

Tech Note 884

Setting Up Historian Servers for Tier-2 Summary Replication

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Introduction

Data from one Historian can be replicated to one or more other Wonderware Historians, creating a "Tiered" relationship between the historians. Figure 1 (below) shows a common configuration in which data from multiple Historians (called Tier-1 Historians) is fed into a single centralized historian (called a Tier-2 historian).

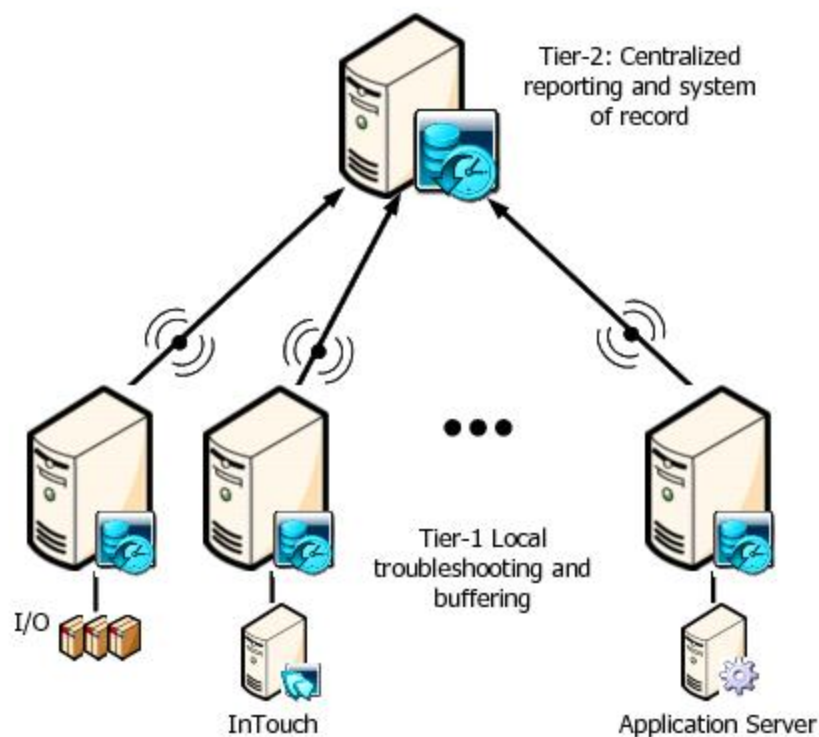


FIGURE 1: THE TIER-2 HISTORIAN STORES DATA REPLICATED FROM THE TIER-1 HISTORIANS

A Tiered Historian provides three types of replications:

- Simple
- Analog Summary, and
- State Summary Replications

Notes

- **Simple** replication retains the original data resolution while Summary replications provide periodic summaries of high resolution data.
- **Simple** replication replicates all values in the Tier- 1 Historian to the Tier-2 Historian. Analog, discrete, and string tags can be configured for simple replication.
- **Analog Summary** replication produces summary statistics for analog tags. The statistics relate only to the recorded interval.
- **State Summary** replication summarizes the various states of a tag value. State summary replication can be applied to analog (integer only), discrete, and string tags.

This *Tech Note* shows you how to configure a Tier-1 Historian to replicate Analog Summary and State Summary data onto a Tier-2 Historian replication server. Analog and State summary data can be then stored for retrieval by configuring replication tags that correlate with the source tag.

Important Considerations

- Tier-2 Historian must be of the same version, service pack, and patch level as the Tier-1 Historian(s). It should have enough licensed tags for data being replicated.
- Be careful not to create or modify a replicated tag on a Tier-1 Historian to have the same tagname that already exists on a Tier-2 Historian. The system does not prevent you from having a replicated tag on a Tier-2 Historian receiving data from two or more different Tier-1 Historians. However, when you retrieve data for that replicated tag on the Tier-2 Historian using the tagname, an incorrect blend of data from the two (or more) data sources is returned.
- You can use summary replication instead of event-based summaries. Compared to event-based summaries, replicated summaries:
 - Support more types of calculations.
 - Are stored to History Blocks, instead of in SQL Server tables, thus taking advantage of all that the Historian storage subsystem has to offer in terms of data compression and throughput as compared to regular SQL Server database storage.
 - Can be retrieved using the full array of real-time query extensions provided by the Historian.

Application Versions

- Wonderwae Historian Server 10 SP1 P01 or later
- Microsoft SQL Server 2005 SP3 (32-bit)
-or-
- Microsoft SQL Server 2008 R2 (32-bit)

Assumptions

This *Tech Note* assumes that you are familiar with Wonderware Historian Server and Microsoft SQL Server Management Studio. If you have any questions regarding the Microsoft SQL Server, contact Microsoft Technical support at www.microsoft.com for further assistance.

Procedures

1. From a Tier-1 Historian, open the Arcestra System Management Console (SMC)
2. Expand Historian\Historian Group\- 3. The **New Replication Server** dialog box appears (Figure 2 below).
- 4. Enter the node name or IP Address of the Tier-2 Historian.
- 5. The **Store & Forward path** will be automatically filled out. You can modify the path if necessary.
- 6. Click the **Test Connection** button.

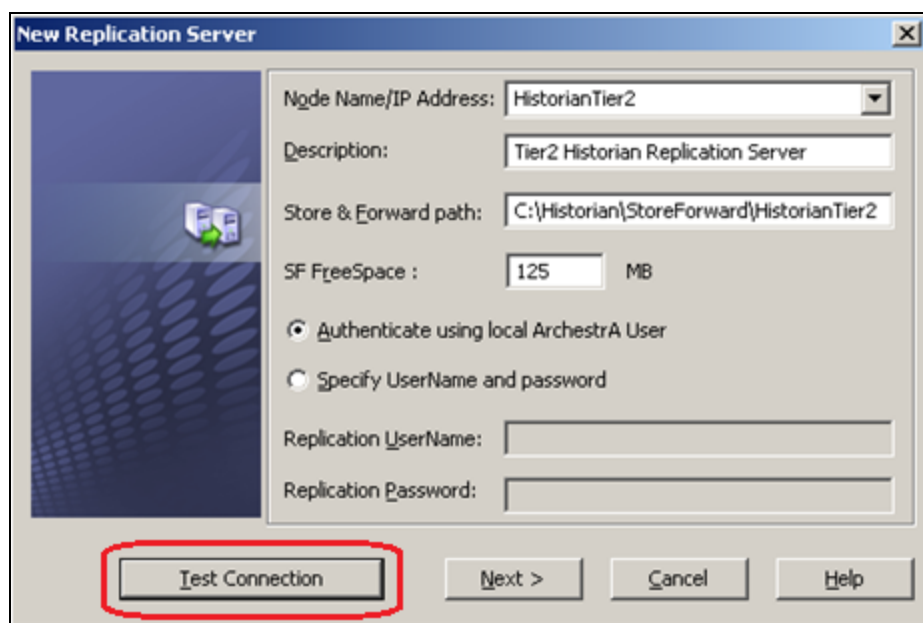


FIGURE 2: TEST REPLICATION SERVER CONNECTION

The test should be successful with a pop-up message (Figure 3 below).

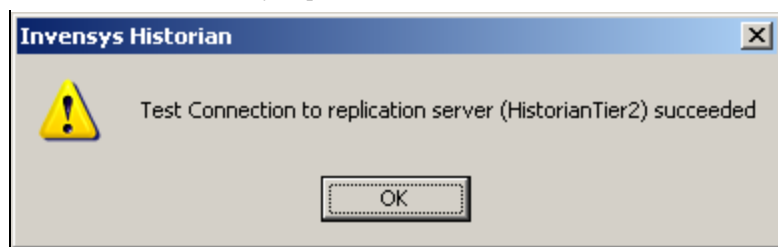


FIGURE 3: CONNECTION TEST SUCCESSFUL

7. Click **OK**.
8. Click **Next**. We can accept default settings like the figure below.

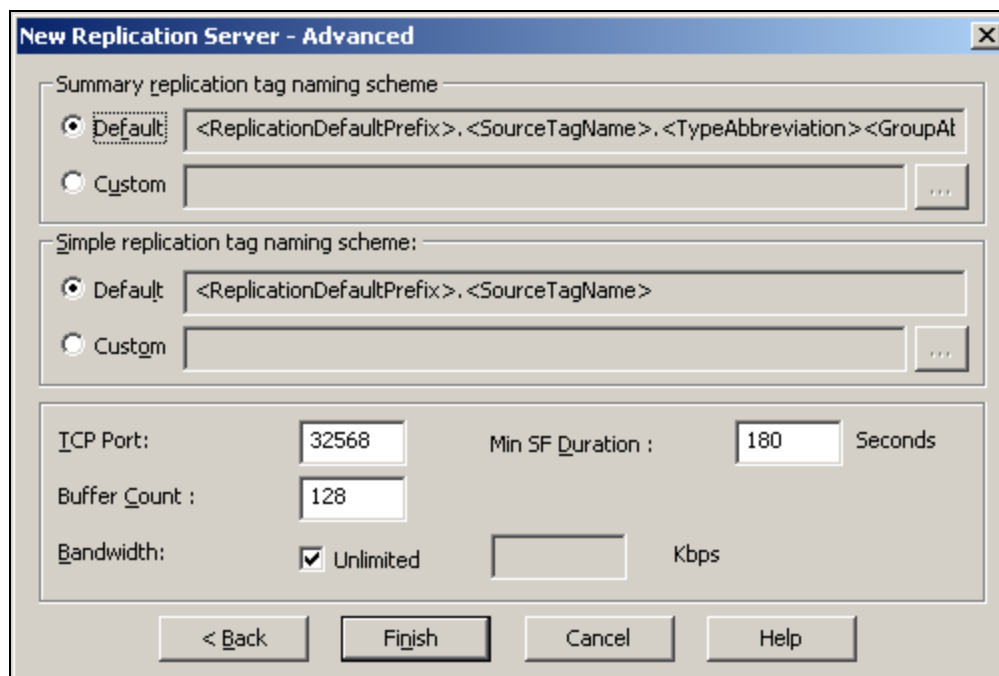


FIGURE 4: NEW REPLICATION SERVER - ADVANCED (DEFAULT SETTINGS)

9. Click **Finish**. The Tier-2 replication server item appears in the SMC (Figure 5 below).

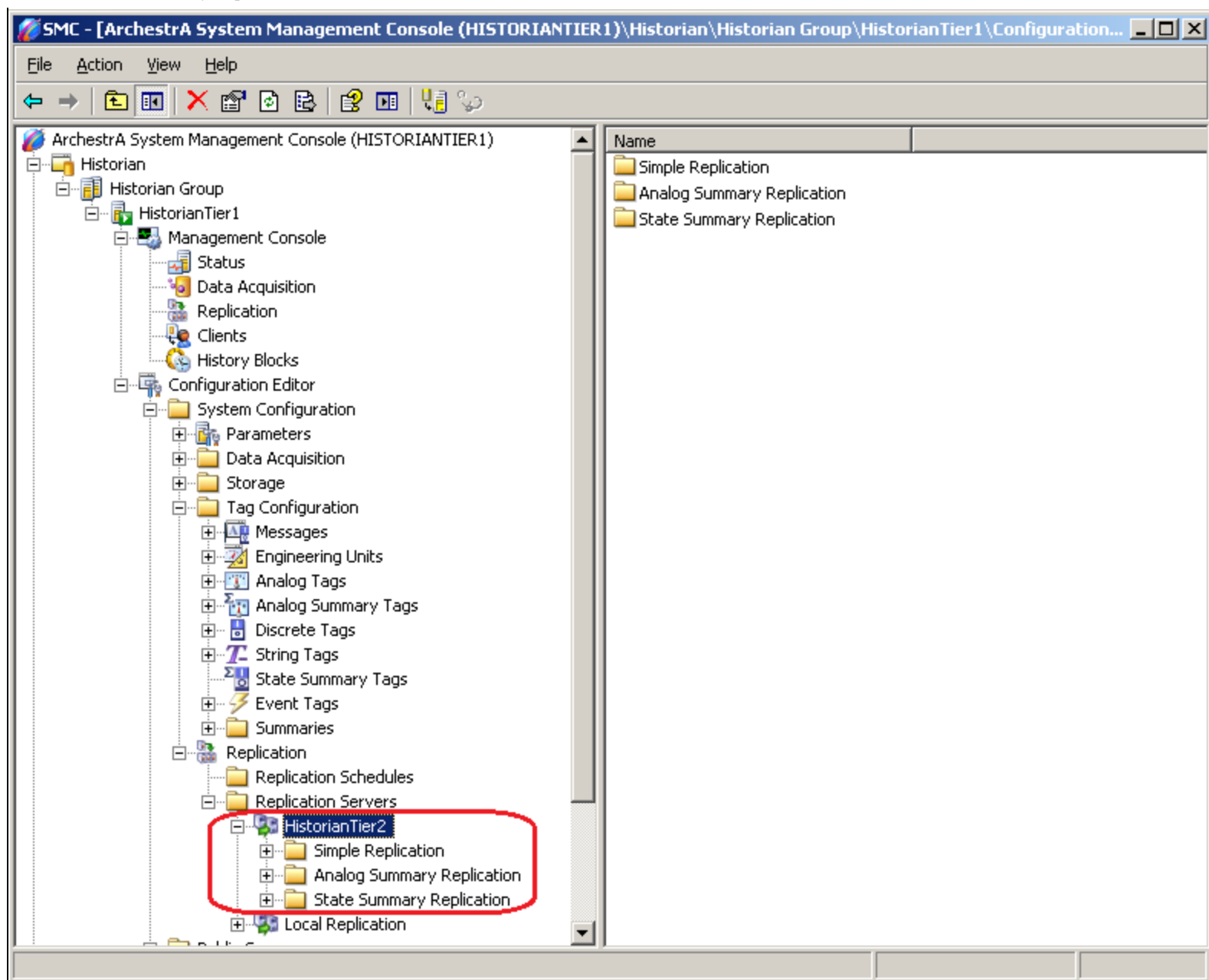


FIGURE 5: TIER2 HISTORIAN ITEM IN SMC

10. Expand the Tier-2 Historian item. In this example, it is called **HistorianTier2**.
11. Expand the **Analog Summary Replication** folder.
12. Right-click on the **15 Minutes** schedule and select **Add Multiple Tags**.

For this example, the following tags are added to the schedule. SysTimeMin is a Historian built-in tag, others were imported from the Wonderware InTouch Demo application: **SysTimeMin**, **ReactLevel**, **ReactTemp**, and **ProdLevel**.

Form Query | SQL Query

Tag Name: Not

Operator:

Description: Not

Tag Types

Analog String Discrete Event

Found Tags:

Tag Name	Description

Target Tags:

Tag Name	Tag Type
SysTimeMin	Analog
ReactLevel	Analog
ReactTemp	Analog
ProdLevel	Analog

> < >> <<

OK Cancel Help

FIGURE 6: ADD MULTIPLE TAGS FOR REPLICATION

13. Click **OK**. The **Add Multiple Tags – Step 2 of 2 – Create replicated tags** window appears.

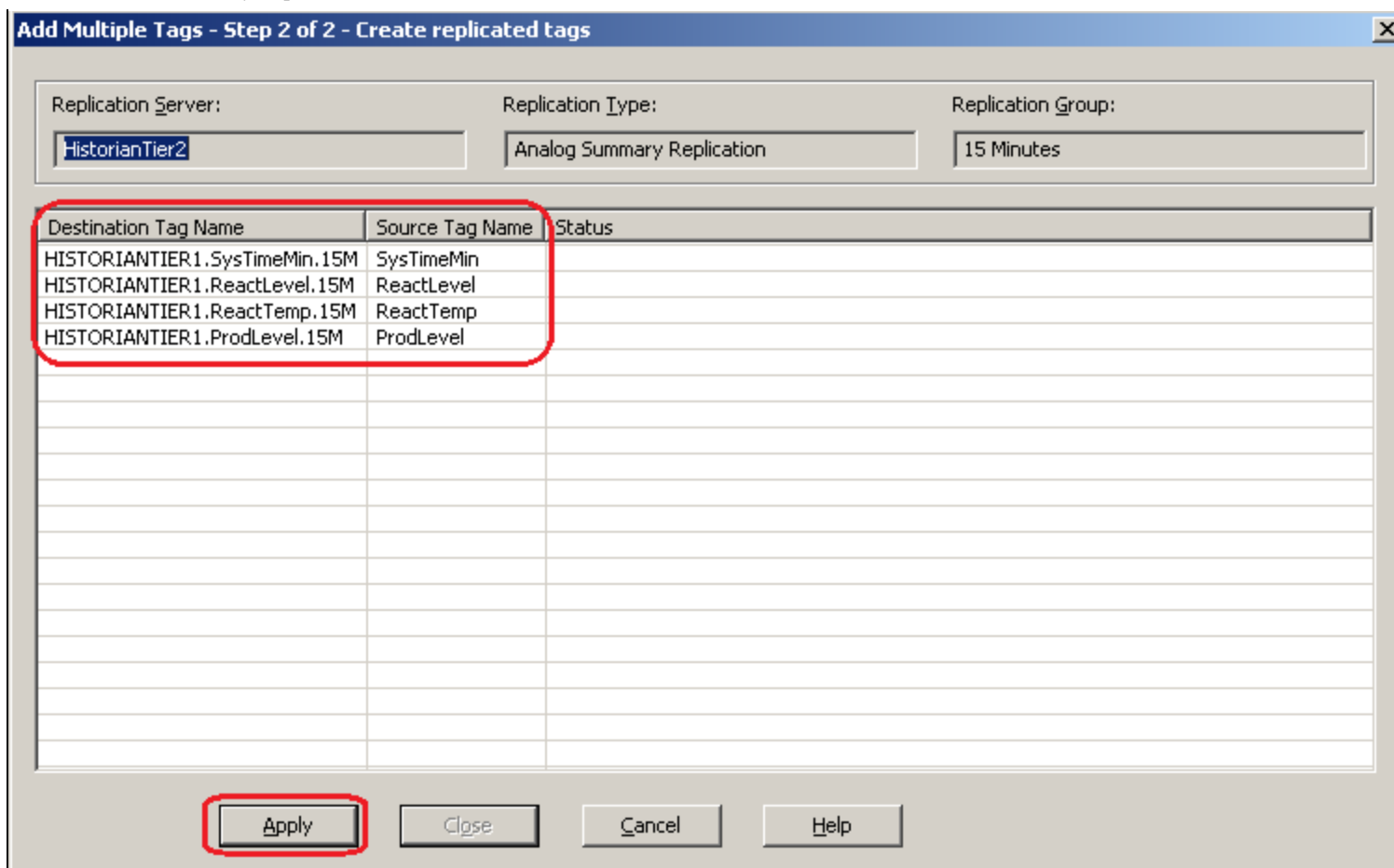


FIGURE 7: CREATE REPLICATED TAGS

14. Click **Apply** then **Close**. The tags appear in the **15 Minutes** item (Figure 8 below).

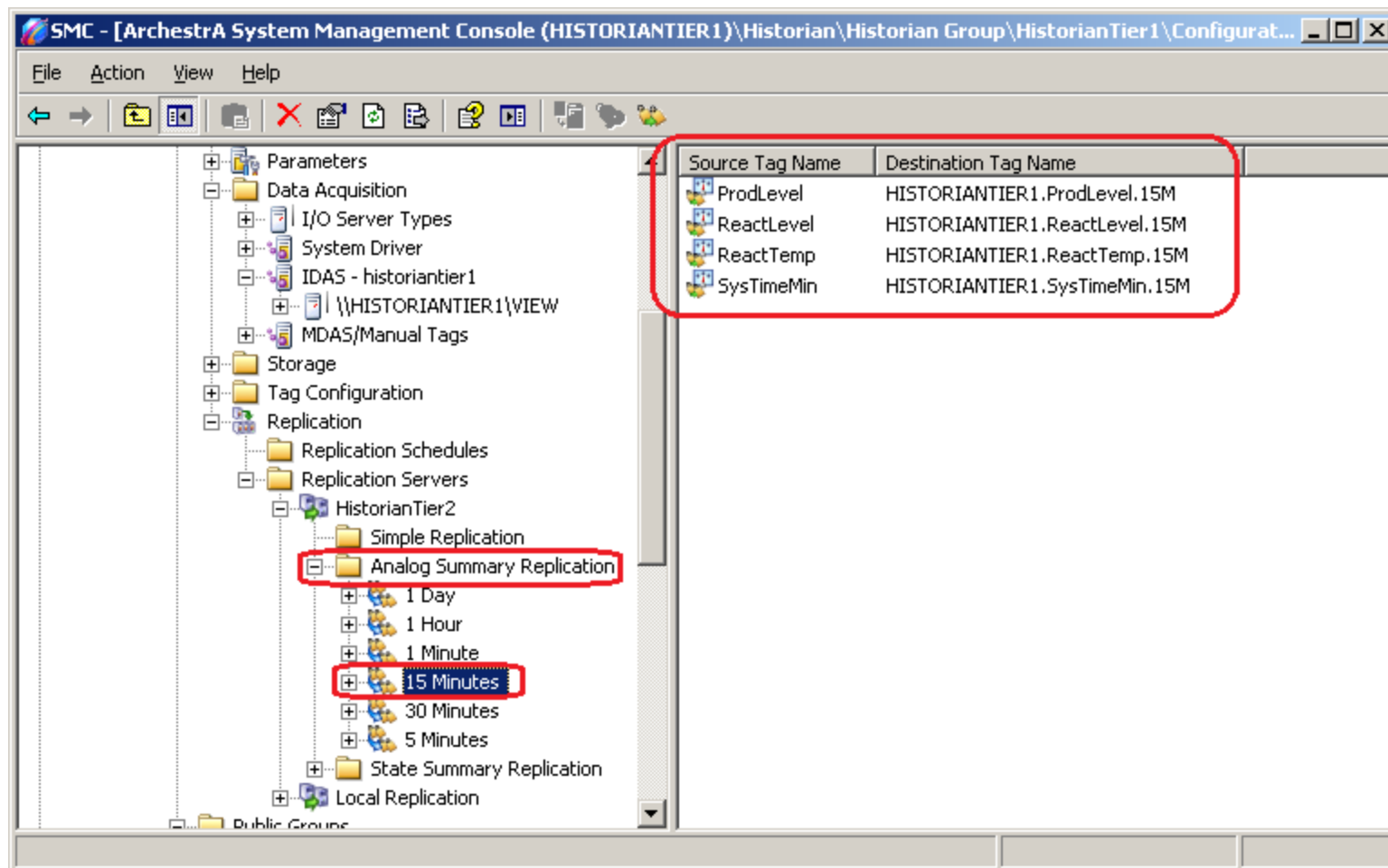


FIGURE 8: SOURCE AND DESTINATION TAG NAMES

15. Now, expand the **State Summary Replication** item, then right-click on 30 Minutes and select **Add Multiple Tags**.
16. In this example, the following tags (imported from the Wonderware InTouch Demo application) to the 30 Minutes schedule: **WaterValve, ConcValve, ConcPump, TransferPump**.

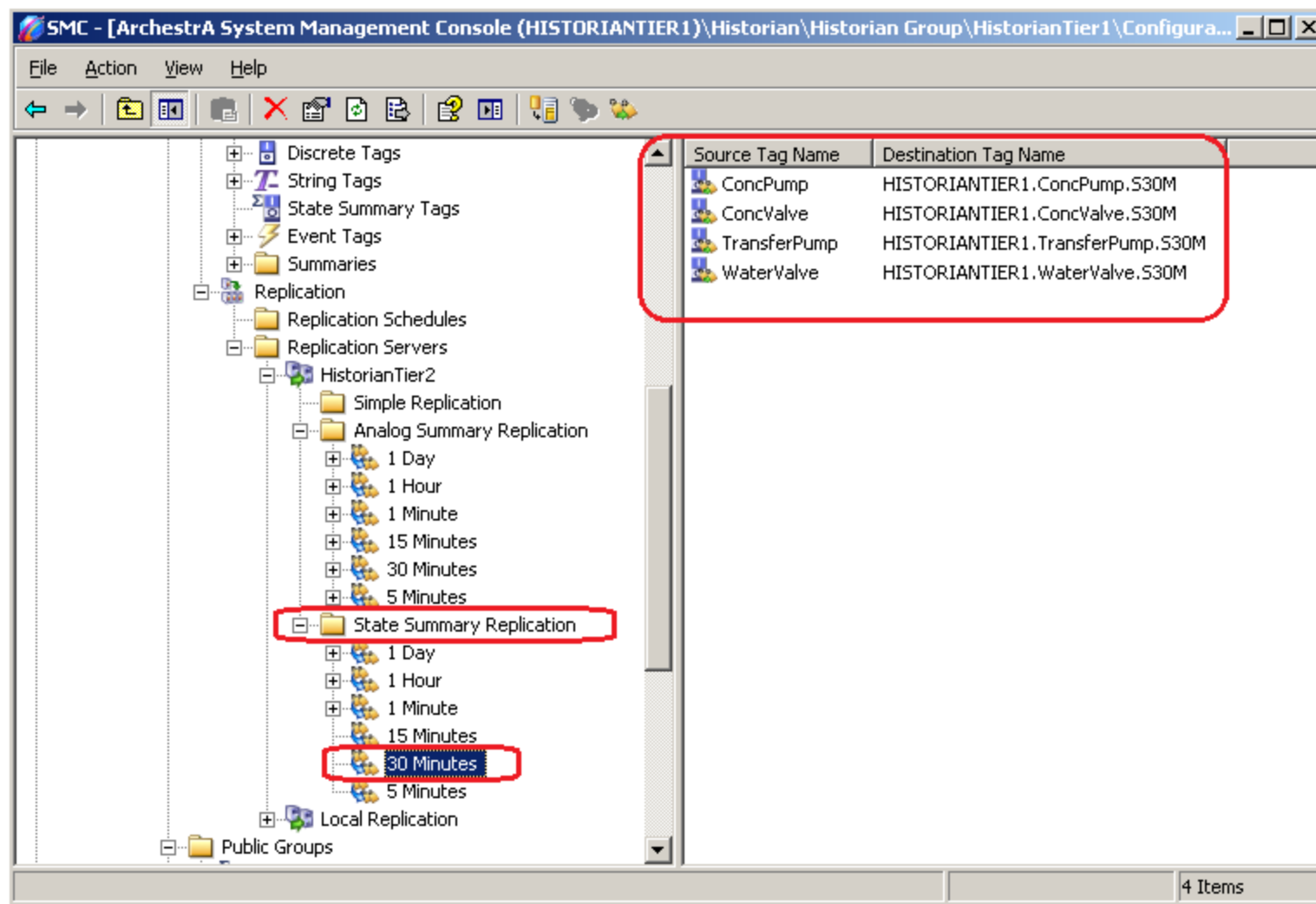


FIGURE 9: STATE SUMMARY REPLICATION/30 MINUTES TAGS

- On the left pane of the SMC, right-click the **Configuration Editor** and click **Commit Pending Changes** to apply the changes to the Runtime database.
- Click **Commit**, then **OK**.

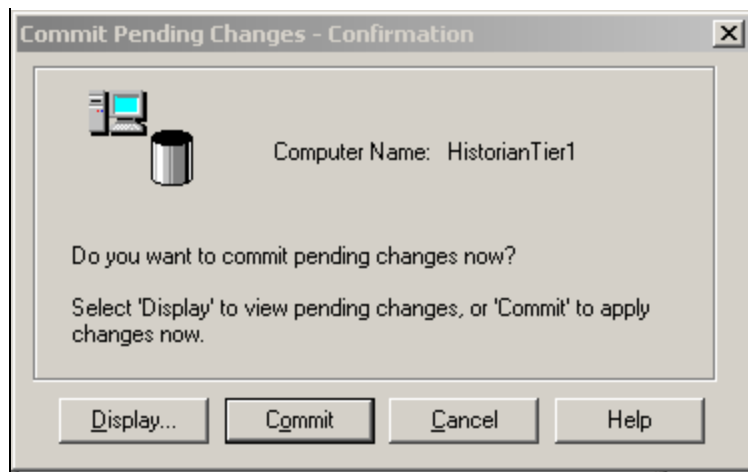


FIGURE 10: COMMIT CHANGES

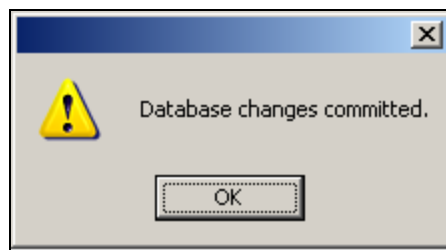


FIGURE 11: CHANGES COMMITTED

Monitoring Replication

1. From the Tier-1 Historian (HistorianTier1 in this example), on the left pane of the SMC, expand the Management Console item and click **Replication**.

The name of the Tier2 Historian (HistorianTier2 in this example), status, total tags, etc. appears in the right panel as (Figure 12 below).

Replication Server	Status	Total Tags	Values / Sec	Sync Queue Values /...	Total Values
Local Replication	Replicating	3	0.00	0.00	882
HistorianTier2	Replicating	9	0.00	0.00	28

FIGURE 12: REPLICATION OPERATION

The panel includes the following columns:

- **Replication Server:** The name of the remote replication server, or "Local Replication" when replicating locally.
- **Status:** The status of replication to the replication server.
- **Total Tags:** The total number of tags being replicated to the replication server.
- **Values/Sec:** The average number of data values replicated per second.
- **Sync Queue Values/Sec:** The average number of synchronization queue values replicated per second.
- **Total Values:** The total number of values being replicated.

2. On the Tier-2 Historian (HistorianTier2 in this example), on the left pane of the SMC, expand the Configuration Editor – Public Groups, and click All Analog Summary Tags. The name of replicated tags from Tier-1 Historian (HistorianTier1 in this example) should appear right panel under the **Referenced Tag Name** column.

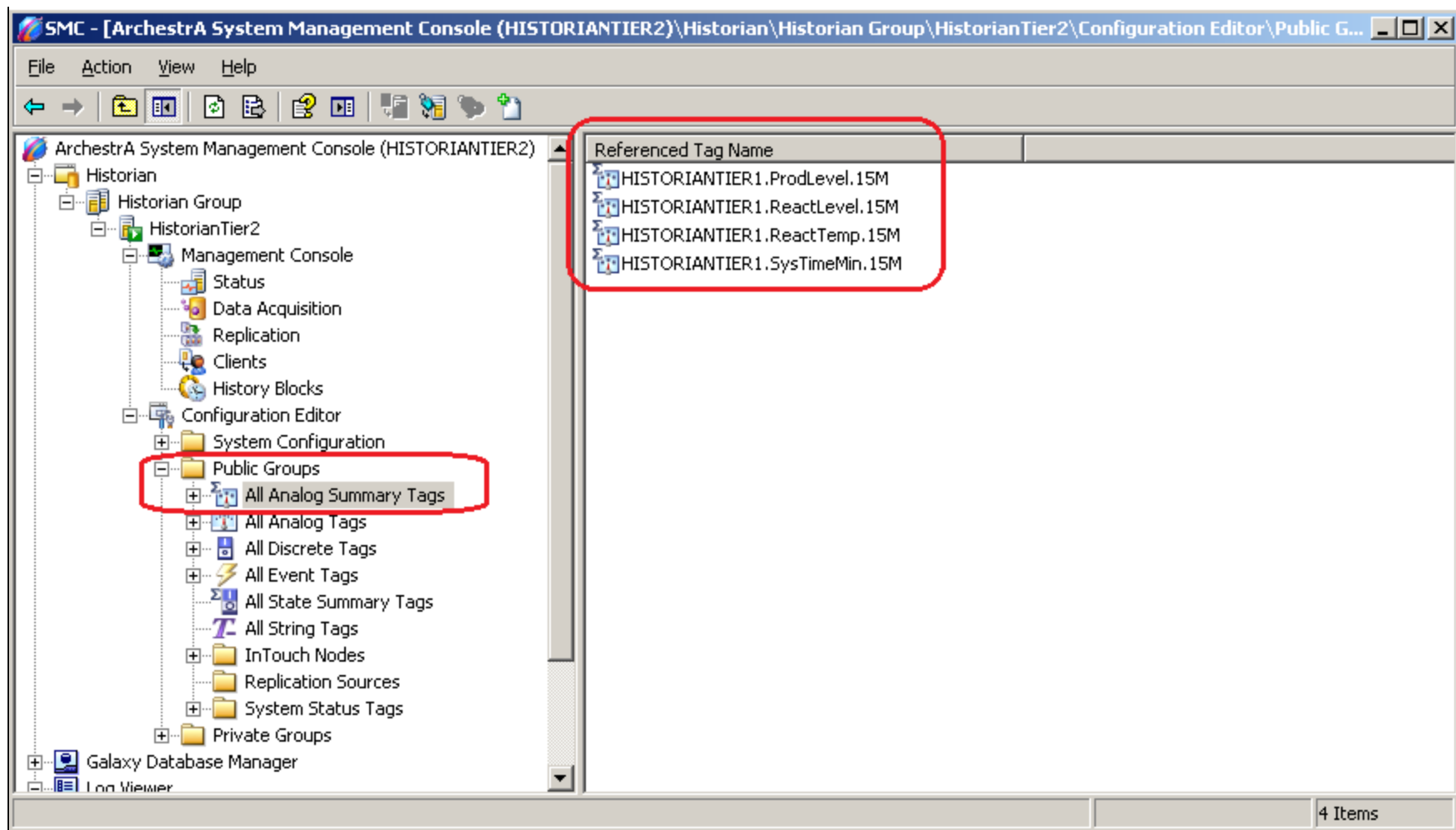


FIGURE 13: ALL REFERENCED TAG NAMES/ANALOG SUMMARY TAGS

3. Similarly, expanding the **All State Summary Tags** item displays in the right panel under the Referenced Tag Name column.

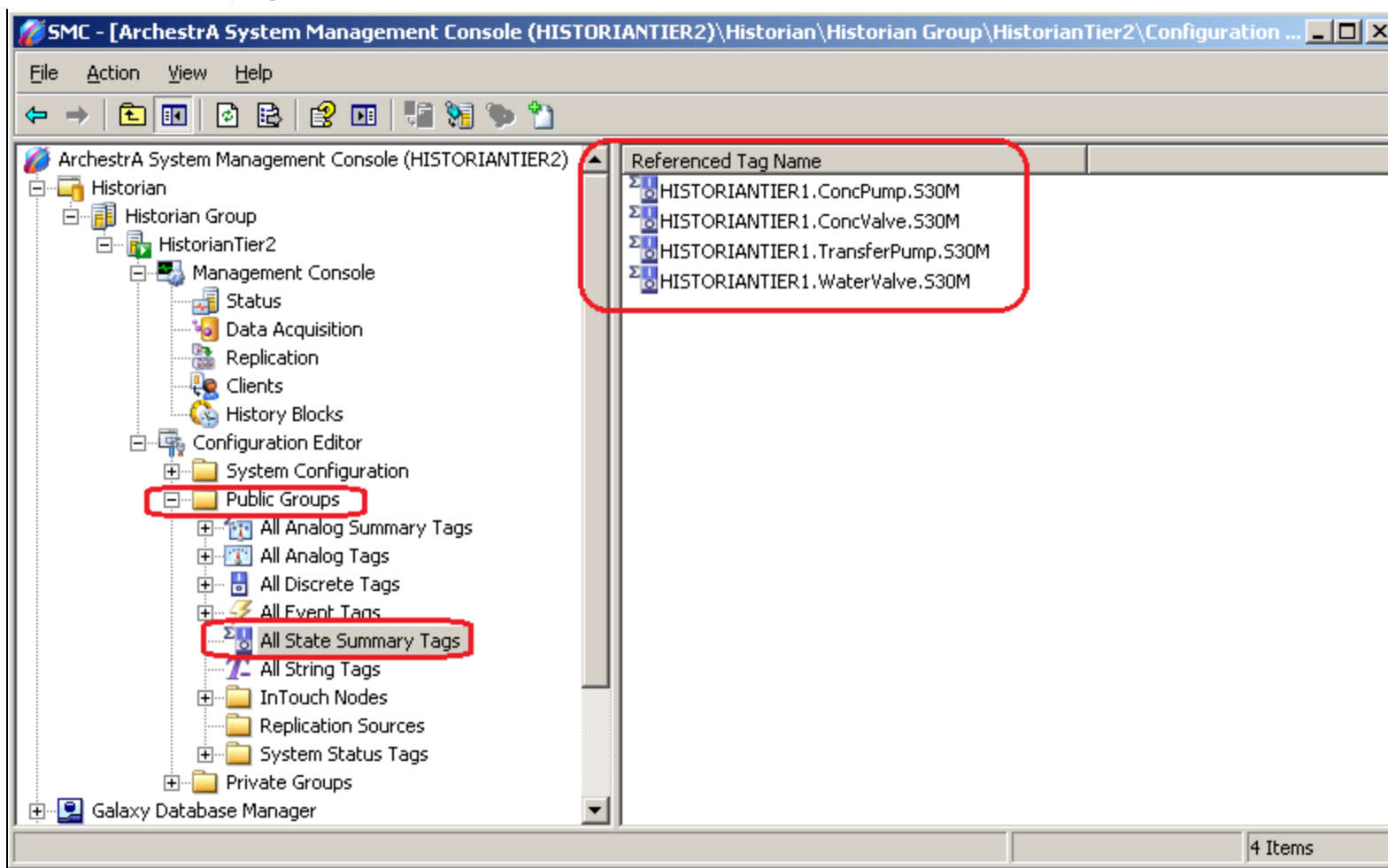


FIGURE 14: ALL REFERENCED TAG NAMES/STATE SUMMARY TAGS

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