Technical Report

Microsoft BizTalk Server 2006 and NetApp SnapManager for SQL Server Fundamentals

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BIZTALK SERVER 2006 AND SMSQL FUNDAMENTALS

This paper discusses the best practices for working with Microsoft's BizTalk Server 2006 and SnapManager® for SQL Server®. The paper discusses the components of the BizTalk Server and how they relate to SQL Server and SnapManager for SQL. It discusses the backup set and different options for establishing backups and scheduling backup processes. It also covers transaction log management and how to establish backups based on SQL Server alerts. The testing process for BizTalk is also outlined to help confirm the performance of the system.

TABLE OF CONTENTS

1   INTRODUCTION TO BIZTALK

BizTalk is a dynamic messaging server that allows many different types of messages to be served across organizations. BizTalk Server 2006 R2 allows the exchange of data between complex systems like Siebel and SAP®, and then integrates into the organizations' RFID scanners for order tracking. It is a complex system that has native support for Electronic Data Interchange (EDI) AS2 and RFID and is very closely tied to Windows® Vista®, 2007 Microsoft® Office system, and the .NET Framework Windows Communication Foundation and Windows Workflow Foundation.

2   NETAPP SUMMARY

BizTalk Server requires a backup that is transactionally consistent across multiple databases. NetApp® SnapManager for SQL Server (SMSQL) can provide that solution right out of the box without a lot of heavy scripting or modification to meet the needs of BizTalk.

SMSQL uses the SQLVDI.dll, which puts the databases into a transaction-consistent state to enable the databases to be backed up correctly. This means that if you have an open transaction in one database, regardless of which backup method you choose, SQLVDI.dll will hold open a lock in the transaction log until the transaction completes. This results in cross-database transactions being noted in the transaction log as the database context changes, leaving a marker in the transaction log that keeps the log file from being truncated beyond that point until the transaction has completed. Once the transaction has completed, the marker is moved to the next open transaction.

Since NetApp uses the SQL APIs for backup, transaction consistency is maintained throughout the database instance during the backup. The one thing that may enhance the entire process is to offload the process of verifying backups to another server. This can significantly offload the workload on the production system.

2.1   COMPONENTS

The components tested for this technical report were Microsoft BizTalk Server 2006 R2, SQL Server 2005 SP 2, SnapDrive® 5.0.1, SnapManager for SQL 2.1.1, Microsoft iSCSI Initiator 2.8, and Windows Server 2003 R2.

The SQL Server should be configured according to the best practices outlined in TR-3696, "Microsoft SQL Server 2005 Relation Engine: Storage Fundamentals for NetApp Storage Systems," http://media.netapp.com/documents/tr-3696.pdf.

2.2   BACKUP SETUP

You need to establish the schedule for backing up your transaction logs. For many environments this may be all that is required to tune the timing of the transaction log backups to match the recovery time objectives with the amount of space you have in the Snap_Info directory. You still need to go through all the sizing calculations so that you do not run out of space using this. Alternatively, you can use the Alert method for backing up transaction logs, as decribed in section 2.5 below.

You can configure your backup jobs to run according to your customer's service-level agreement (SLA). This helps BizTalk manage the flow of messages that are unique to each system.

2.3   FULL BACKUP JOB CONFIGURATION

The full backup is set up in the SMSQL tool. There is no special configuration that you need to follow as you go through the setup. You follow the standard NetApp processes for establishing your full backup for all the user databases in the system.
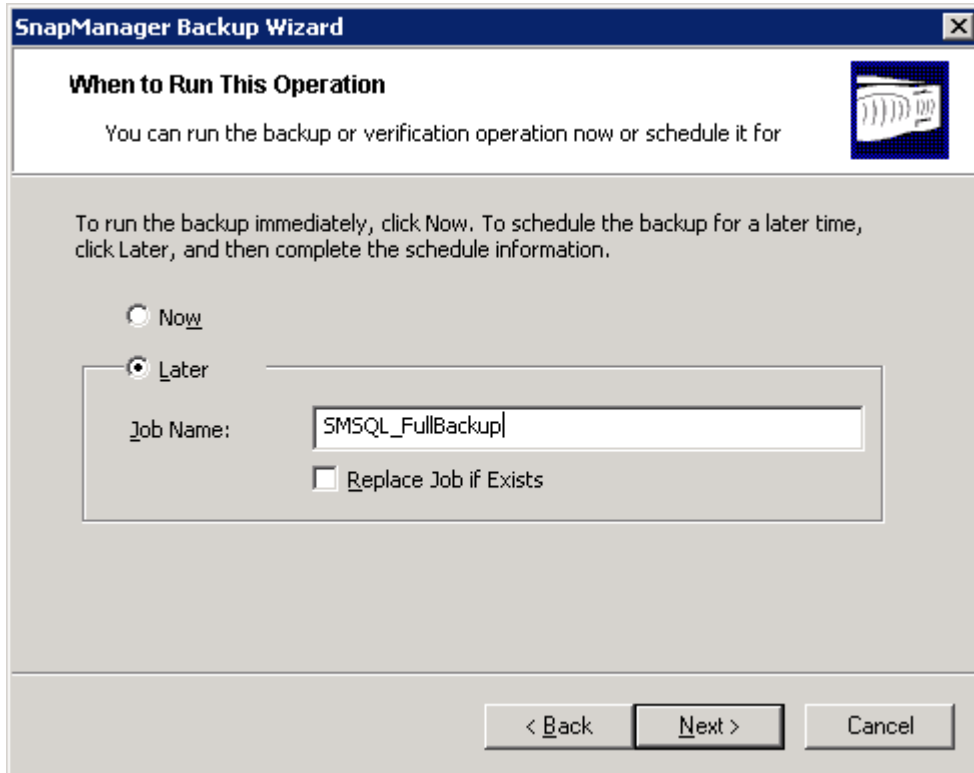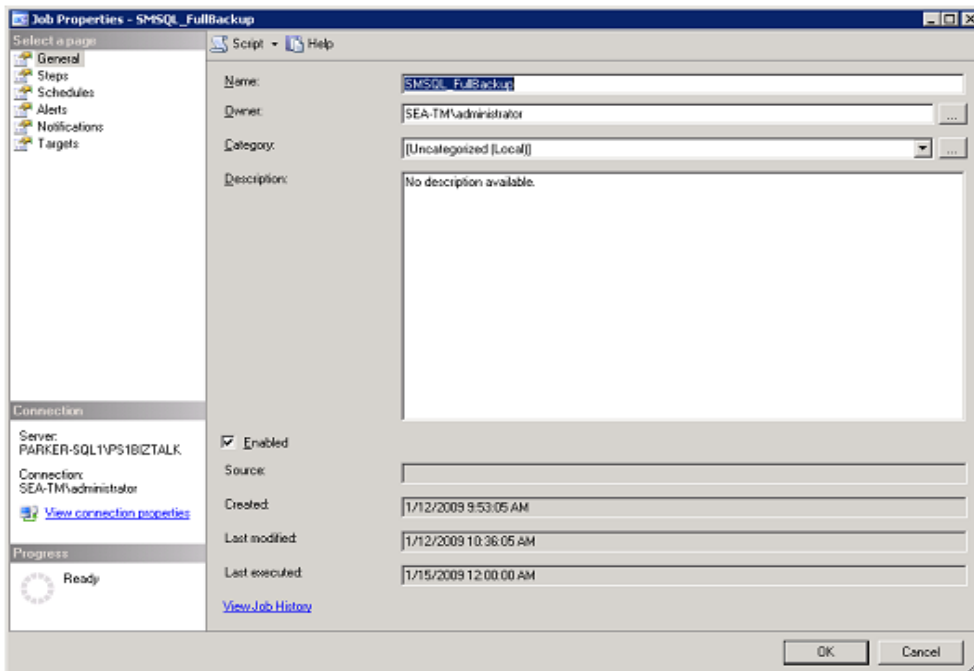
Figure 1) SMSQL configuration.

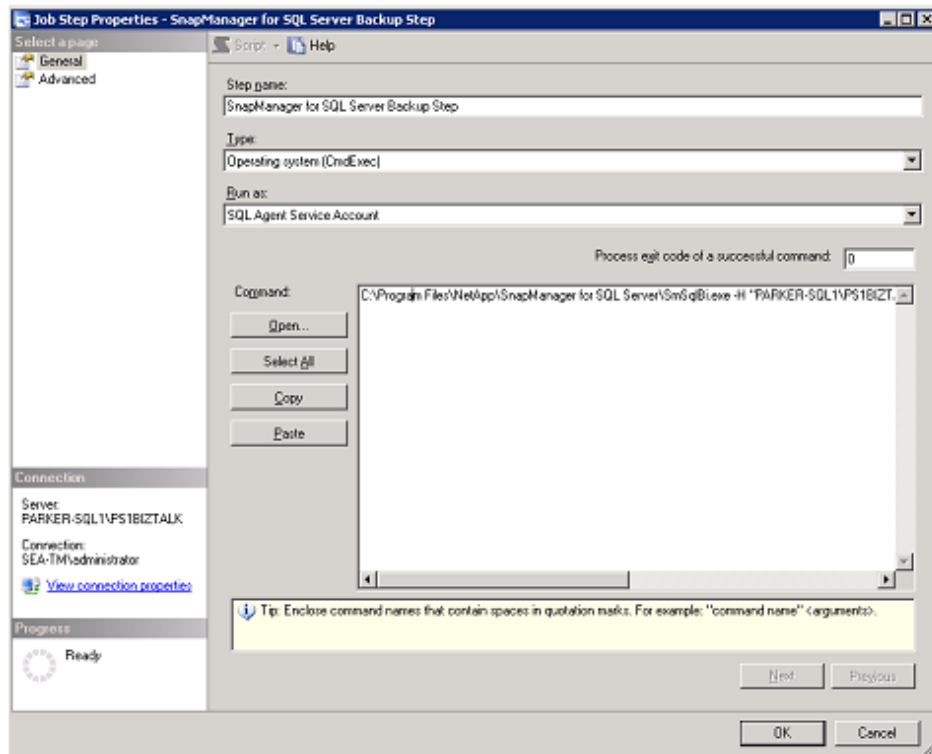**Figure 2) SQL agent job for full backup.**

Figure 3) Commands being executed.

Figure 3 shows the commands being executed: C:\Program Files\NetApp\SnapManager for SQL Server\SmSqlBi.exe -H "PARKER-SQL1\PS1BIZTALK" -D 3 -R -G -S "PARKER-SQL1\PS1BIZTALK" -C 0 - Q "PARKER-SQL1\PS1BIZTALK" –Daily. This is running a "Daily" backup for this BizTalk instance. Although Figure 4 shows the schedule for the full backup, it can take place on any regularly scheduled interval the customer requires.
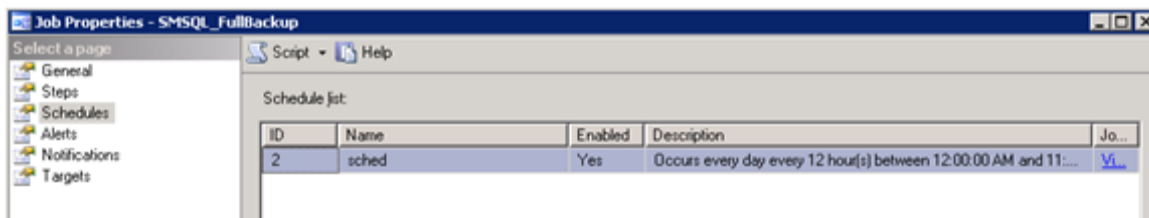

Figure 4) Schedule for full backup.

2.4   TRANSACTION LOG SETUP

SMSQL_TranLog Configuration: The SQL agent job is created from the SMSQL tool. Then you go into the tool and establish the schedule and tie the job to any existing alerts if necessary.
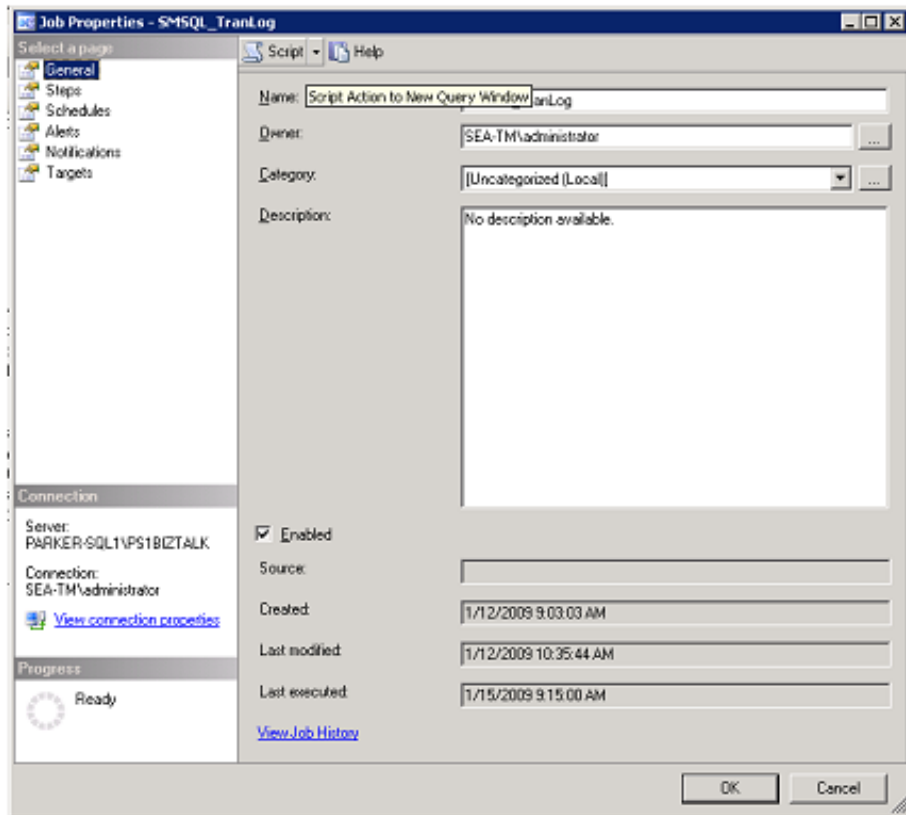
Figure 5) Transaction log SQL agent job.

Figure 5 shows the standard SQL agent job that was created from SMSQL. This is a basic job that can be configured to the unique situations you have for your BizTalk installation.
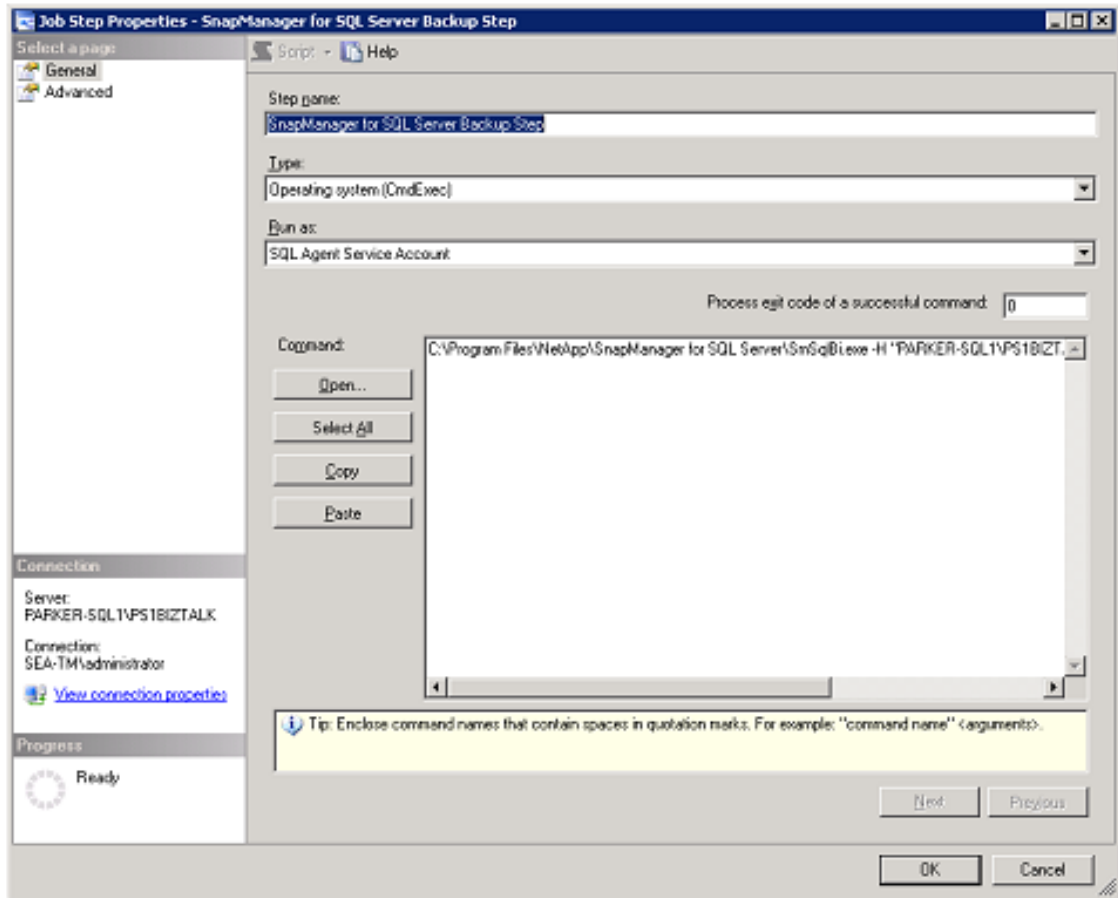
Figure 6) Command executed.

Figure 6 shows the command being executed: C:\Program Files\NetApp\SnapManager for SQL
Server\SmSqlBi.exe -H "PARKER-SQL1\PS1BIZTALK" -L -J -K 3 -S "PARKER-SQL1\PS1BIZTALK" -C 0.
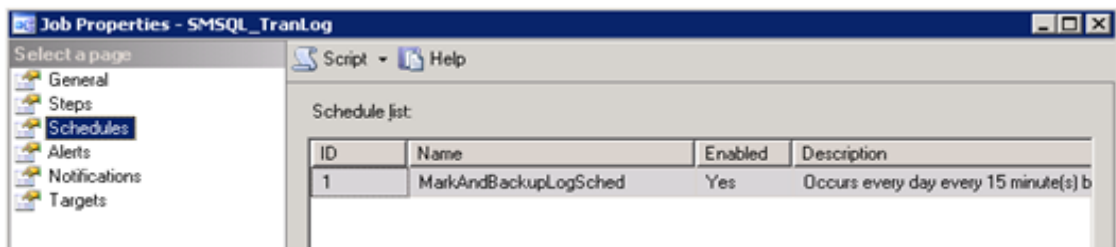This command can also be customized to run through the Power Shell interface.

Figure 7) Transaction log schedule.

Figure 7 shows a 15-minute schedule for backing up transaction logs. There are other ways to do this,
depending on the needs of your environment. In any case, you configure the schedule under the Schedule
key in the Job Properties area of the SQL agent job located on the SQL Server instance.

2.5   ALERT METHOD FOR BACKING UP TRANSACTION LOGS

Backing up transaction logs can also be tied to an alert. In this case, when a transaction log reaches X% full, the job to perform the backup will be executed backing up. If you implement this method, it is important to note that you need a transaction backup job for each individual database.

1. Select the Alerts tab.
2. Fill in the following items:

• Name for the alert
• Type "SQL Server performance condition alert"
• Object: MSSQL$<Instance>:Databases
• Counter: Percent Log Used
• Instance: <Database Name>
• Alert if counter: Becomes equal to
• Value: <Percent at which you want the transaction log to be backed up >
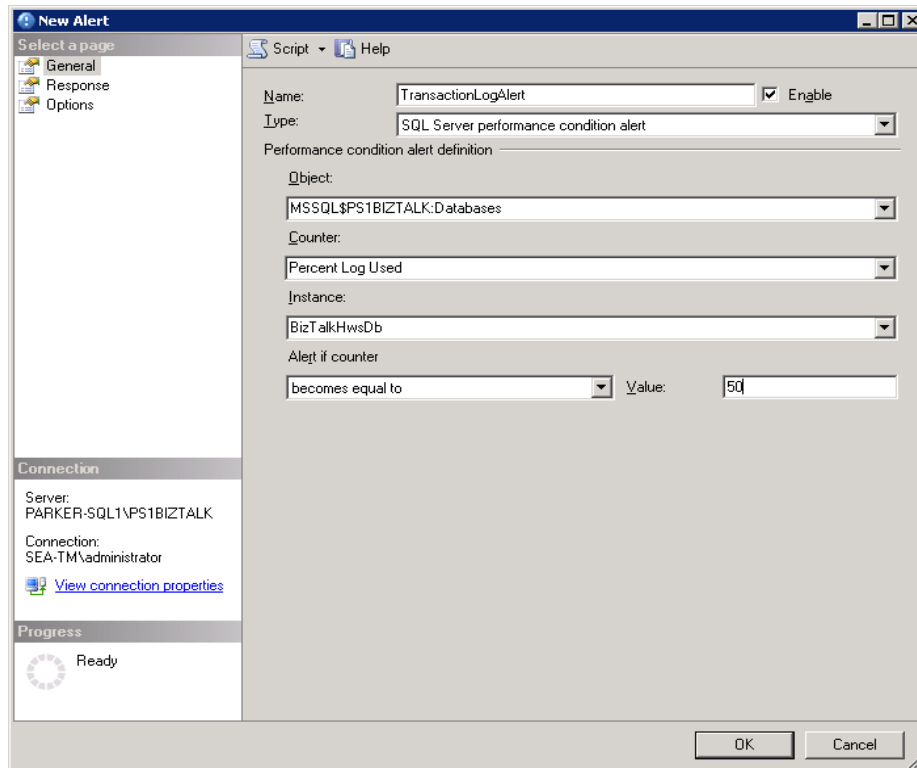

Figure 8) New alert.

You can have multiple alerts for the different percentages you feel are necessary based on the volume of messages in your particular environment. It is not a one-size-fits-all situation. You may need to tune it until you get the best working model.

3   LOAD-TESTING BIZTALK

Testing backups under load can be accomplished by using the BizTalk Load Generation tool. This tool generates a load to test the messages coming through the BizTalk server and can be found by an Internet search for "BizTalk LoadGen 2007" or by downloading it from http://www.microsoft.com/downloads/details.aspx?FamilyID=c8af583f-7044-48db-b7b9-969072df1689&DisplayLang=en.

3.1 ESTABLISH THE INBOUND/OUTBOUND QUEUES

Establish an inbound queue and an outbound queue. This can be either of files or the Microsoft queues. For this test files were used.

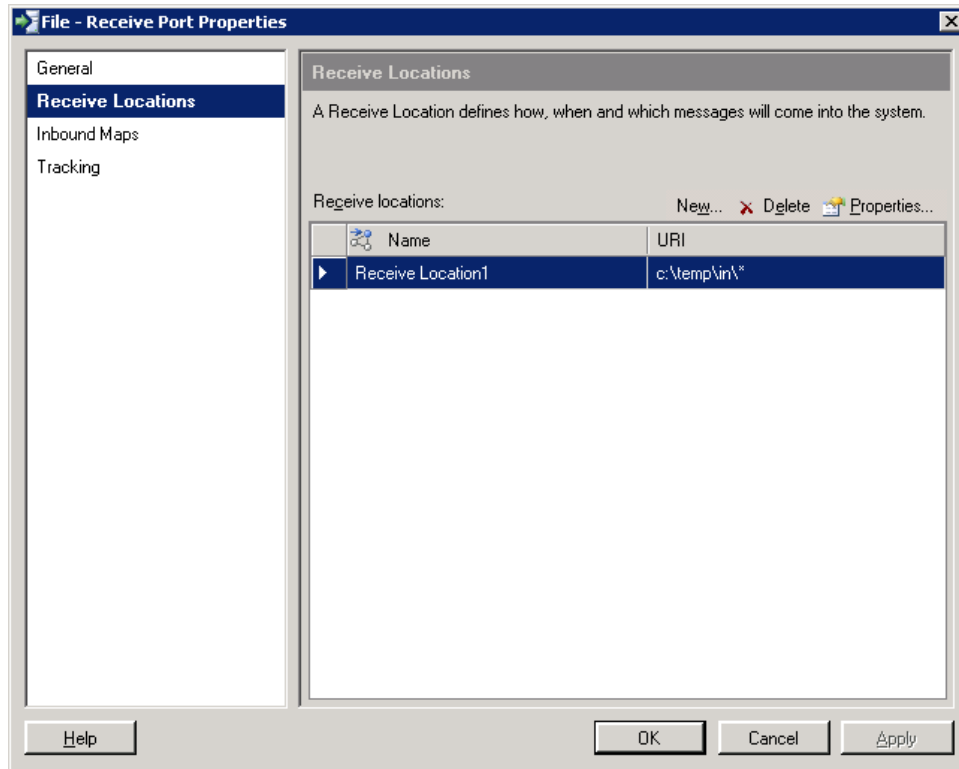The locations used were C:\temp\in and c:\temp\out.

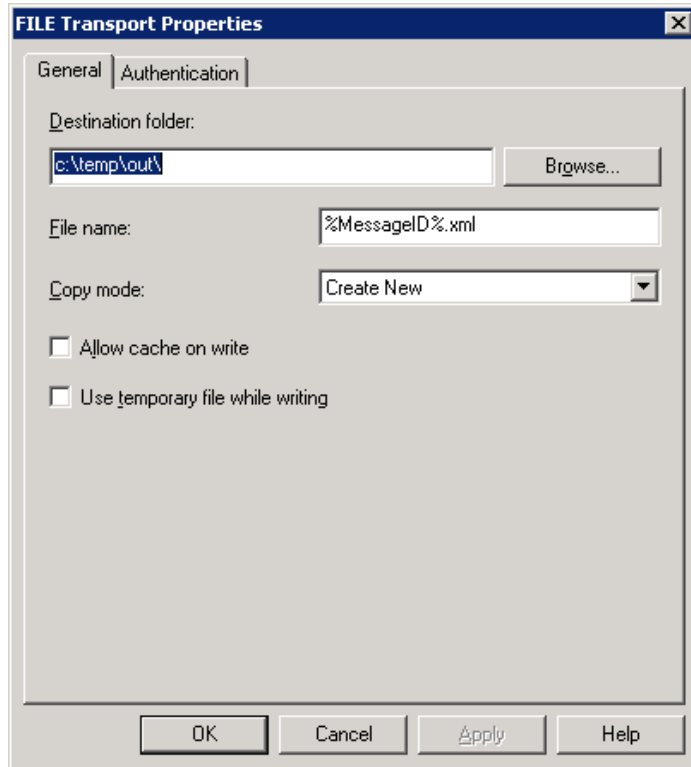**Figure 9) Setting the inbound location.**

Figure 10) Setting the outbound location.

3.2   BIZTALK LOADGEN 2007

The LoadGen tool is an excellent tool for testing the configuration of the BizTalk server as well as to see that your backups are performed at the right intervals to meet the needs of the customer. The testing for this technical report used inbound and outbound files to create the load for the BizTalk server. You can also configure Microsoft messaging queues if necessary. The LoadGen tool uses an XML file as the base configuration file. The changes made to the LoadGen file are XML-based and we made changes to the NumFiles, Parameters, ThresholdRange, and DstFilePath sections.

```
<LoadGenFramework>
    <CommonSection>
        <LoadGenVersion>2</LoadGenVersion>
        <OptimizeLimitFileSize>204800</OptimizeLimitFileSize>
        <NumThreadsPerSection>5</NumThreadsPerSection>
        <SleepInterval>200</SleepInterval>
        <LotSizePerInterval>25</LotSizePerInterval>
        <RetryInterval>10000</RetryInterval>

        <StopMode Mode="Files">
            <NumFiles>5000000</NumFiles>
            <TotalTime>3600</TotalTime>
        </StopMode>

        <Transport Name="FILE">
            <Assembly>FileTransport.dll/FileTransport.FileTransport</Assembly>
        </Transport>

        <ThrottleController Mode="Custom">
```

```
<Monitor Name="File">
        <Assembly>FileMonitor.dll/DropLocationFileMonitor.DropLocationFileM
        onitor</Assembly>
        <ThresholdRange>100000-120000</ThresholdRange>
        <SleepInterval>1000</SleepInterval>
        <Parameters>C:\temp\out</Parameters>
</Monitor>

<ThrottleCondition>File</ThrottleCondition>

        </ThrottleController>
</CommonSection>

<Section Name="FileSection">
        <SrcFilePath>C:\readme.txt</SrcFilePath>
        <DstLocation>
                <Parameters>
                        <DstFilePath>C:\temp\in</DstFilePath>
                </Parameters>
        </DstLocation>
</Section>
</LoadGenFramework>
```

This is how you start the load-generation tool. Once the tool is up and running, you can start your tests.

Figure 11) BizTalk LoadGen 2007.

You can read more about the tool and how it works on the BizTalk LoadGen 2007 download site: http://www.microsoft.com/downloads/details.aspx?FamilyID=c8af583f-7044-48db-b7b9-969072df1689&DisplayLang=en.

4   SUMMARY

Microsoft BizTalk Server 2006 R2 is a very dynamic messaging service that ships with its own backup and recovery solution. NetApp enhances the BizTalk environment with an easy-to-manage backup and recovery solution that replaces the solution that is included with BizTalk. The NetApp solution allows fast backups

and restores, central management, and expandability without additional modification of the BizTalk environment.

5   REFERENCES

Microsoft BizTalk LoadGen 2007 Tool
http://www.microsoft.com/downloads/details.aspx?FamilyID=c8af583f-7044-48db-b7b9-969072df1689&DisplayLang=en

TR-3696, "Microsoft SQL Server 2005 Relation Engine: Storage Fundamentals for NetApp Storage Systems," by Robert McPhail, 2008
http://media.netapp.com/documents/tr-3696.pdf

Microsoft BizTalk Server 2006 R2 Overview
http://www.microsoft.com/biztalk/en/us/overview.aspx

www.netapp.com

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