Checklist – System Performance and Tuning

This document contains information to assist you with performance tuning tasks for your Sterling Integrator system.

Sterling Integrator can be tuned to perform as you want it to. If you prefer more speed in your processing, you can change various parameters to meet your needs. If you need higher volume processing, you can set parameters to accomplish your goals.

Key Terms

The following terms and definitions will assist you in understanding the concepts that are discussed in this document:

- Performance – This term means different things to different users. Performance can be related to:
  - Latency – Amount of time required to generate a response to a request (speed)
  - Throughput – Amount of data transferred in a specified time period (volume)
  - Scalability – Ability of the system to grow with increased workloads (additional hardware)
  - Load – Ability of the system to continue performance levels when the amount of work requested by the system increases
- Performance Tuning Utility – Sterling Integrator provides a utility that calculates the majority of tuning parameter values for you. You can change the database settings, memory allocations, and pool settings, so that Sterling Integrator performs as you want it too. However, you cannot use the utility to tune your business processes.
- Performance Statistics Report – The Performance Statistics Report is the key to managing your Sterling Integrator performance. The report provides information about business process and activities execution times, database connections and persistence, and business process queue performance. You can use this information to tune your system to meet your volume and speed requirements. Before you can create or view a performance statistics report, you must turn on performance statistics.
- Database Usage Report – You can use this report to determine the levels of database usage. If the usage level increases to the high end of its capacity, you may need to take corrective action unless you have your database set to auto-extend (increase in capacity when a specified level is reached). This report also shows the number of pool requests and the number of failed requests. You can use this information to determine which pool settings to change in the Performance Tuning Utility.
- Cache Usage Report – Displays the following statistics for each cache: count, number of requests, and number of successful hits. Sterling Integrator uses caches to hold information that is frequently requested by the system.

Checklist for Initial Performance Tuning

For effective performance tuning, you must be able to identify the performance issue and determine the corrective action. Following a methodology helps focus your efforts and reduces redundant operations. Use the following methodology to identify and resolve performance issues in Sterling Integrator:

Step	Description	Your Notes
1	Fill out the Requirements Planning Worksheet to determine the hardware requirements for the processing volume and speeds you want. Use the worksheet to help determine the hardware requirements. See*Performance and Tuning Worksheet* on page 4.	
2	Verify that your hardware and memory amounts match the hardware and memory recommendations according to your processing time and volume requirements completed in the performance planning phase.	
3	Verify that you have patched your system using any patches that fix your performance issue from the Sterling Commerce SOD site.	
4	Verify that you have the supported Java Virtual Machine (JVM) on the computer running Sterling Integrator, and on the DMZ computer if you are running perimeter servers. Both JVM versions must match each other and the requirements for your version of Sterling Integrator. The build date and lower release numbers must also match.	
5	Verify that you are running the supported version of your operating system.	
6	Verify that you are running the supported versions of the Java Database Connectivity (JDBC) drivers	
7	Verify that you have created your business processes using the most current adapters and services, using well structured XPath statements, and with the lowest persistence by step and business process that meets your business needs.	
8	Tune Sterling Integrator using the Performance Tuning Utility according to the information that you provided in the Performance Planning Worksheet. The Performance Tuning Utility enables you to tune the cache, memory, and other system components, but not business processes.	

Step	Description	Your Notes
9	Enable Performance Statistics option on the **Operations** > **System** > **Performance** > **Statistics** page. The Performance Statistics reports provide information about business process and activities execution times, database connections and persistence, and business process queue performance. You can use this information to tune your system to meet your volume and speed requirements.	
10	Review your history of incoming and outgoing documents, and place the information on a chart showing daily, weekly, and monthly processing trends. Use these charts to determine your peak volume processing levels according to your historical processing methods.	
11	Conduct initial performance testing by running your business processes with sample data that is of equal size of the data that will be processed in production. In addition, run the approximate volume that is your peak anticipated volume processing. This helps you tune your system as closely to your production environment as possible.	
12	Review the Performance Statistics Report for processing speeds, volumes, and database connections.	
13	Review other reports, such as the Database Usage report and the Cache Usage report, for areas that can be tuned.	
14	Retune Sterling Integrator using the Performance Tuning Utility, according to the information you gathered from your initial performance testing.	
15	Continue this process until you have met your processing time and volume requirements according to your peak volume processing.	
16	Create a new Performance Statistics Report called Benchmarks*dd*/*mm*/*yy*.	
17	Conduct the same tests that you conducted in step 11.	
18	Review the Benchmarks*dd*/*mm*/*yy* Performance Statistics Report. If the statistics do not compare closely to your previous statistics complete steps 11 through 14 again.	
19	Compare your monthly or weekly Performance Statistics Reports to this benchmark report to verify that your system is processing business processes efficiently and that your resources are being used efficiently. Using this methodology as a proactive measure may reduce downtime and processing issues before they arise.	

Addressing Performance Issues

Performance issues can typically be addressed with the following actions:

- Changing performance parameters in the properties files or through the performance tuning utility.
- Adding additional hardware.
- Tuning your business processes to run more efficiently within Sterling Integrator.
- Monitoring databases and archiving databases to free up resources.
- Creating a Sterling Integrator cluster for load balancing and scaling.

Capacity Planning

Before you can take any performance tuning actions, you must consider capacity planning issues. The *Performance and Tuning Worksheet* on page 4 can help you determine your capacity needs. This worksheet and other capacity planning tools can also help you adjust your current workload, regardless of your future needs.

The following is a list of some capacity issues that impact performance and tuning:

- Daily volume requirements, including the average size and number of transactions to be processed.
- Additional processing requirements, for example translation and straight through processing.
- Types of pay loads including EDIFACT, XML, and other formats.
- Translation requirements. For example, translation from EDIFACT to XML.
- Enterprise Resource Planning (ERP) integration requirements. For example, integration with SAP or PeopleSoft.
- Number of processors dedicated to Sterling Integrator.
- Memory available to meet your processing requirements.
- Disk space requirements.
- Hard disk Redundant Array of Independent Disks (RAID) level. RAID arrays use two or more drives in combination for fault tolerance and performance. The recommended RAID level for Sterling Integrator is Level 5.
- Database size requirements.

Note: When conducting any performance tuning activity, keep this information nearby for easy reference and future planning.

Performance and Tuning Worksheet

Completing the following planning worksheet prior to completing your performance tuning is optional, but the worksheet can assist you in tuning your Sterling Integrator for performance. Use this worksheet to help

determine your hardware needs according to your processing volumes, operating system, hardware vendor, and number of CPUs you are running.

Request	Description	Your Answer
How many processing days are in a month?	Enter the number of processing days in a month. Use 30 days as an average. This gives 5 days of maintenance time throughout the year.	
How many processing hours are in a day?	Enter the number of hours you allow to process all data.	
How many translations are required for each transaction?	Enter the largest number of translations you will have, if there are multiple translations required for a business process. For example, is data mapped to a common format, and is the common format used to interface with all external systems.	
Is content based routing required?	If content-based routing is required in your business processes, you need maps, XML encoder, BPML choice, assigns, adapters that are used for routing, and possibly other components.	
Does the content of a transaction need to be verified?	This would require translating data in to XML. The data would then need to be put in process data and verified using XPath.	
What percentage of the content of the transaction needs to be verified?	Typically, only a small amount of a transaction needs to be verified. However, if most of a transaction requires verification, you may need significant resources depending on the verification path.	
How many rules need to be applied to verify the content?	This is used to calculate the Service Latency.	
How many content elements need to be verified?	Enter the number of elements that need to be verified.	
What is the future system multiple?	Current daily volume increment in the future. The default for the current volume is 1. For example, 2 means 100% growth or doubling the system requirements.	
What is the business process persistence level required?	Enter the level of persistence (storage to the database) you require for your business process. Choices include: ◆ Full – Saves a complete copy of process data along each step of the process. ◆ Minimal – Saves all steps in a business process and selected copies of process data. ◆ None – Saves the first and last steps of a business process, any steps with an override persistence level, and selected steps in business process data.	

Request	Description	Your Answer
What is the average business process size (KB)?	Unless you are very experienced and understand business process context, enter 3.5.	
What is the hardware vendor that hosts Sterling Integrator?	Enter the hardware vendor name. For example: IBM, Sun, HP (Compaq), or Dell.	
What is the speed of CPUs in the host?	Enter the speed in MHz. For example: 450, 1900 (1.9GHz).	
What is the number of CPUs in the host?	Enter the number of CPUs installed or the number you plan to install.	
What is the amount of main memory in the host (RAM)?	Enter the amount of memory in MB. For example: 500, 2048MB.	
What is the operating system you are using to host Sterling Integrator?	Enter the host operating system (OS). For example, Solaris, Windows, Windows Server 2003, AIX, or Linux.	
What is the operating system release and version number?	For example, Red Hat Enterprise Linux Release 3 or Windows 2003 Server Standard Edition R2.	
What are the Java Virtual Machine (JVM) version numbers?	For example, IBM 1.5.0 build pxi32devifx-20070806 (SR5a). Your JVM version must match the requirements for your version of Sterling Integrator. The build date and lower release numbers must also match.	
What is the Sterling Integrator version and patch numbers?	Enter the version and patch number for your copy of Sterling Integrator.	
Are you integrating with an application server? If so, what is the vendor?	Enter the application server to integrate with. For example, JBoss or WebLogic.	
What is the application server version and patch number?	Enter the version and patch numbers for the application server.	
What is your relational database vendor?	Enter the relational database vendor name Sterling Integrator uses. For example, MYSQL, Oracle, or DB2.	
What is the relational database version and patch number?	Enter the version and patch number of the relational database.	
What are the other business applications that need to be integrated with?	Enter the vendor name of the other business applications that you use in your business. For example, SAP or PeopleSoft. This helps determine which adapters and services you need to complete processing.	

Request	Description	Your Answer
What are the other business applications version and patch numbers?	Enter the version and patch number of the other business applications.	
What data format do you exchange data with the other business applications?	Enter the different data formats that you use to exchange data with the other business applications. For example, XML or IDOC. This helps determine the amount of translation processing that may be needed that increases system resource requirements.	
What type of inbound transactions do you have?	Enter the types of inbound transactions that Sterling Integrator will process.	
What is the average size of each inbound transaction type?	Enter the average size of your inbound transactions that Sterling Integrator will process. Base your planning on the larger transactions at peak times for better performance.	
How many of each inbound transaction types do you receive daily?	Enter the sum total of the number for each inbound transaction type. This helps in determining the processing volumes.	
What is the sum total size of each inbound transaction type?	Enter the sum total size of the number for each inbound transaction type. This helps in determining the processing volumes.	
What is the average number of files in each inbound transaction by type?	Enter the average size of files in each inbound transaction type. This helps determine processing volumes.	
What type of outbound transactions do you have?	Enter the types of outbound transactions that Sterling Integrator will process.	
What is the average size of each outbound transaction type?	Enter the average size of your outbound transactions that Sterling Integrator will process. Base your planning on the larger transactions at peak times for better performance.	
How many of each outbound transaction types do you receive daily?	Enter the sum total of the number for each outbound transaction type. This helps in determining the processing volumes.	
What is the sum total size of each outbound transaction type?	Enter the sum total size of the number for each outbound transaction type. This helps in determining the processing volumes.	
What is the average number of files in each outbound transaction by type?	Enter the average size of files in each outbound transaction type. This helps determine processing volumes.	