dynamic_sql and dsi_bulk_copy are both on, DSI will use bulk if possible, and use dynamic SQL if bulk cannot be applied.
  - dsi_bulk_threshold
    - The number of insert commands that, when reached, triggers Replication Server to use bulk copy-in
    - Range: 1-2147483647
    - Default: 20
    - Should not be much larger than dsi_large_xact_size
- DSI will use bulk copy when
  - Dsi_bulk_copy is "on" and
  - Number of consective inserts for the same table with a transaction is > than dsi_bulk_threshold

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DSI Bulk Library Options

- Syntax:
  - To alter bulk copy setting for a connection:

    alter connection to DS.db set {dsi_bulk_copy | dsi_bulk_threshold} to value

    - Dynamic configuration parameter, no need to restart connection
  - To set bulk copy defaults at the server level:

    configure replication server set {dsi_bulk_copy | dsi_bulk_threshold } to value

    - Semi-dynamic configuration parameter, server wide values will be used if no connection specific setting is configured
    - Only affect connections started in the future

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SQL Statement Replication

- Principles
  - SQL statement replication is not a replacement but a compliment of row change replication
  - Focus on warm standby and multi-site availability environments where full schema is replicated and subscriptions do not have where clauses
  - Performance of mass updates and deletes that impact a large number of rows
  - Requires ASE 15.0.3 source
  - Permits ASE 15.x as target
  - Supports four kinds of SQL DML: update, delete, insert…select…, and select…into…

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SQL Statement Replication

- ASE Configuration
  - Enabling SQL statement logging
    1. Database level (lowest priority)
       - sp_setrepdbmode dbname [, 'udsi' [, 'on' | 'off']]
    2. Table level (medium priority)
       - sp_setrepdefmode tbname [, 'udi' [, 'on' | 'off' | 'never']]
    3. Session level (highest priority)
       - set repmode [on 'udsi' | never | off]
  - Configuring threshold
    - sp_setrepdefmode tbname [, 'threshold' [, 'value']]

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SQL Statement Replication

- RS Configuration – enabling SQL statement replication
  - Table replication definition

  ```
  create replication definition …
    with primary at …
      :
  [replicate {minimal | all} columns]
  [replicate {SQLDML ['off'] | 'udi'}]
  ```

  ```
  alter replication definition …
    with primary at …
    replicate {SQLDML ['off'] | 'udi'}
  ```

  - Database replication definition

  ```
  create database replication definition …
    with primary at …
      :
  [[not] replicate setname [in (table list)] ]
  [[not] replicate setname [in (table list)] ]
      :
  ```

  ```
  alter database replication definition …
    with primary at …
    [[not] replicate setname [in (table list)] ]
  ```

  'setname' can be 'SQLDML' or any combination of 'UDSI'. 'SQLDML' equals to 'UDSI'.

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SQL Statement Replication

- RS Configuration – enabling SQL statement replication
  - Configuration parameter 'ws_sqldml_replication'
    - alter logical connection *LDS.LDB* set ws_sqldml_replication to 'on'.
   - *Takes effect in warm standby environment*

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RS 15.2 FEATURES – Heterogeneous Replication

REQUIREMENT	NEW FEATURE	ADVANTAGE
Ease of use	Configuration and Setup	Automated and simplified configuration of Heterogeneous environments including preloading scripts
	Connection Profiles	Extended "create connection" command to include non-ASE required details
	Non-ASE Error Classes	Default error classes for Oracle, UDB, DB2, and SQLServer
Database platform support	Updated Oracle Replication	Support for latest Oracle platform and features, such as Oracle 11g

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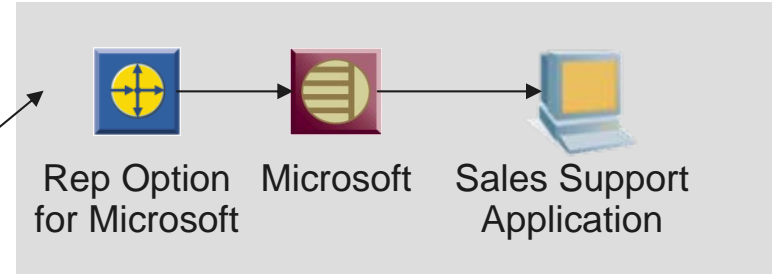# Data Distribution and Migration Example

One example, many permutations

San Francisco (order processing)

Order Entry Application → ASE → Rep Server
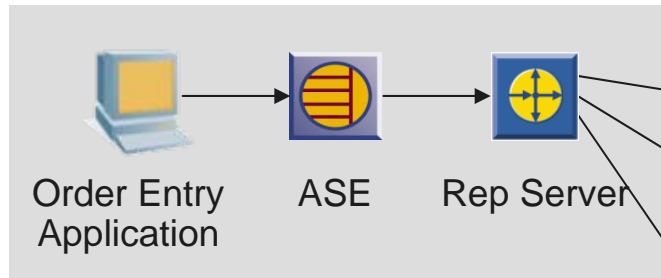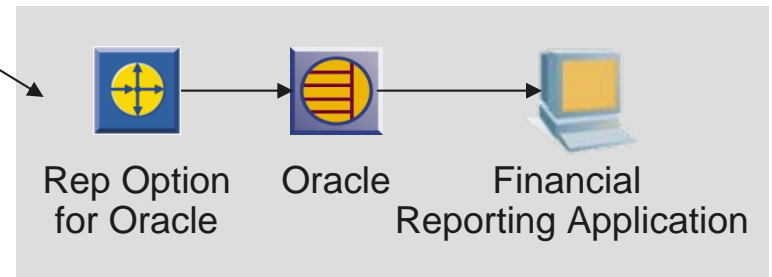
- One source to many targets
- Publish and subscribe architecture
- Propagate order info to related downstream applications
- Can also have bi-directional scenarios
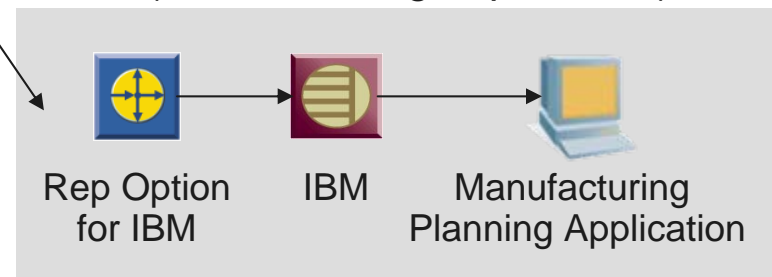- Can also have many – one and many – many topologies

New York (sales department)

Rep Option for Microsoft → Microsoft → Sales Support Application

San Francisco (finance department)

Rep Option for Oracle → Oracle → Financial Reporting Application

Dallas (manufacturing department)

Rep Option for IBM → IBM → Manufacturing Planning Application

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Data Distribution Customer Story
State of Pennsylvania Courts

- **CHALLENGE**

  Data Migrations & Distribution: Numerous Databases

  – Over 5.6 million court cases in 100 different systems

  – No ability to access or exchange information

  – High security risk and low operating efficiency

- **SOLUTION**

  – Common Pleas Case Management System, using Sybase Replication

  – Single, automated approach to case processing

  – Seamless delivery of information anywhere, anytime

- **RESULTS**

  – Significant improvements in public safety, unification of data and the ability to share information

  – Access to a wide variety of court functions for over 8,000 users

**2007 Computerworld Honors Program Laureate Medal for a global best practice**

"*…agencies are evaluating their ability to exchange data in a timely manner. By 2010, the promise of an integrated justice community may be achieved.*"

Administrative Office, Pennsylvania Courts

Real-Time Reporting Example

- Maintain a complete copy of the primary OLTP database
- Run operational reports and queries against this copy (ODS)
- Preserve transactional system processing performance
- Enable more robust and responsive reporting environment
- Sources can be ASE, Oracle, Microsoft, and IBM
- Targets can be ASE, Oracle, Microsoft, IBM, and Sybase IQ
- HA/DR warm standby can also be ODS

OLTP Production System

Source

Rep Server

Operational Data Store

Rep Server

Target

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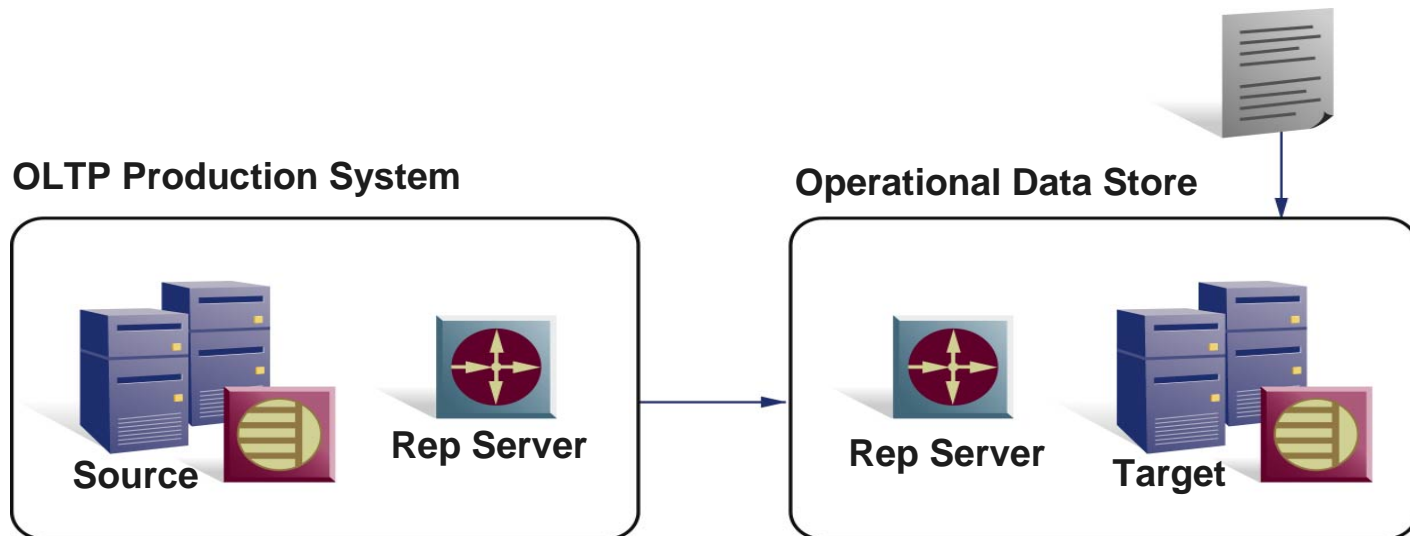
Real-Time Reporting Customer Story
A Major Travel Service Provider

- **CHALLENGE**

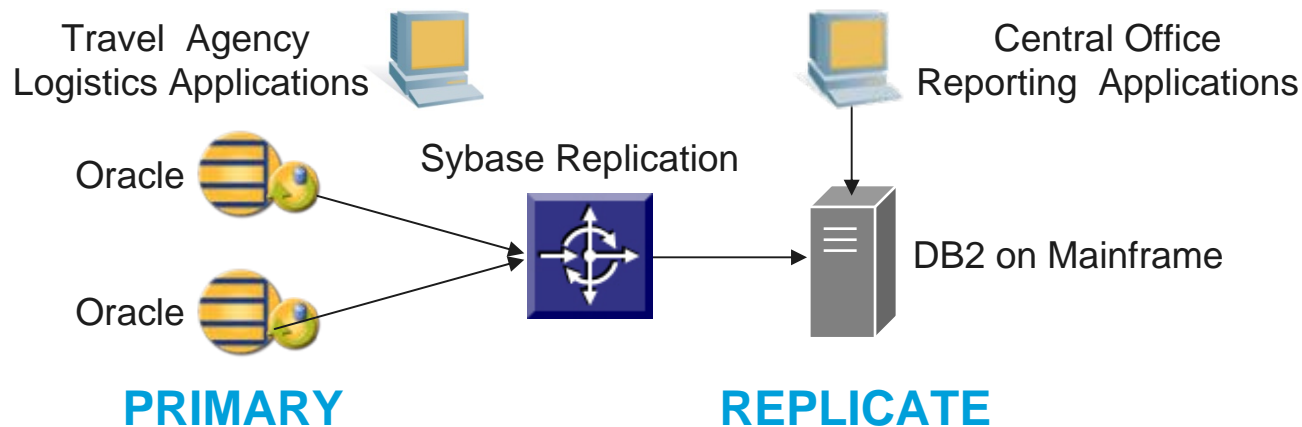 Data Consolidation & Centralized Reporting: Oracle – DB2 (on Z/OS)

  – Legacy system used a manual, script-driven batch process

  – Real-time data movement needed to improve customer satisfaction
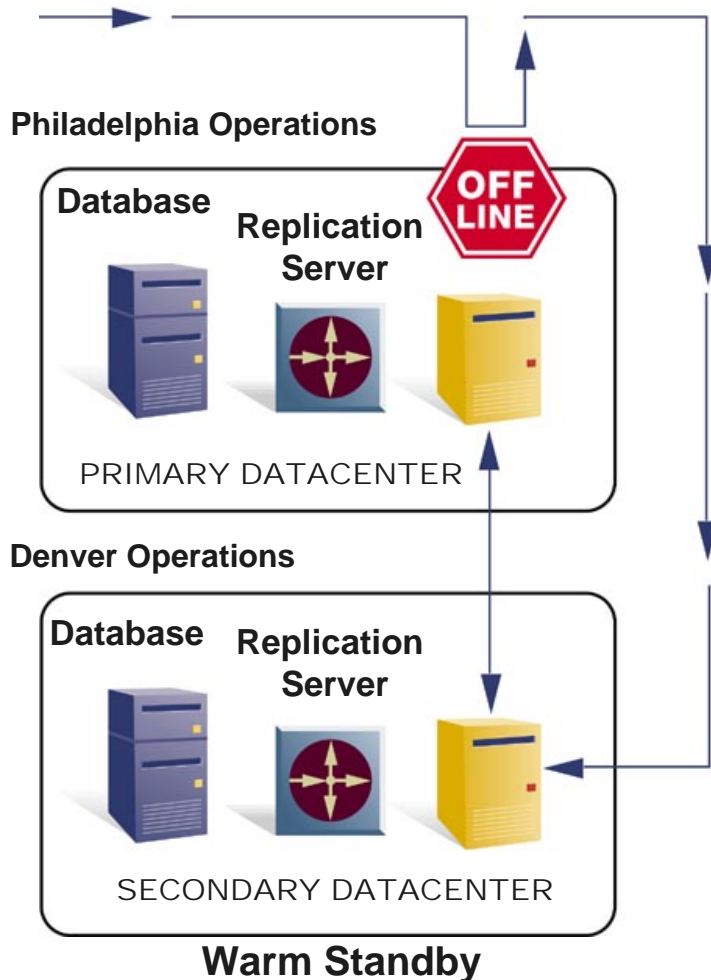
- **SOLUTION**

  – Sybase Replication collects changed data from local sources and replicates in real-time to central heterogeneous target

- **RESULTS**

  – Accurate information by way of centralized, real-time data integration

Travel Agency
Logistics Applications

Central Office
Reporting Applications

Oracle

Sybase Replication

Oracle

DB2 on Mainframe

PRIMARY

REPLICATE

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Disaster Recovery Example

Philadelphia Operations

Database — **Replication Server** — OFFLINE

PRIMARY DATACENTER

Denver Operations

Database — **Replication Server**

SECONDARY DATACENTER

Warm Standby

- Minimize/eliminate user impact
- Protect against unplanned outages
  - Software, Hardware, Application failure
  - Unforeseen circumstances like data corruption
- Protect against planned outages
  - Software, Hardware, Application upgrades
  - Enable ops to perform maintenance activities
- Recover from natural disaster
  - Without geographic restrictions

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Disaster Recovery Customer Story
The Jockey Club Technology Services

- **CHALLENGE** | ASE – ASE Replication |
  - Rapidly expanding volumes of data needed to be protected in case of a disaster

- **SOLUTION**
  - Sybase Replication (with Multi-Site Availability Option)

- **RESULTS**
  - Simplified data movement and synchronization across all systems
  - Reduced risk of downtime with multiple replicates for disaster recovery and reporting across multiple locations
  - Web access for information systems

> " *We wanted warm standby in two locations – one on site, the other off site – and Sybase Replication made it easier.* "

Paul Carter
Manager, Database Administration
TJCTS

Disaster Recovery Use Case

- Warm Standby for Disaster Recovery
  - Primary site collects customer data from heterogeneous sources
  - Stores information in ASE database for customer care application
  - Replicates all database changes to secondary ASE site (warm standby)
  - Warm standby ensures fast failover, limits data loss, and enables geographic separation

Oracle

ASE

DB2

Customer Care Application

Replication   ASE   Replication   WAN

Warm Standby ASE

PRIMARY SITE   **SECONDARY SITE**
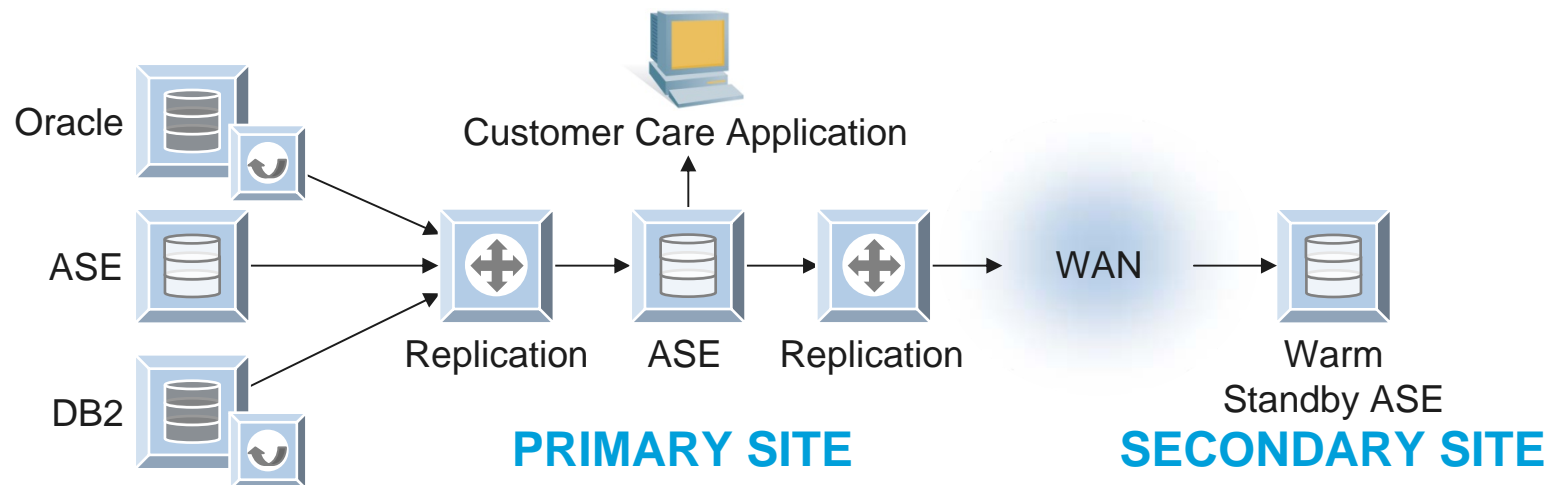
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Q&A

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For more information
www.sybase.com/replicationserver

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