Tech Note 1042
Solving Historian Memory Issue with SQL Server MemToLeave Configuration

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Introduction

MemToLeave is virtual address space (VAS) that SQL Server will leave available for memory allocations for SQL Server processes that are *outside* the SQL Server memory pool.

The memory outside of the memory pool is the area used by SQL Server for loading items, such as extended procedure .dll files, OLE DB providers, and automation objects referenced in Transact-SQL statements. The default memory allocation for MemToLeave is about 380 MB on a 32-bit version of SQL Server.

This *Tech Note* describes solving memory issues with with Historian OLE DB Provider (Wonderware products in general) by determining whether you need to increase the amount of memory allocation for MemToLeave.

Application Versions

- Wonderware Historian Server 2012R2 (version 11.0) and later

- Microsoft SQL Server 2008 SP1 or Microsoft SQL Server 2012

> **Note:** This *Tech Note* assumes you are familiar with Wonderware Historian Server and Microsoft SQL Server. If you have any questions regarding the Microsoft SQL Server or the Operating System, please contact Microsoft Technical support at www.microsoft.com for further assistance.

Symptoms

There are two main indications for assigning more memory to MemToLeave:

1. Warnings, errors or informational messages produced by either SQL Server or the ArchestrA logger, similar to the following:

   Database Error (5;ExecuteDetectorSQL: Cannot create a statement object using OLE DB provider "INSQL" for linked server "INSQL".) [Server Name; EventDatabase.cpp; 267
   Database Error (5;ExecuteDetectorSQL: The OLE DB provider "INSQL" for linked server "INSQL" reported an error. The provider ran out of memory.) [Server Name; EventDatabase.cpp; 267]

2. If the following T-SQL script shows that the amount of available memory is small for the requirements of your platform.

Determining Maximum Free Memory for MemToLeave

To determine the current memory utilization, use the following T-SQL script (**Christian Bolton's Blog**) to show maximum free size for the OLEDB provider:

```
WITH VASummary(Size,Reserved,Free) AS
(SELECT
Size = VaDump.Size,
Reserved = SUM(CASE(CONVERT(INT, VaDump.Base)^0)
WHEN 0 THEN 0 ELSE 1 END),
Free = SUM(CASE(CONVERT(INT, VaDump.Base)^0)
WHEN 0 THEN 1 ELSE 0 END)
FROM
(
SELECT CONVERT(VARBINARY, SUM(region_size_in_bytes))
AS Size, region_allocation_base_address AS Base
FROM sys.dm_os_virtual_address_dump
WHERE region_allocation_base_address <> 0x0
GROUP BY region_allocation_base_address
UNION
SELECT CONVERT(VARBINARY, region_size_in_bytes), region_allocation_base_address
FROM sys.dm_os_virtual_address_dump
WHERE region_allocation_base_address = 0x0
)
AS VaDump
GROUP BY Size)
SELECT SUM(CONVERT(BIGINT,Size)*Free)/1024 AS [Total avail mem, KB] ,CAST(MAX(Size) AS BIGINT)/1024 AS [Max free size, KB]
FROM VASummary
WHERE Free <> 0
```

Procedure

If you need to increase the size of the MemToLeave area, you must define the **-g startup parameter** for the SQL Server Service. If you are unsure of how much additional memory to allocate to MemToLeave (or **(memory_to_reserve)**, it is best to increase the default 380MB *in increments.* For example, by increments of 256MB until the warnings or related messages are no longer being generated.

1. Click **Start/All Programs/Microsoft SQL Server 2008/Configuration Tools/SQL Server Configuration Manager**.

2. Click **SQL Server Services**.

3. Right-click on the SQL Server (MSSQLSERVER) service and select **Properties**.

4. Click the **Advanced** tab from the SQL Server (MSSQLSERVER)Properties.

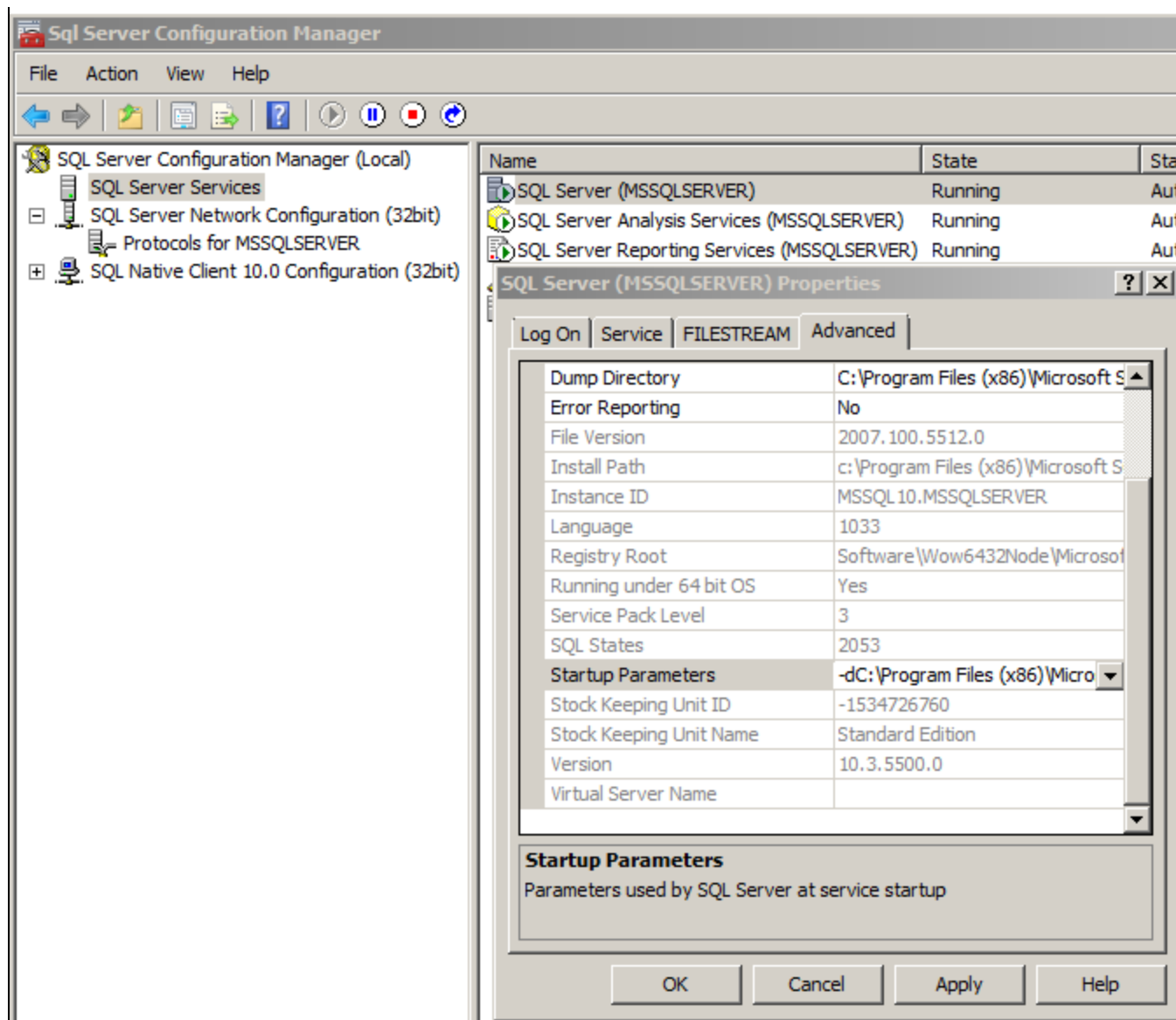5. Scroll down and select **Startup Parameters**.

FIGURE 1: STARTUP PARAMETERS

6. Click the drop-down arrow and add the parameter **;-g512** to the end of the startup parameters.
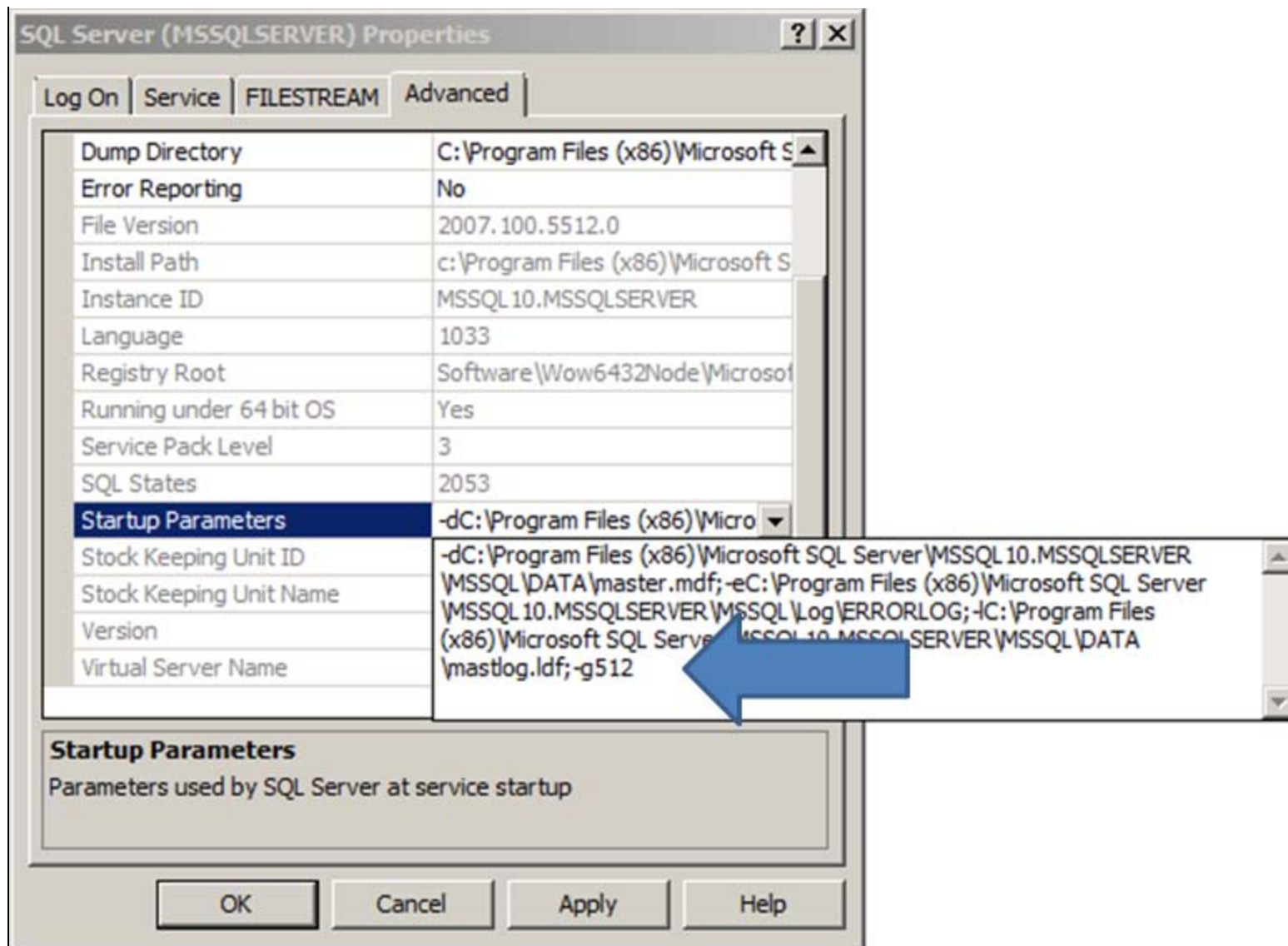
FIGURE 2: ADD -G512 TO THE STARTUP PARAMENTERS

7. Click **OK**.

8. Right-click the SQL Server (MSSQLSERVER) service and click **Restart**.

B. Nguyen

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For technical support questions, send an e-mail to **wwsupport@invensys.com**.

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 Back to top