

Managing Your Pro2 Deployment

Brian Bowman, Director/Architect

Essentials

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About me...

- Over 30 years of Progress experience
- Always focused on operations - database, performance, BC/DR, installation & configuration
- Worked for Progress for some time
 - “Everything but legal and accounting”
- Pro2 Implementation team for 2 years

- Avid BBQ Addict



Essentials

Essentials delivers cost-effective foundational IT solutions so you can focus on growing your business. It's what you need, when you need it – stabilized infrastructure, a rock-solid network, strengthened cybersecurity, and modernized business operations – all made simple and affordable.

We adapt best-in-class practices for small businesses, delivering greater simplicity, affordability, and efficiency, so you can focus on growing your company.

Essentials Team

- Who we are

Combined 158 years of OpenEdge DBA experience

- 5 onshore DBA's
- 2 offshore DBA's

- Migration Experience

- AIX to AWS – 1.5 TB database in ~ 4 hours
- Pro2Pro and Pro2Oracle experience
- Classic AppServer to PASOE

Agenda

The Application Environment

- Pro2 Overview
- The Pro2 schema change process
- Pitfalls you might experience
- Monitoring Pro2
- Summary

The Application Environment

- Two applications – 100% AWS
- 4 environments each (DEV, TEST, UAT, PROD)
- Pro2Oracle is used in 4 of these environments (UAT & PROD)
- Near real-time reporting – OE Replication moving to Oracle
- Oracle is really a staging area for SnowFlake

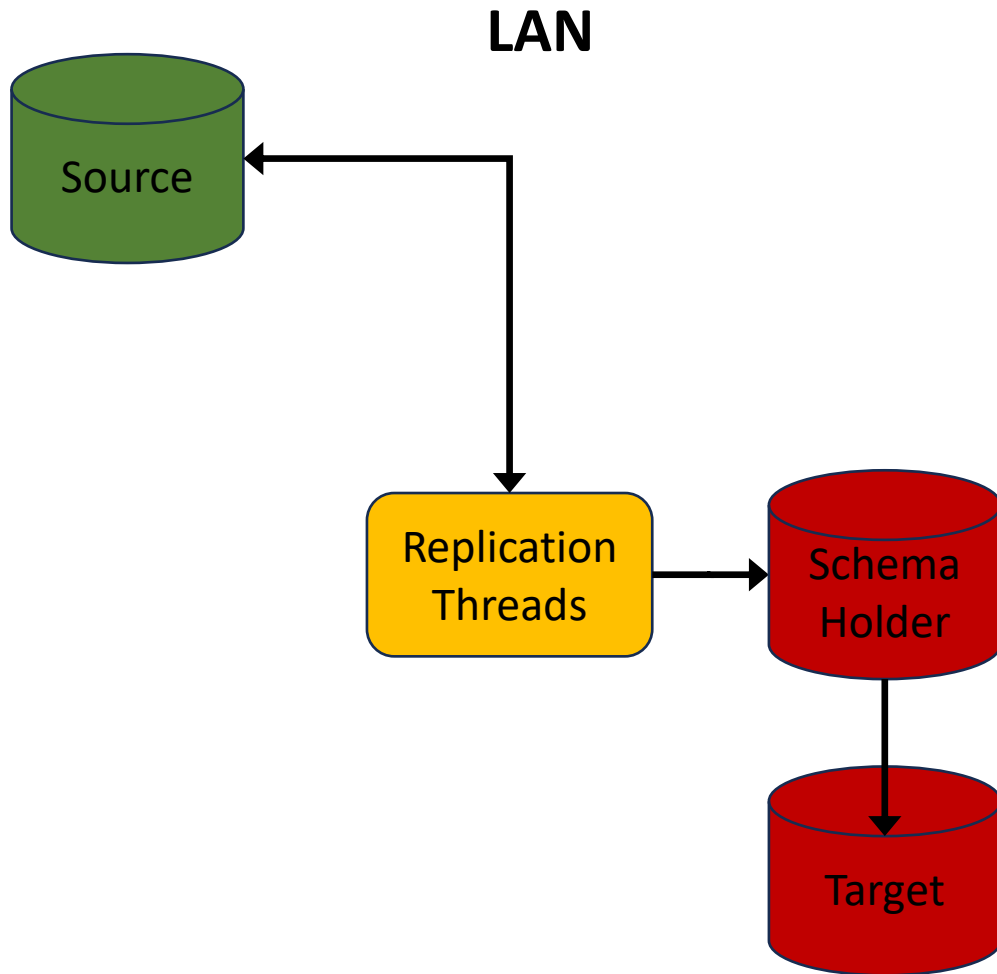
Agenda

- The Application Environment

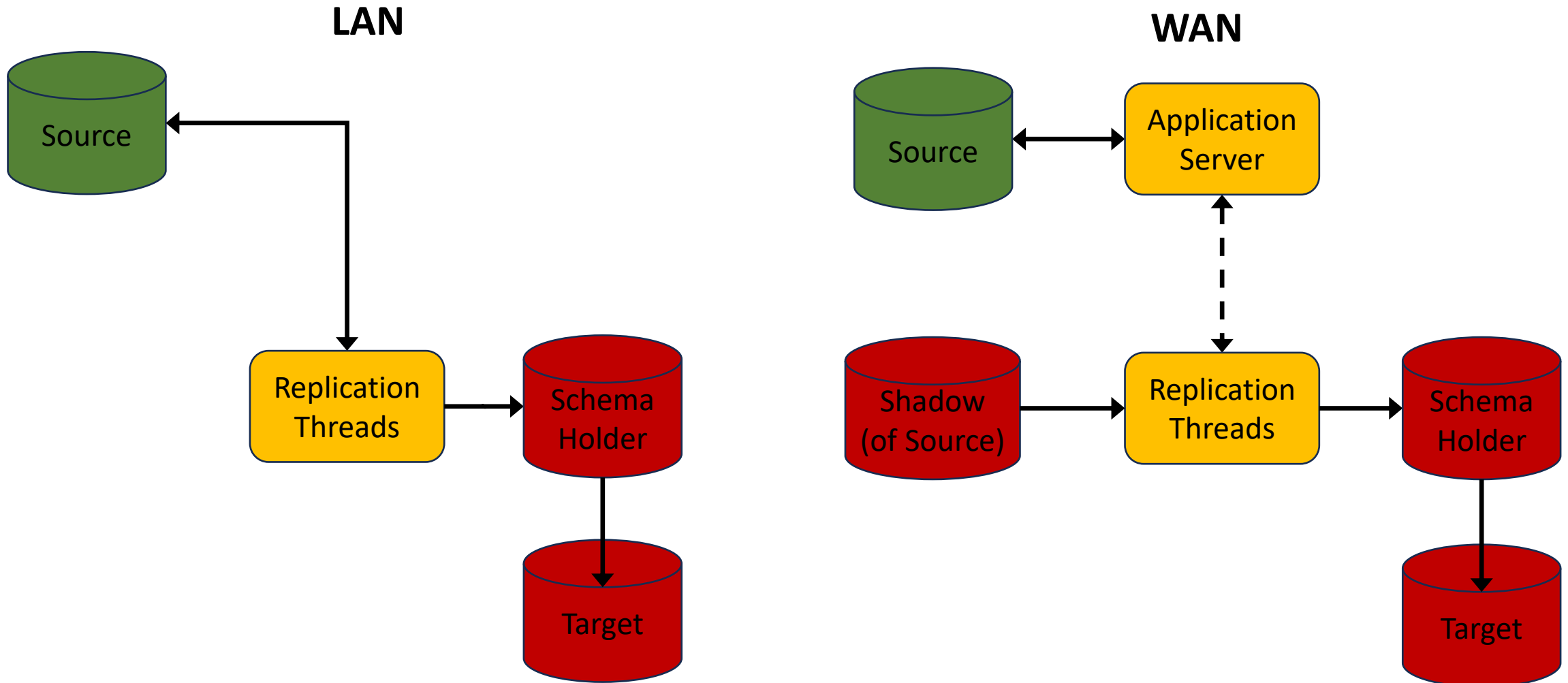
Pro2 Overview

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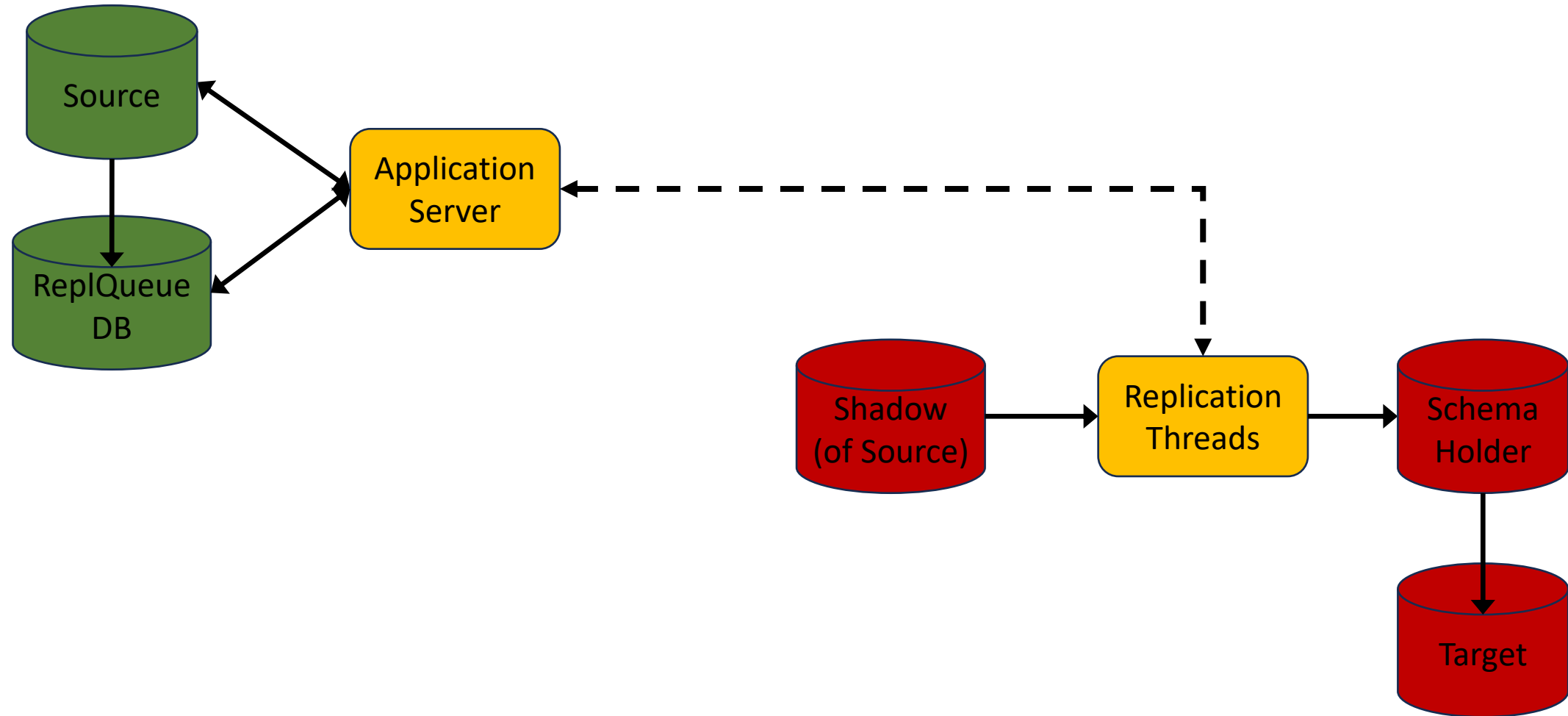
Standard Pro2 Architecture



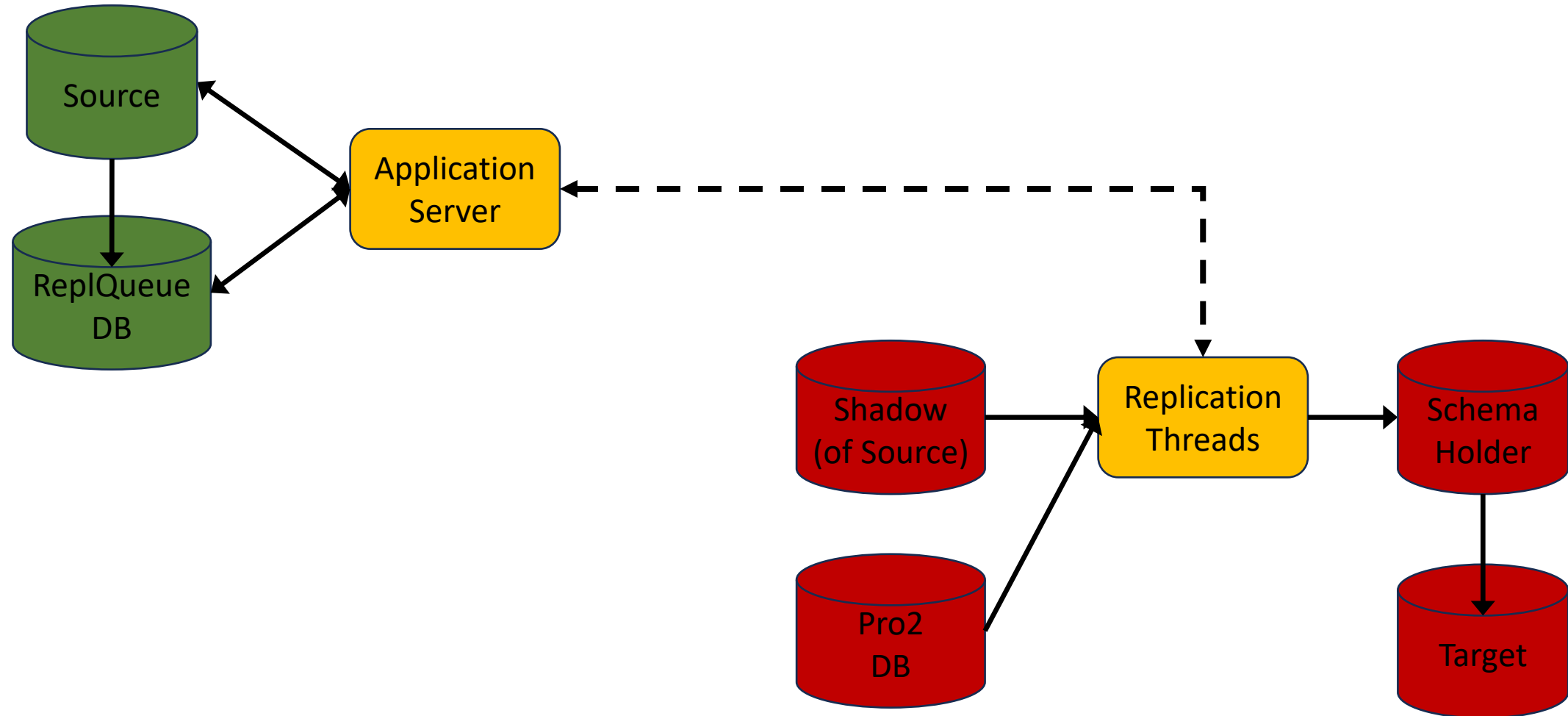
Standard Pro2 Architecture



Our WAN Configuration



Our WAN Configuration – Pro2 6.5



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Pro2 Schema Change Process

- 4 databases you have to keep in sync
 - Source
 - Shadow
 - Schema Holder
 - Target
- We do it ALL (almost) from the command line!
 - Make use of Pro2 scripts/programs where possible
 - Customization is needed in some cases
 - Felt we could not “trust” the GUI interface of pre version 6
 - Pro2 V6 – UI looks interesting, but we will not use it for change management
- Schema change occurs every 3 weeks in UAT**

Pro2 Schema Change Process (2)

- Update order is important
 1. Generate DDL
 2. Take threads down
 3. Shut down Source
 4. Update Source
 5. Restart source for application
 6. Update Target (Oracle)
 7. Update Schema Holder
 8. Update Shadow & Regenerate code
 9. Start Threads

All Automated except...

- Generate DDL – Online script that uses new DF
- Take threads down
- Update Source – Automated schema apply process in UAT
- Restart source for application
- Update Target – offline script
- **Update Schema Holder – Manual process**
- Update Shadow & Regenerate code – One offline script
- Start Threads

How can this help you?

- By automating it you can...
- Build validation checks into the process
- Achieve consistency
- Run the whole process faster

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Pitfalls you might experience

- Databases are out of sync
 - Check field counts between them
 - Check r-code generation sizes
- Int64
 - Progress undocumented feature
- Datetime parsing
 - Progress undocumented feature
- R-code vs. P-code
 - We run p-code except for triggers
- Shadow Database Management
 - We recreate it every time (automated)
 - Just found it to be easier to ensure it matches production

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Monitoring Pro2

- Available Tools
 - Pro2 UI
 - OpenEdge Management
 - Progress MDBA Monitoring
 - ProTop
- Script-based Monitoring

Available Pro2 Tools

Pro2 UI

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- ProTop

Pro2 UI(1)

Progress OpenEdge Pro2

Help Hello admin

Dashboard

Pro2 - PROD - WAN

- Dashboard
- Manage Replication
- Properties
- Actions
- Settings

Total Threads: 11

Active Threads: 10

Total Source DBs: 3

Total Target DBs: 3

Pending Jobs Status: Running: 0

Total Alerts: 718

Thread Control

Use this table to control Threads

Replication CDC

Actions

| <input type="checkbox"/> | Id | Thread Control | Logging Level | Disposition | Status |
|--------------------------|----|----------------|---------------|---------------|---------|
| <input type="checkbox"/> | 1 | Enabled | Moderate | Delete Record | RUNNING |
| <input type="checkbox"/> | 2 | Enabled | Moderate | Delete Record | RUNNING |
| <input type="checkbox"/> | 3 | Enabled | Moderate | Delete Record | RUNNING |
| <input type="checkbox"/> | 31 | Enabled | Moderate | Delete Record | RUNNING |
| <input type="checkbox"/> | 32 | Enabled | Moderate | Delete Record | RUNNING |

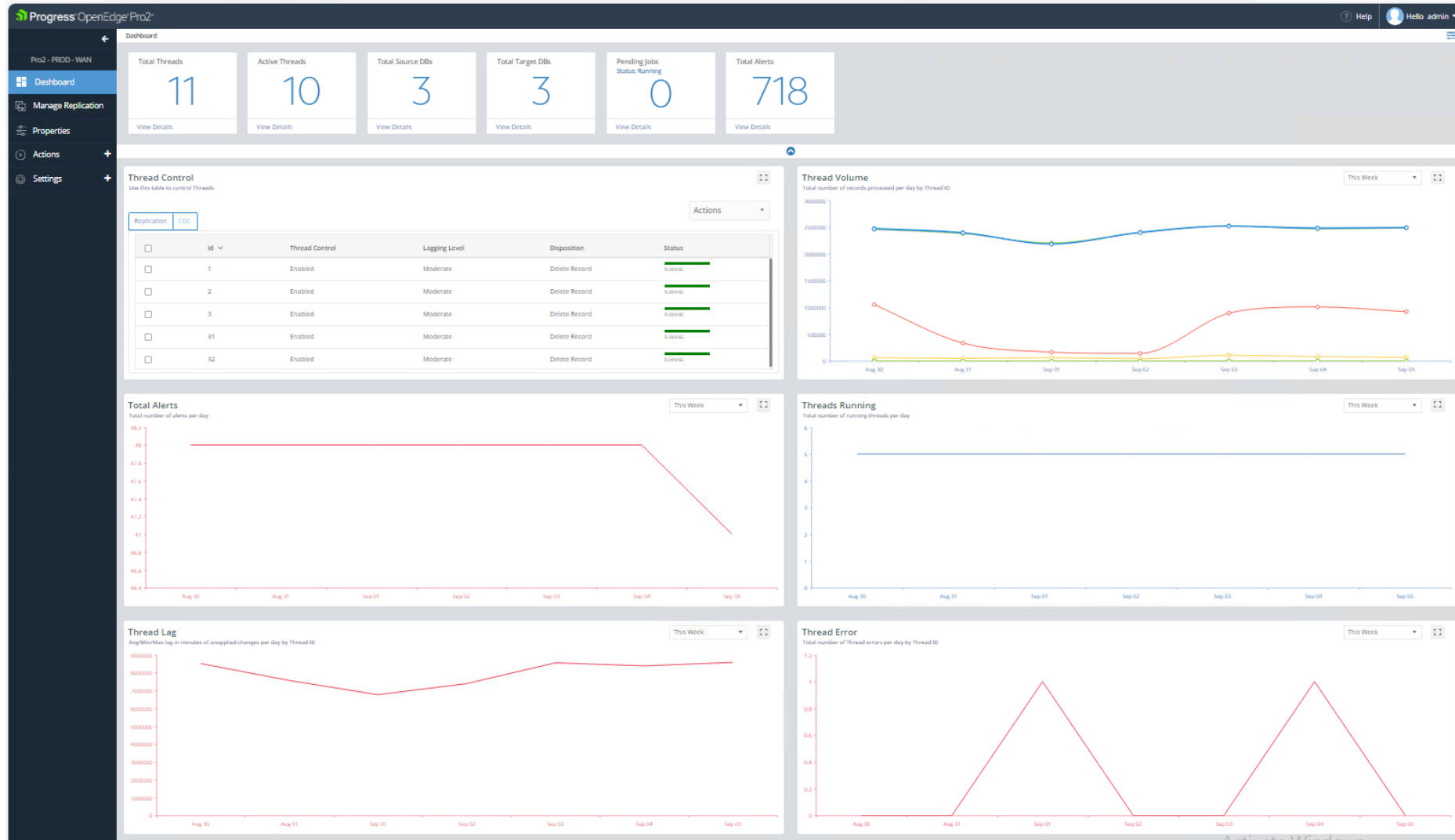
Thread Volume

Total number of records processed per day by Thread ID

This Week

| Date | Blue Line (Records) | Red Line (Records) | Yellow Line (Records) |
|--------|---------------------|--------------------|-----------------------|
| Aug 30 | 2,500,000 | 1,000,000 | ~100,000 |
| Aug 31 | 2,400,000 | ~300,000 | ~100,000 |
| Sep 01 | 2,200,000 | ~100,000 | ~100,000 |
| Sep 02 | 2,400,000 | ~100,000 | ~100,000 |
| Sep 03 | 2,500,000 | ~900,000 | ~100,000 |
| Sep 04 | 2,500,000 | 1,000,000 | ~100,000 |
| Sep 05 | 2,500,000 | ~900,000 | ~100,000 |

Pro2 UI (2)



Pro2 UI (3)

Progress OpenEdge Pro2 Help Hello admin

Replication > Mapping

Pro2 - LAN

- Dashboard
- Manage Replication
 - Select Source
 - Set Target
 - Generate Target Schema
 - Mapping
 - CDC Mapping
 - Advanced Configuration
 - Generate Code
- Properties
- Actions
- Settings

Total Threads: 8 [View Details](#)

Active Threads: 2 [View Details](#)

Total Source DBs: 2 [View Details](#)

Total Target DBs: 2 [View Details](#)

Pending Jobs: 0 Status: Running [View Details](#)

Total Alerts: 10 [View Details](#)

Create Replication : Mapping Source to Target Tables
Note: Auto mapping requires selection of one or more source tables and manual mapping requires a 1 : 1 linking (single source table to a single target table)

Source Database: sports Target Database: target

[Auto Map](#) [Map Table Only](#) [Un-Map](#) [Table List](#)

Mapped Tables

Search Table

| | |
|-----------|------------------------|
| Customer | Target Table: Customer |
| Thread: 1 | |
| Invoice | Target Table: Invoice |
| Thread: 1 | |
| Item | Target Table: Item |
| Thread: 1 | |
| Order | Target Table: Order |
| Thread: 1 | |
| Ref-Call | Target Table: Ref-Call |

Mapped Fields

[Auto Map Fields](#) [Map Fields](#) [Un-map Fields](#) [Field List](#)

| Source Field | Source Data Type | Target Field | Target Data Type | Scale | Precision |
|--------------|------------------|--------------|------------------|-------|-----------|
| Address | character | Address | character | 0 | |
| Address2 | character | Address2 | character | 0 | |
| Balance | decimal | Balance | decimal | 2 | |
| City | character | City | character | 0 | |
| Comments | character | Comments | character | 0 | |
| Contact | character | Contact | character | 0 | |
| Country | character | Country | character | 0 | |
| Credit Limit | decimal | Credit Limit | decimal | 2 | |

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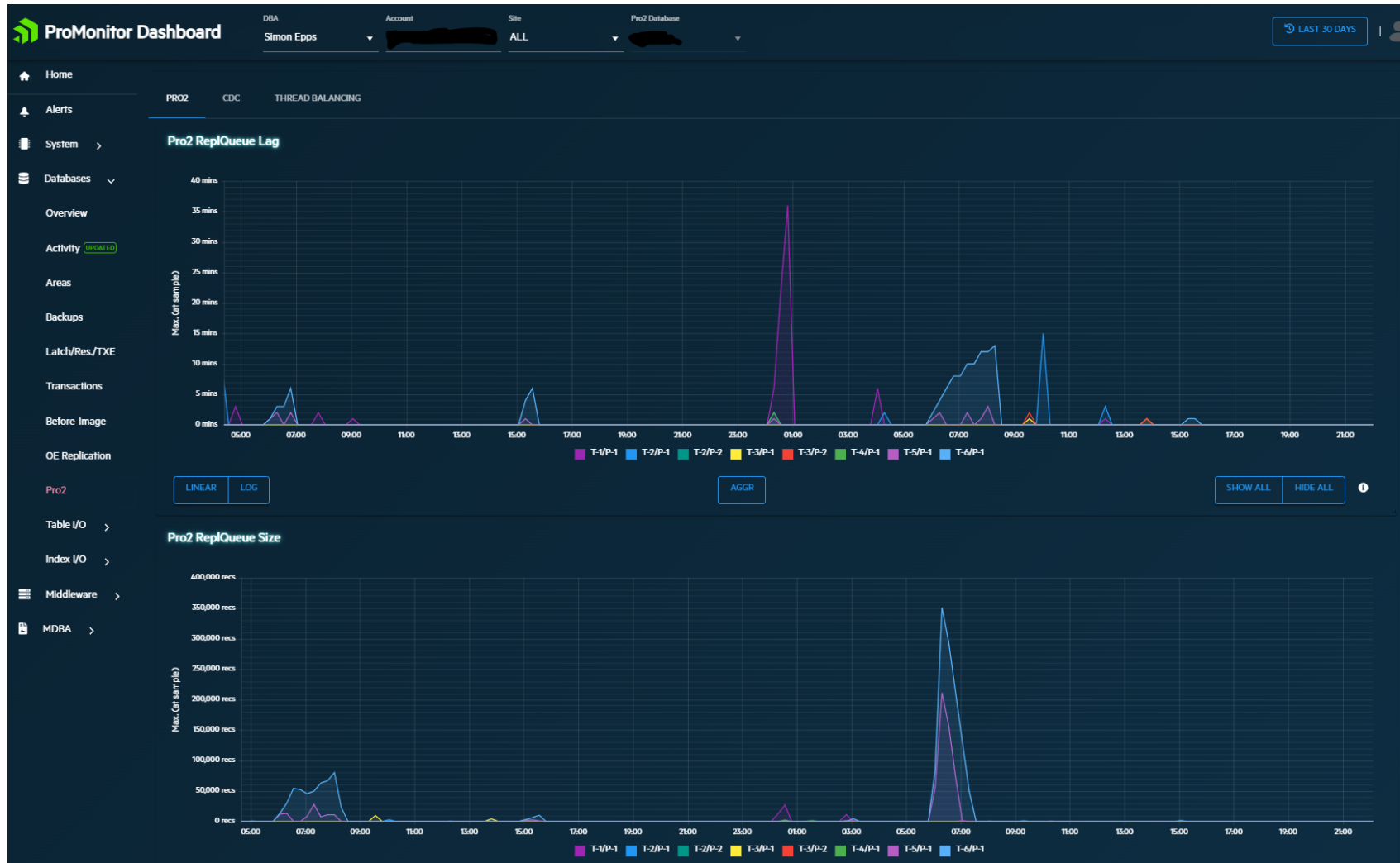
Available Pro2 Tools

- Pro2 UI
- OpenEdge Management
- Progress MDBA Monitoring
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ProMonitor Dashboard



ProMonitor Dashboard(2)



Available Pro2 Tools

- Pro2 UI
- OpenEdge Management
- Progress MDBA Monitoring

ProTop

ProTop RT

2024/09/11 ProTop RT 326-rc1 11:46:53
 xus6lt2
 C *Z{uti2C

| | | | | | | | | | | | |
|--------------|---------|-----------------|--------|--------------|------|----------------|-----------|----------------|-----------|---------------|-------|
| Hit% | 99.26 | Commits: | 615 | Examined: | 251 | APW Writes: | 74 | DB UpTime: | 24d 05:47 | Connections: | 1786 |
| Log Reads: | 1703137 | Undos: | 2 | New RM: | 249 | APW Write%: | 91 | Backup Age: | 10:31 | -n %: | 60 |
| Log Writes: | 4164 | | | From RM: | 249 | BuFs Scanned: | 3503 | | | Brokers: | 7 |
| OS Reads: | 12572 | Lock Tbl HWM: | 365074 | RM Locked: | 288 | APW Scan Wrts: | 3 | Oldest TRX: | 00:19:00 | SQL Servers: | 1 |
| OS Writes: | 81 | Curr # Locks: | 2319 | From Free: | 0 | APW Q Wrts: | 14 | Curr BIClstr: | 1353041 | SQL Clients: | 1 |
| LogRd/LogWr: | 409.05 | Lock Tbl% | 0.23% | Front2Bk: | 1 | Chkpt Q Wrts: | 56 | Old BIClstr: | 1353024 | 4gl Servers: | 10 |
| LogRd/RecRd: | 3.08 | Rec Lk/s: | 3810 | Mod BuFs: | 7828 | Flushed BuFs: | 0 | Ilum BIClstrs: | 17 | 4gl RemCnx: | 0 |
| Rec Reads: | 553534 | Lk Dura (ms): | 36.54 | Evicted: | 0 | Chkpt Len: | 00:00:51 | BI MB Used: | 1088 | App Server: | 64 |
| Idx Reads: | 638581 | | | | | | | | | Web Speed: | 0 |
| Rec Creates: | 248 | | | | | | | | | Local: | 1645 |
| Idx Creates: | 1098 | BogoMIPS: | 1.84 | Orders: | 4 | Notes: | 6640 6640 | Curr AI Ext: | 9 of 12 | Batch: | 51 |
| Rec Updates: | 167 | Random IO (ms): | 0.11 | Order Lines: | 17 | Wrts to Log: | 39 39 | Curr Seq#: | 27933 | BIW/AIW/WDOG: | 1 1 1 |
| Rec Deletes: | 285 | Sync IO (MB/s): | 102.85 | | | BIW/AIW Wrts: | 30 38 | Empty AI: | 11 | AI Mgmt: | 1 |
| Idx Deletes: | 1236 | | | | | BIW/AIW Wrt%: | 78 98 | Full AI: | 0 | APWs: | 2 |
| Idx Blk Spl: | 1 | User Exp SHM: | 9840 | | | Partial Wr: | 0 0 | Locked AI: | 0 | RPLA/RPLS: | 0 1 |
| Rec Waits: | 0 | localhost: | 20018 | | | Busy Waits: | 10 0 | pica Used: | 1 | Utilities: | 0 |
| Resrc Waits: | 31 | | | | | Empty Wts: | 0 0 | pica Used%: | 0.00 | | |
| Latch Waits: | 1958 | | | | | | | | | TRX: | 538 |
| Latch Reqs: | 5880551 | | | | | | | | | Blocked Rec: | 1 |
| Latch/logRd: | 3.45 | | | | | | | | | Other Blkd: | 0 |

<2> Pro2 Queues

| QlNum | Type | QlName | Status | Action | Enabled | Disabled | Paused | Orphans | Depth | Queue Lag | Oldest Table | Source DB |
|-------|-------------|----------|---------|--------|---------|----------|--------|---------|---------------|-------------|----------------|-----------|
| 1 | replication | pro2q1 | Running | Delete | 891 | 52 | 1 | 0 | 174 p | 00:00:05 | po-trans-d | sentai |
| 10 | replication | pro2q10 | Running | Delete | 4 | 0 | 0 | 0 | 0 2 | 00:00:00 | n/a | |
| 2 | replication | pro2q2 | Running | Delete | 3 | 0 | 0 | 0 | 212,941 p | 00:31:31 | so-trans-x | sentai |
| 3 | replication | pro2q3 | Running | Delete | 22 | 0 | 0 | 0 | 160 p | 00:00:03 | po-trans-log | sentai |
| 4 | replication | pro2q4 | Running | Delete | 19 | 0 | 0 | 0 | 168,062,617 p | 22 19:08:05 | ir-trans | sentai |
| 5 | replication | pro2q5 | Running | Delete | 71 | 0 | 0 | 0 | 193 p | 00:00:04 | cust-credit | sentai |
| 6 | replication | pro2q6 | Running | Delete | 1 | 0 | 0 | 0 | 572 p | 00:00:09 | prod-exp-loc-q | sentai |
| 7 | replication | pro2q7 | Running | Delete | 2 | 0 | 0 | 0 | 702,678 p | 01:30:43 | price-lp | sentai |
| 8 | replication | pro2q8 | Running | Delete | 3 | 0 | 0 | 0 | 0 2 | 00:00:00 | n/a | |
| 9 | replication | pro2q9 | Running | Delete | 9 | 1 | 0 | 0 | 0 2 | 00:00:00 | n/a | |
| 0 | cdcadmin | cdcadmin | Running | n/a | 161 | 0 | 0 | 0 | 65,739 e | 00:18:50 | ap-trans | |

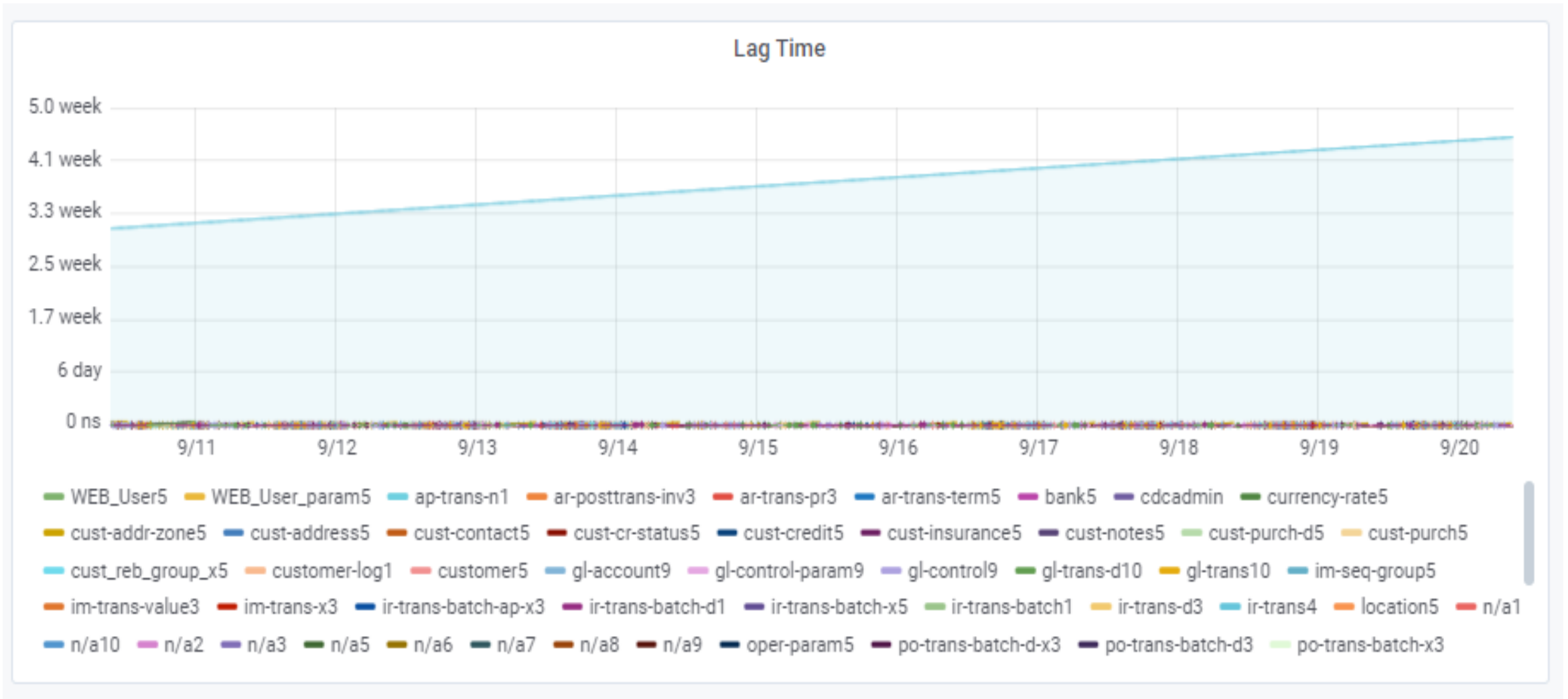
<C> CDC Queue Status

| Policy | Source Table | First | Last | Queued | Oldest Change | Latest Change | Lag (Seconds) | Lag Time |
|---------------------|----------------|----------|----------|--------|-------------------|-------------------|---------------|----------------|
| ap-trans_Pro2 | ap-trans | 906630 | 906630 | 1276 | 24/09/11 11:27:46 | 24/09/11 11:46:46 | 1141 | 0 00:19:01.286 |
| so-trans-d_Pro2 | so-trans-d | 18171395 | 18199156 | 27762 | 24/09/11 11:27:59 | 24/09/11 11:46:47 | 1129 | 0 00:18:48.863 |
| prod-exp-loc-q_Pro2 | prod-exp-loc-q | 13958103 | 13975070 | 16968 | 24/09/11 11:28:01 | 24/09/11 11:46:47 | 1127 | 0 00:18:46.568 |
| cust-credit_Pro2 | cust-credit | 5831763 | 5835512 | 3750 | 24/09/11 11:28:01 | 24/09/11 11:46:47 | 1127 | 0 00:18:46.565 |
| so-trans_Pro2 | so-trans | 6290568 | 6302904 | 12337 | 24/09/11 11:28:01 | 24/09/11 11:46:47 | 1127 | 0 00:18:46.563 |
| so-trans-x_Pro2 | so-trans-x | 5237243 | 5239688 | 2446 | 24/09/11 11:33:25 | 24/09/11 11:46:37 | 803 | 0 00:13:23.036 |
| ar-posttrans_Pro2 | ar-posttrans | 22290 | 22308 | 19 | 24/09/11 11:33:26 | 24/09/11 11:46:37 | 802 | 0 00:13:21.963 |
| ar-trans_Pro2 | ar-trans | 3240065 | 3241469 | 1405 | 24/09/11 11:36:47 | 24/09/11 11:46:47 | 601 | 0 00:10:00.759 |
| ar-trans-log_Pro2 | ar-trans-log | 1109915 | 1110070 | 156 | 24/09/11 11:45:03 | 24/09/11 11:46:32 | 105 | 0 00:01:44.989 |
| po-trans-log_Pro2 | po-trans-log | 1560372 | 1560385 | 14 | 24/09/11 11:46:28 | 24/09/11 11:46:31 | 20 | 0 00:00:20.001 |

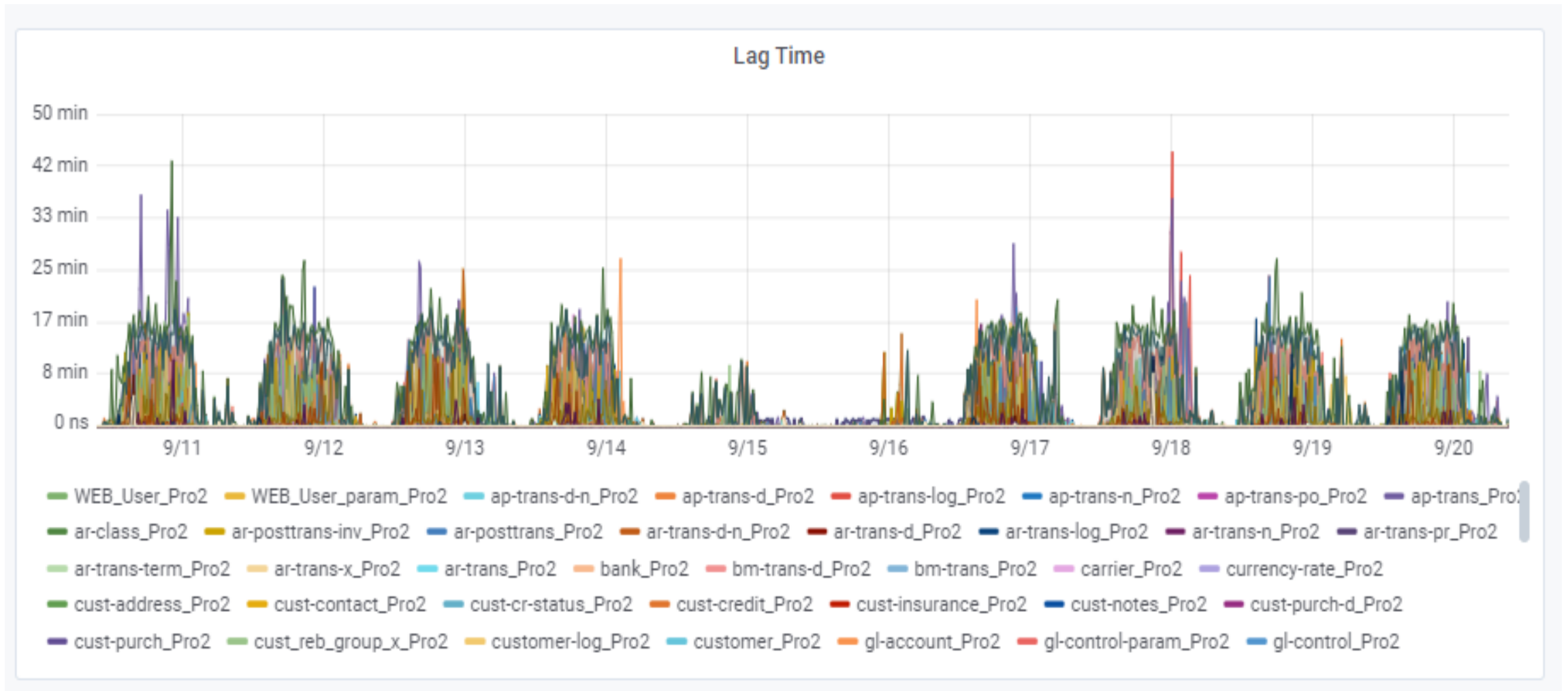
ProTop Portal – Queue Depth



ProTop Portal – Lag Time Stuck Record

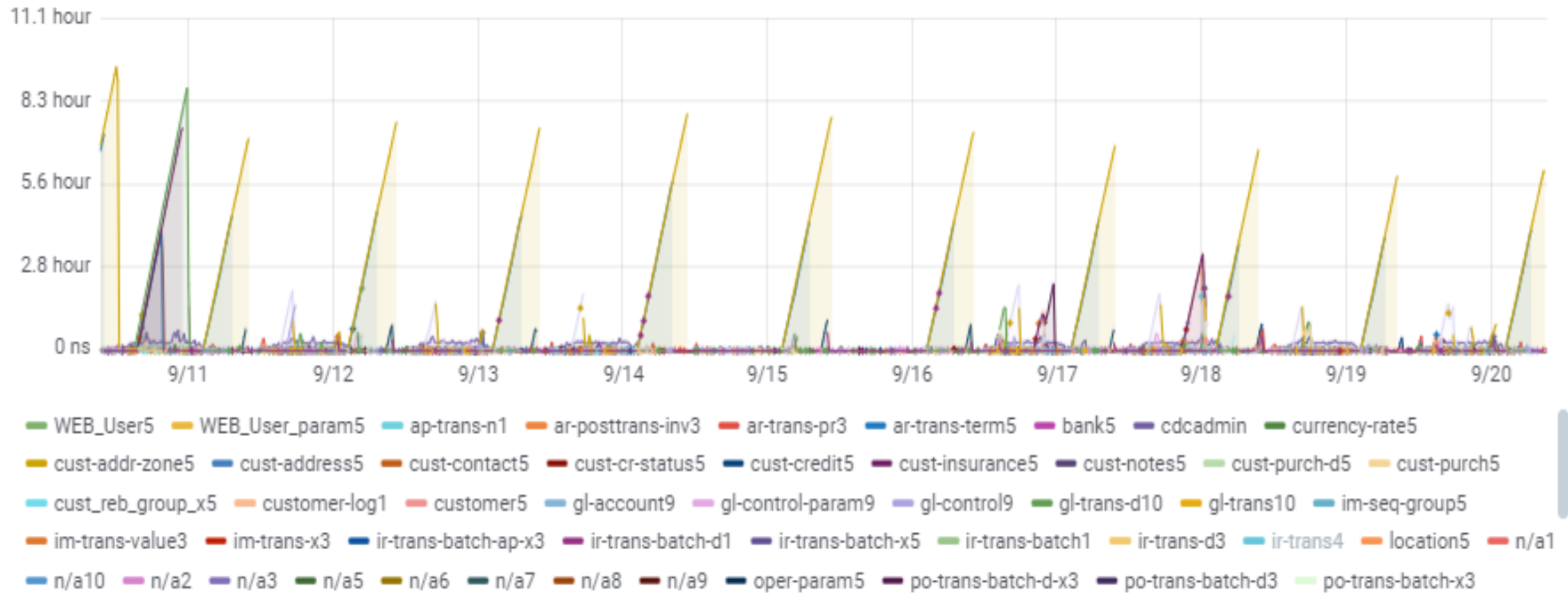


ProTop Portal – Lag Time Detail



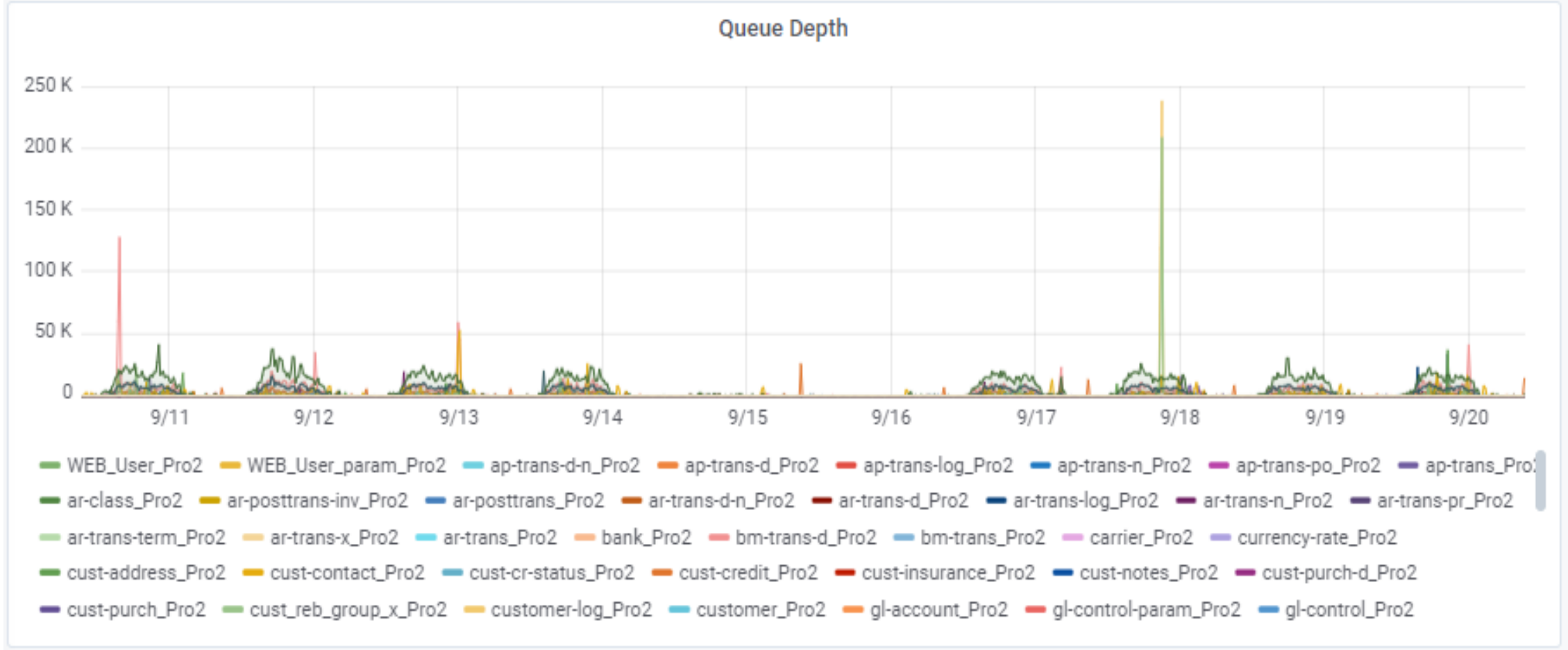
ProTop Portal – Lag Time Spikes

Lag Time



ProTop Portal – CDC Queue Depth

▼ CDC



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What is the data used for?

- Are they reporting off of the Pro2 database?
- What additional indexes are needed?
- Is it a staging area for additional ETL processing?

Pro2 Alerting Challenge

| | | | | |
|---------------------|-------------|-------|-----------|----------|
| Pro2Ora Queue Alert | | | | |
| Queue Count | 11,512 | | | |
| Lag Time | 573 seconds | | | |
| | | | | |
| Table | Count | Queue | Date | Time |
| ----- | ----- | ----- | ----- | ----- |
| i-post-cmnt | 2 | 30 | 9/10/2024 | 15:35:29 |
| critical | 6 | 5 | 9/10/2024 | 15:44:13 |
| address | 598 | 2 | 9/10/2024 | 15:44:14 |
| loan-edits | 188 | 6 | 9/10/2024 | 15:44:14 |
| escrow | 30 | 11 | 9/10/2024 | 15:44:14 |
| escrw-dt | 40 | 11 | 9/10/2024 | 15:44:14 |
| housing | 148 | 13 | 9/10/2024 | 15:44:14 |
| addrappr | 5 | 30 | 9/10/2024 | 15:44:14 |

- Backlog – 11,512 rows
- Lag Time – 8.5 minutes

- Transaction scope issue?
- Is the thread buried?
- Are the records “stuck”?

The Dreaded Bulkcopy

- Validation is always a challenge!
- Constantly defending Pro2Ora because of the use of ROWID
- Getting back in sync – ultimately it is best to start over

Replication Triggers vs. CDC

- CDC
 - Harder to set up in the beginning
 - Easier to manage in the longer run
- We use replication triggers
 - When we create a new table, we also create the triggers for it
- Replication Trigger types can be a challenge!
- Replication Triggers vs. CDC
 - CDC introduces another queue and level of management
 - Replication Triggers are “older”
 - Each has their own quirks

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- Change is inevitable – The effect of them can be minimized
- Once you understand the update process it gets easier.
- There are several options for managing your pro2 environment and configuration
 - Some are good, some cost you money
 - Some are more sexy and less intuitive
- We still find alerting to be a challenge...

Contact Information

Brian Bowman
Essentials

brian.bowman@onearchwell.com

+1 (603) 801-8259