Transactional Replication

it's not scary
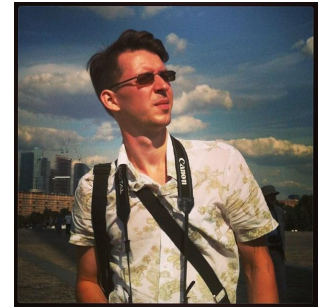
Evgeny Khabarov

About me

- Evgeny Khabarov
- Moscow, Russia
- DBA in a financial company in Moscow
- Also work as a independent consultant
- Developer in past

- Email: sql@dev.ms
- Twitter: @gR4mm
- Blog: http://sql.dev.ms

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Agenda

- What is replication?
- When we can use transactional replication?
- When we must not use it?
- Replication components
- How works simplest replication schema
- What we should to do to begin use replication or «fast setup of replication»
- Let's break something and see what happens
- How change replication
- Tips & tricks

What is replication?

- Synchronization mechanism
- Synchronizes different objects
  - Tables
  - Views
  - SP
  - UDF

  "Articles"

- Replication types
  - Transactional
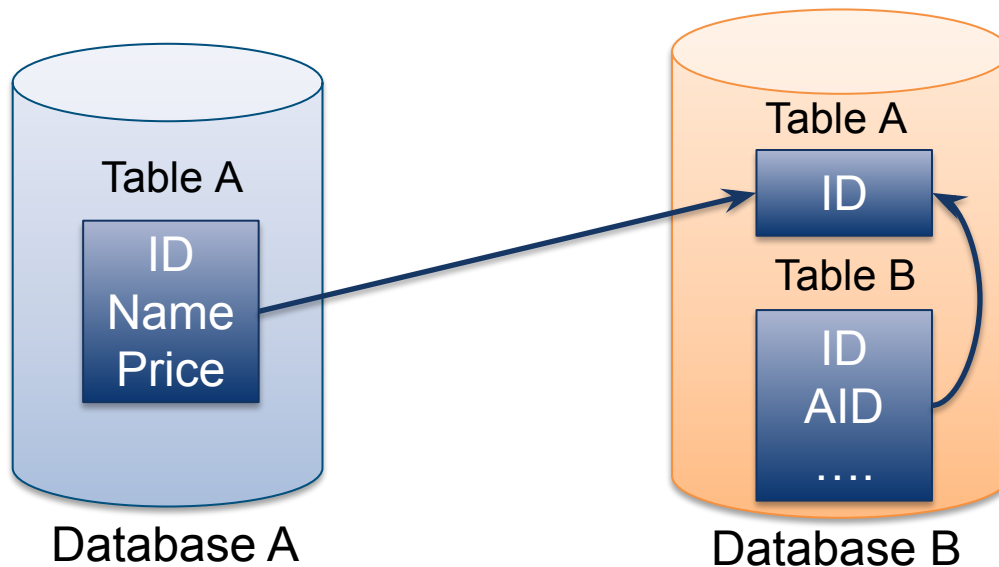 - Peer-To-Peer
  - Merge
  - Snapshot

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What is **transactional** replication?

- Tracks changes through transactional log

- Propagates changes to Subscribers in near real time

- Transactional consistency within Publication guaranteed

- Publisher and Subscriber might be not-SQL Server database, for example Oracle or DB2

When we can use transactional replication?

- DWH & Reporting
- Load distribution across databases (retail network)
- Cross-database foreign keys

When we must not use it?

- ## HA/DR
  - Doesn't supports automatic page repair
  - Doesn't supports load balancing
  - Doesn't supports failover/failback
  - Data in Subscriber database could be changed
  - Can't replicate any table without PK

Replication components (1)

- Publisher
  - Published database
    - Publication
      - Article

- Distributor

- Subscriber
  - Subscription
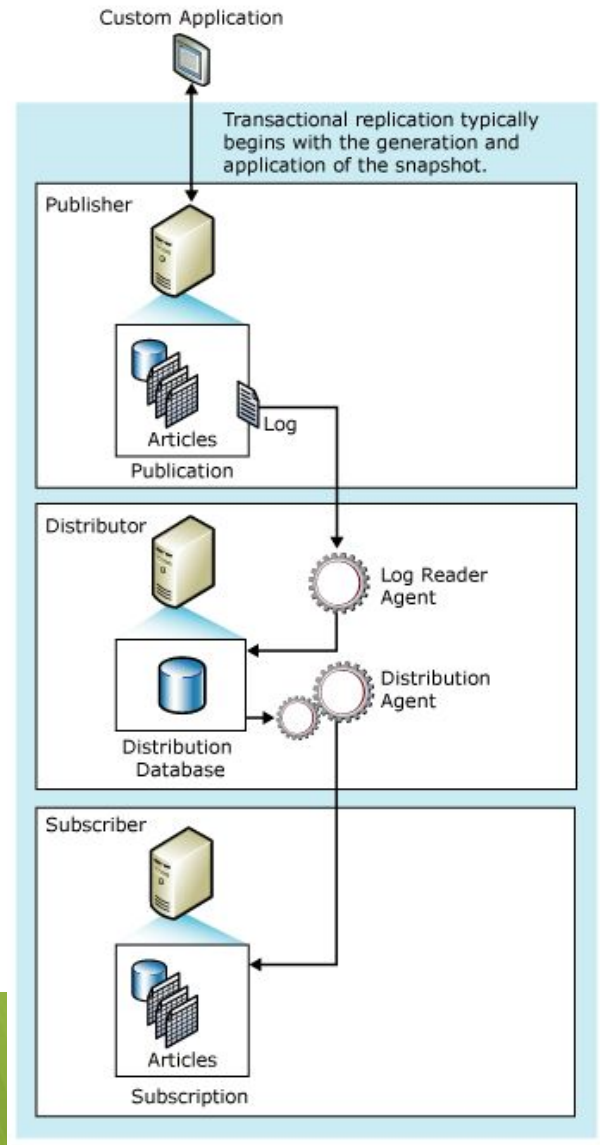   - PUSH
    - PULL

Replication components (2)

- Agents
  - Snapshot agent
  - Log reader agent
  - Distributor agent

Replication components (3)

- Jobs
  - Agent history clean up: <distribution database>
  - Distribution clean up: <distribution database>
  - Expired subscription clean up
  - Reinitialize subscriptions having data validation failures
  - Replication agents checkup
  - Replication monitoring refresher for <distribution database>

How works simplest replication schema

Custom Application

Transactional replication typically begins with the generation and application of the snapshot.

Publisher

Articles | Log

Publication

Distributor

Log Reader Agent

Distribution Agent

Distribution Database

Subscriber

Articles

Subscription

Fast replication setup aka "next, next, next, finish"

DEMO

Let's break something and see what happens

DEMO

Incorrect ANSI_PADDING settings

DEMO

Tips & Tricks

- Initialize with backup
- sp_configure, 'max text repl size (B)'
- Profiler
- Snapshot/Distribution Agent profile –MaxBCPThread
- Don't use many instances of Replication Monitor at the same time

Thank you!

- Email: sql@dev.ms
- Twitter: @gr4mm
- Blog: http://sql.dev.ms

Resources

- http://www.sqlservercentral.com/stairway/72401/
  - Stairway to SQL Server Replication *by Sebastian Meine*

- http://www.replicationanswers.com/
  - Script and articles by Paul Ibison

- http://blogs.msdn.com/b/repltalk/archive/2010/02/07/repltalk-start-here.aspx
  - Microsoft SQL Server Replication Support Team

- https://msdn.microsoft.com/en-us/library/ms151740.aspx
  - Frequently Asked Questions for Replication Administrators

- https://technet.microsoft.com/en-us/library/ms152556.aspx
  - Enable Initialization with a Backup for Transactional Publications

- https://technet.microsoft.com/en-us/library/ms152552(v=sql.105).aspx
  - Regenerating Custom Transactional Procedures to Reflect Schema Changes

- https://msdn.microsoft.com/en-us/library/ms151227.aspx
  - Replication Security Best Practices

- http://www.sqlskills.com/blogs/paul/category/replication/
  - Paul Randall blog