Kony Fabric

Sync Services

Server Planning Guide

On-Premises

Release V8

Document Relevance and Accuracy

This document is considered relevant to the Release stated on this title page and the document version stated on the Revision History page. Remember to always view and download the latest document version relevant to the software release you are using.

September, 2017

Revision History

Date	Document Version	Description of Modifications/Release
09/08/2017	1.0	Document updated for release V8. Worked on rebranding of MobileFabric to Kony Fabric.

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1. Preface

You need to consider factors like Kony Fabric Sync server installation options, planning Kony Fabric Sync server capacity, monitoring and tuning Kony Fabric Sync server performance and so on for the best performance of the application that accesses Kony Fabric Sync server.

1.1 Purpose

This document provides a few guidelines to plan factors such as installation options, planning Kony Fabric Sync server capacity, monitoring and tuning Kony Fabric Sync server performance.

1.2 Intended audience

This document is intended for developers or system administrators who are responsible for monitoring and configuring Kony Fabric Sync.

1.3 Formatting Conventions

The following typographical conventions are used throughout the document:

Conventions	Explanation
`Monospace`	■ User input text, system prompts, and responses ■ File path ■ Commands ■ Program code ■ File Names.

Conventions	Explanation
Italic	■ Emphasis ■ Names of books, and documents ■ New terminology.
Bold	■ Windows ■ Menus ■ Buttons ■ Icons ■ Fields ■ Tabs ■ Folders.
URL	Active link to a URL.
Note	Provides helpful hints or additional information.
Important	Highlights actions or information that might cause problems to systems or data.

1.4 Contact us

We welcome your feedback on our documentation. Write to us at techpubs@kony.com. For technical questions, suggestions, comments, or to report problems on Kony's product line, contact support@kony.com.

2. Kony Fabric Sync Server Installation Options

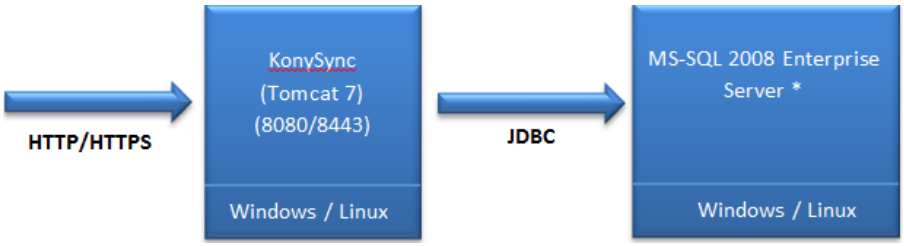
You need to decide how you want to install and configure it to provide the best possible performance before you develop an application that accesses Kony Fabric Sync Server. The installation and configuration choices that produce the best performance depend on your reporting requirements, resources, and preferences. Below are the typical installations for a Development, Quality Assurance (QA) and Production environments.

In the below environment setups, you can see how Kony Server (Kony Middleware) can be deployed alongside the Kony Fabric Sync Server. There is no dependency between these Servers but the diagram just illustrates a possible scenario when you deploy both in the same environment.

With respect to the database setup (especially in case of persistent Kony Fabric Sync strategy), the Console Database and Enterprise Database can be hosted on the same physical hardware or different hardware. They can even be co-located in the same physical database instance (as separate schemas). You can decide to host them as separate instances or in same schemas on a case by case basis.

2.1 Standard Development Environment Setup

Install all components on one computer only for a single developer or proof of concept or in demonstration environments where the user load is small. In this setup both the Database and Kony Fabric Sync Server are installed on the same computer.



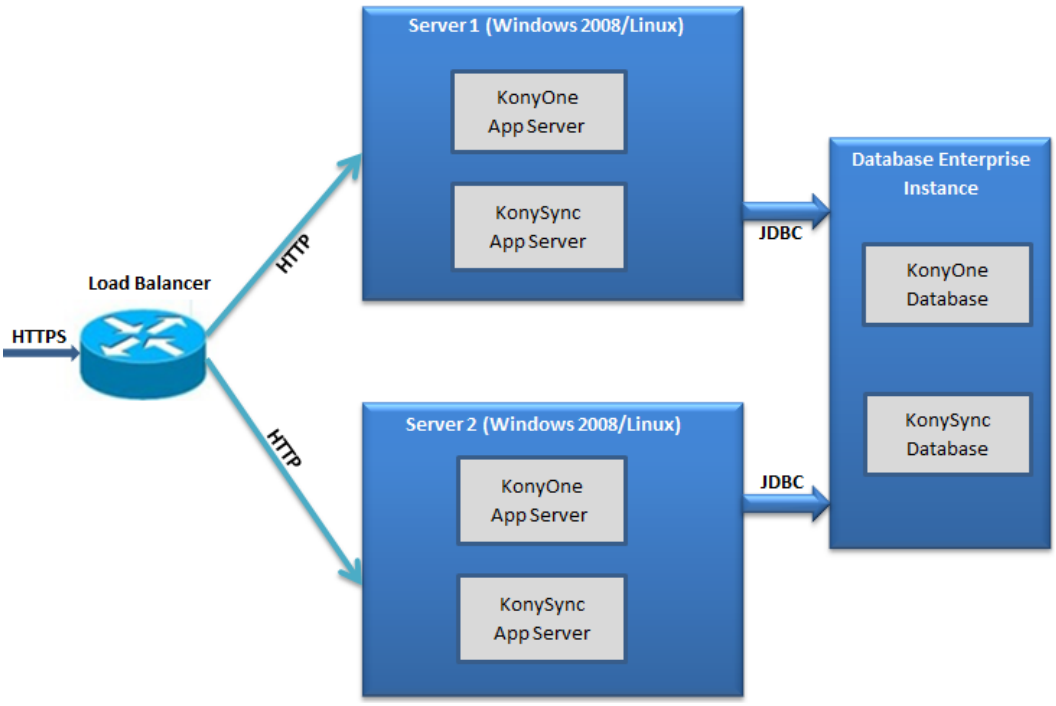
Hardware configuration for Application and Database Servers

Operating System	Specification per Instance
Windows	Windows Server 2008 / Windows 10 / Windows 8 Professional / Windows 7 Professional, 64-bit, 4 Core
Linux	CentOS 6.5, Red Hat Linux Enterprise 6.0, 64-bit, 4 Core
Minimum Recommended RAM	8 GB or more
Minimum Recommended Hard Disk Space	40 GB or more

2.2 Standard QA or Certification Environment Setup

A QA environment represents a very close replica of the actual production environment setup except that the number of server instances and the capacity of each of the instances are lesser than those in Production Environment setup. In this setup, Kony Fabric Sync Server and the Database are installed on separate computers.

> ***Note:*** The below figure indicates that the Secure Socket Layer (SSL) termination that happens at the load balancer level. This is a recommended setup for the Kony Fabric Sync server installation. If the Enterprise policies mandate that SSL terminates at individual Tomcat / Application server instance, then you need to setup SSL certificate accordingly for each server.



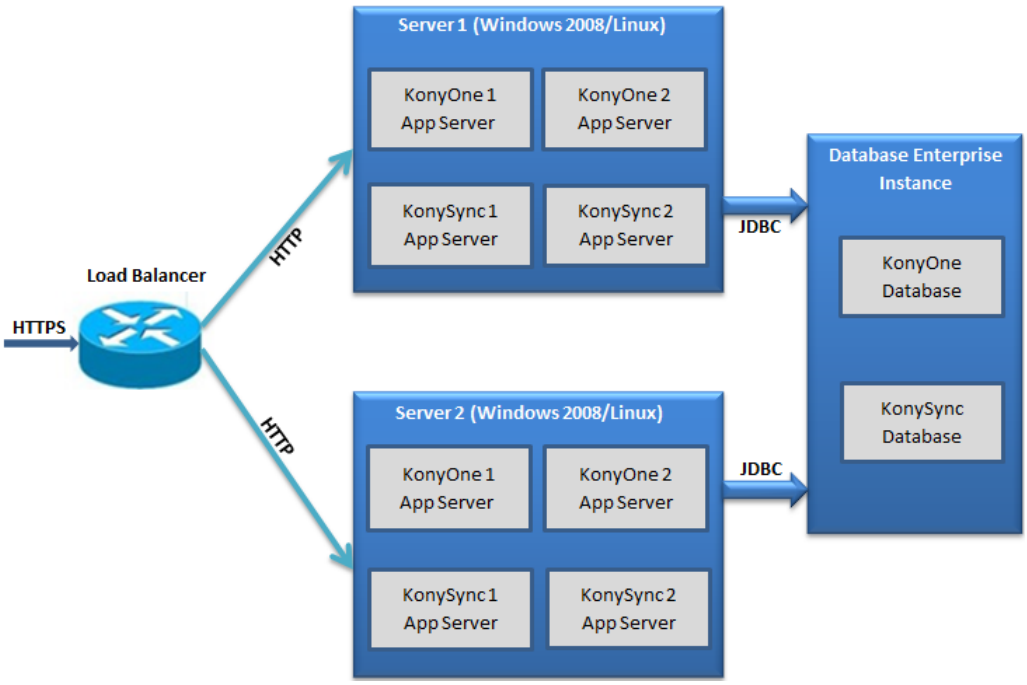
Hardware configuration for Application and Database Servers

Operating System	Specification
Windows	Windows Server 2008 / Windows 10 / Windows 8 Professional / Windows 7 Professional, 64-bit, 4 Core
Linux	CentOS 6.5, Red Hat Linux Enterprise 6.0, 64-bit, 4 Core
Minimum Recommended RAM	16 GB or more
Minimum Recommended Hard Disk Space	40 GB or more

2.3 Standard Production Environment Setup

A production environment represents the setup that live / actual users access. The capacity of the servers is definitely much more than Development or QA setup. The number of instances also vary or may be more, depending upon the number of concurrent users the system plans to support.

Note: The below figure indicates that the Secure Socket Layer (SSL) terminates at the load balancer level. This is a recommended setup for the Kony Fabric Sync server installation. If the Enterprise policies mandate that SSL terminates at individual Tomcat / Application server instance, then you need to setup SSL certificate accordingly for each server.



Hardware configuration for Application and Database Servers

Operating System	Specification per Instance
Windows	Windows Server 2008 / Windows 10 / Windows 8 Professional / Windows 7 Professional, 64-bit, 4 Cores
Linux	CentOS 6.5, Red Hat Linux Enterprise 6.0, 64-bit, 4 Core
Recommended RAM	32 GB or more
Minimum Recommended Hard Disk Space	80 GB or more

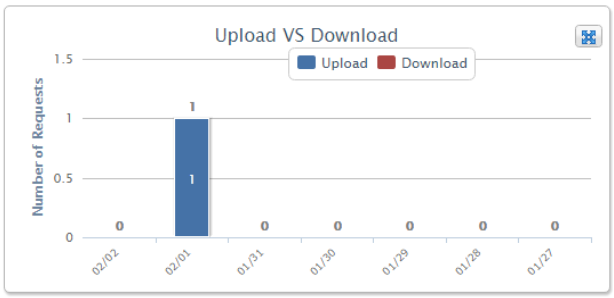
3. Monitor and Tune Kony Fabric Sync Server Performance

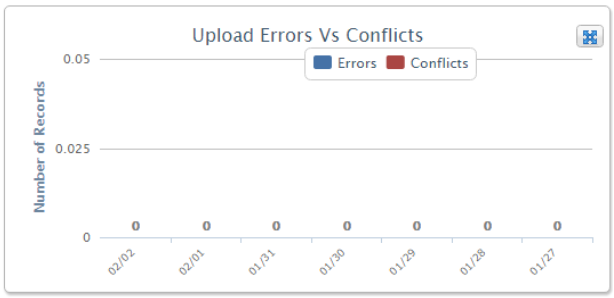
Kony Fabric Sync Server deployment environment changes over time. User populations grow, processing requests tend to increase in number and complexity, and network capacity and other aspects of infrastructure may be modified.

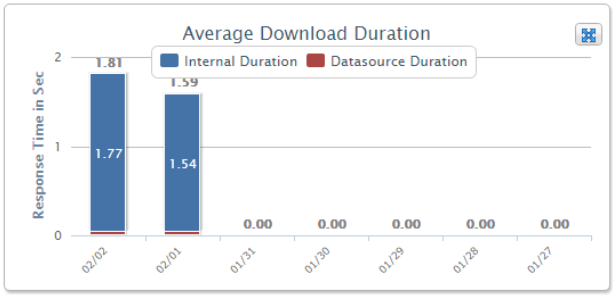
These changes can affect Kony Fabric Sync Server performance. As a result, it is important to monitor and tune performance regularly.

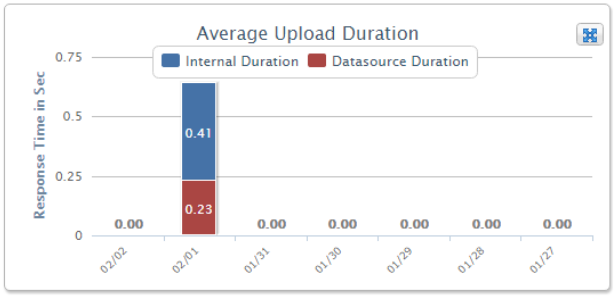
Monitoring performance means checking status of your Kony Fabric Sync Server and its resources regularly. Kony Fabric Sync Server provides metrics for checking the performance of the system and services.

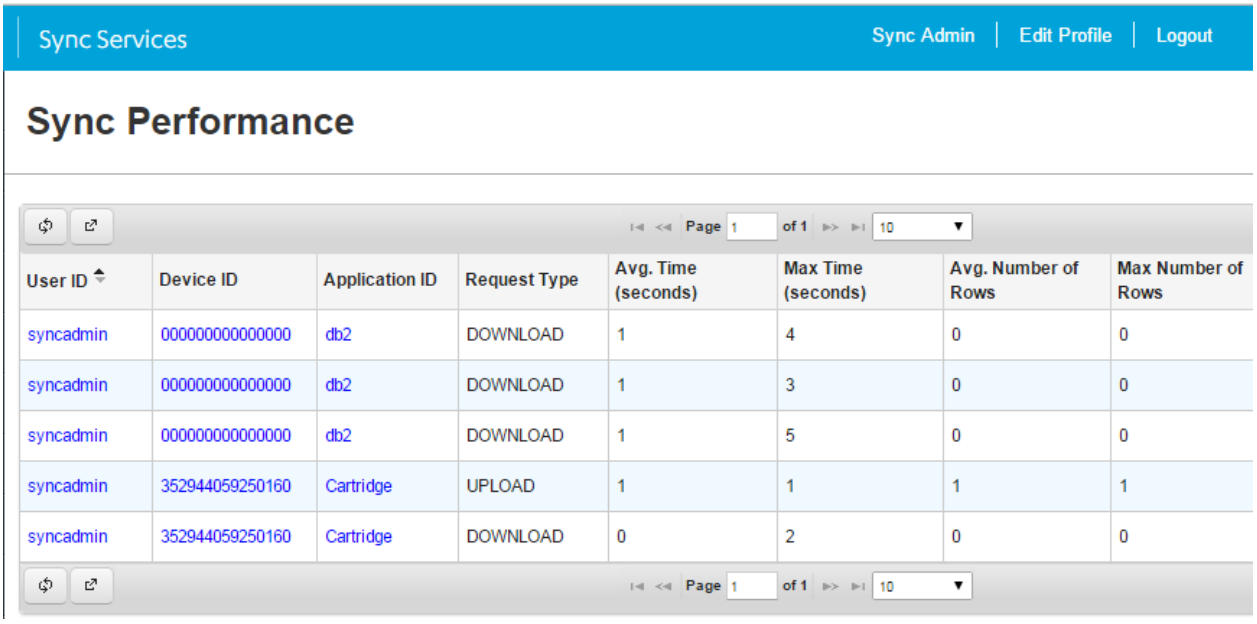
Kony Fabric Sync Console provides a view of the requests that the server received and time it took to execute those requests. These requests are either for downloading the delta dataset or for uploading changes from device to the enterprise datasource.











Tuning can involve adjustments in the following areas:

- Kony Fabric Sync Server: Adjust your application server memory and connection settings as required for better performance.
- Databases: Keep your databases optimized for querying and reporting.

3.1 Tune Kony Fabric Sync Server Installation

- Enable GZIP Compression

  Compression is a simple, effective way to save bandwidth and speed up the bulk download response times. Simply put gzip compression works by finding similar strings within a text file, and replacing those strings temporarily to make the overall file size smaller. This form of compression is particularly well-suited for the Kony Fabric Sync responses.

  For more information on minimum size of compression, refer to **compressionMinSize** in the following URL: https://tomcat.apache.org/tomcat-7.0-doc/config/http.html.

  To ensure that GZIP compression is turned for Tomcat make sure you see similar tag in `<TOMCAT_INSTALL_DIR>\conf\server.xml`.

```
<Connector port="8080" protocol="HTTP/1.1"
connectionTimeout="20000" redirectPort="8443" compression="on"
compressionMinSize="512"  noCompressionUserAgents="gozilla,
traviata
compressableMimeType="text/html,text/xml,text/css,text/plain,te
xt/javascript,application/x-
javascript,application/javascript,application/json,application/
xml"/>
```

For other application servers please refer to the Server Configuration/Administration Guide for enabling GZIP compression.

- Disable DEBUG logging in Production Environments

  A debug log records database operations, system processes and errors that occur when executing a transaction during development lifecycle. The system generates a debug log for a user every time that user executes requests for an upload or download operation (or even device registration).

  Debug logs slow down the application performance as the server spends a lot of time performing the input and output (I/O) operations to capture the LOG statements. In a production environment, the user is typically interested to know only runtime errors and do not need a complete log trace for every user.

  Ensure that below logger is set to ERROR in `log4j.properties` file.

  For Kony Sync 5.0.X, the `log4j.properties` file is located at:

  `<sync.home>/apache-tomcat-7.0.26/webapps/syncconsole/WEB-INF/classes/log4j.properties`

  `<sync.home>/ apache-tomcat-7.0.26/webapps/syncservice/WEB-INF/classes/log4j.properties`

  For Kony Sync 5.5.X, the `log4j.properties` file is located at:

`<sync.home>/conf/console-log4j.properties`

`<sync.home>/conf/services-log4j.properties`

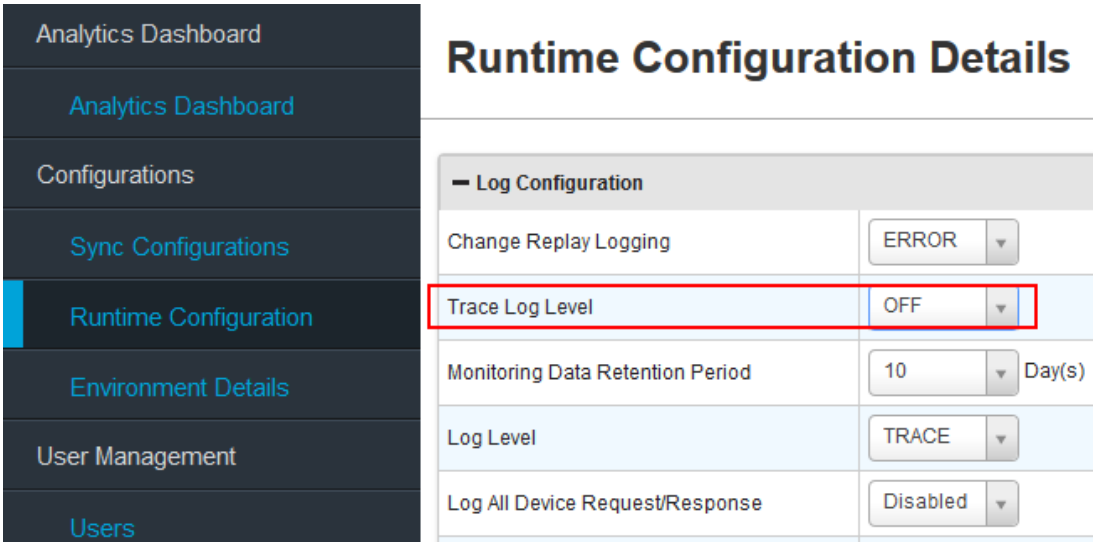
> ***Note:*** Once you modify the `log4j properties` file, you need to remove `syncconsole.war` and `syncservice.war` from `webapps` folder, otherwise it gets overridden again on tomcat start.

- Disable Trace Logs in Production Environments

  Tracelogs enable the administrator to view incoming HTTP requests and responses. This is very useful to debug issues during development. It impacts the application server performance. So unless you debug an issue, you should turn off the Tracelogs.

  To turn off the trace logs follow these steps:

  1. Log on to Kony Fabric Sync Management Console.
  2. Click **Configurations** > **Runtime Configuration**.
  3. In **Log Configuration**, select *OFF* from the **Trace Log Level** checkbox as follows:



3.2 Tune Database

Kony Fabric Sync implementation uses a relation database (Microsoft SQL Server or Oracle) to store user information and log performance metrics. To ensure that Kony Fabric Sync implementation continues to perform well, it is important to maintain the performance of your database.

This means optimizing it for querying, reporting, and analyzing. If Kony Fabric Sync and other applications demand more of a database than it can provide, or if queries are too large for a database to handle efficiently, you may experience increased response times and degradation in Kony Fabric Sync performance and scalability.

For information about tuning your database, see its documentation.

4. Plan Kony Fabric Sync Server Capacity

Planning for capacity means determining the hardware that you need for your system to perform well under its anticipated workload.

Planning capacity is a challenge. It involves many variables, some of which are difficult or impossible to measure. It is the science of measuring known variables and developing an educated estimate of resource requirements based on those measurements. It is also an art of allowing unknown variables and assessing their impact on the estimates derived from the known variables.

To determine requirements for your Kony Fabric Sync Server capacity, gather information about the following:

- Number of users accessing Kony Fabric Sync application from their devices
- Amount of initial data that is downloaded during the first synchronization (initial provisioning)
- Amount of average data throughput during each synchronization
- Application complexity
- Deployment infrastructure

Planning capacity is an on-going process. After deploying Kony Fabric Sync Server, monitor and modify your capacity as necessary to meet your performance expectations.

4.1 Estimate User Load of Kony Fabric Sync Server

Estimate the user load Kony Fabric Sync server is expected to handle.

In general, the greater the number of users and the more concentrated their requests are over time, you need more hardware for a system to perform effectively. As a result, when planning adequate capacity for Kony Fabric Sync Server, you should estimate the number of people who would use Kony Fabric Sync Server and determine when they would use Kony Fabric Sync the application. This helps you decide not only how much hardware you need, but also how to make the best use of the hardware you have.

The only users who load the Kony Fabric Sync Server are those who actually perform the processing. These are concurrent users. You can estimate the number of concurrent users, based on your total user population, by distinguishing between named, active, and concurrent users.

a. **Named users**: Named users are all the users authorized to use Kony Fabric Sync application; your total user population.

b. **Active users**: Active users are a subset of named users. Active users can log on to Kony Fabric Sync Server and can demand system resources.

c. **Concurrent users**: Concurrent users are a subset of active users. Concurrent users demand system resources, for example: submit requests and wait for response to requests.

As a general rule, the ratio of named to active to concurrent users for business applications should be 100:10:1. In other words, for every 1000 named users, there are 100 active users and 10 concurrent users.

The concurrence ratio can vary over time, and is affected by many factors. For example; the number of concurrent users relative to active and named users tends to be higher when the user population is small. The most important determinant of the concurrence ratio is how processing demand is distributed over time.

4.2 Assess Complexity of an Application

Load is determined by the number of concurrent users also by the complexity of their processing requests. The greater the complexity of a request, the more time is needed to process the request. In general, hardware resources can process more requests in a given time period when the requests are simple rather than complex. As a result, application complexity is an important determinant of the number of concurrent users that can be supported on a given hardware infrastructure.

The complexity of a Kony Fabric Sync application depends on the amount of work required to process the result set returned from the database query or the amount of time required to get response from an external Web Service.

You can improve performance during peak times by identifying queries run at peak times and improving their efficiency while meeting user requirements. As query patterns change over time, assessing application complexity and improving reporting efficiency should be on-going activities.

4.3 Deployment Infrastructure

Use true server computers than fast workstations. True server computers run business applications faster and provide systems that are less likely to fail.

Are web and application servers dedicated solely to Kony Fabric Sync Server for or shared by other software products? If other applications share the resources, you should consider these applications when you determine capacity requirements.

The complexity of your security infrastructure can increase response time. As your security infrastructure becomes more complex, a user request must be validated more frequently. For example, if you implement multiple network firewalls, each firewall must validate every request that passes through it. This can increase the time taken to complete the request. In addition, if you use Secure Socket Layer (SSL), the overhead of SSL encryption adds both processing overhead and size to the response.

4.4 Kony Fabric Sync Performance Benchmarks

The purpose of the below benchmark is to help customers and partners find the appropriate hardware configuration for their Kony Fabric Sync deployment environment. While the Kony Fabric Sync server performance depends upon several external factors like Datasource performance, network connectivity and several others, the purpose of the below table is to provide an indicative performance figure.

4.4.1 Test Configuration and Results

Application Scenario	Configuration
SyncStrategy	OTA Sync

Application Scenario	Configuration
Datasource	Salesforce WebService (XML based)
Total Number of Rows	3500
Average Batchsize (in MB)	approximately 1.5 MB
Number of rows in each Batch	500
Average Row Size	approximately 3KB
Operating System	**Configuration**
Windows	Windows Server 2008 R2 Standard
Hardware Specification	Core 2 Duo CPU, 3.05 GHz, 64 bit OS, 4 GB RAM
Network Card	Broadcom NetLink (TM) Gigabit Ethernet Adapter Type Ethernet 802.3 Product Type Broadcom NetLink (TM) Gigabit Ethernet
Java	**Configuration**
JDK	Oracle JDK 1.6.0_26
JVM Heap Size	1 GB
Application Server	**Tomcat 7**
SyncConsole Database	MSSQL Server 2008
Number of Kony Fabric Sync Server Instances	1

Application Scenario	Configuration
Maximum Number of Concurrent Users (before system performance degraded)	120
Average response time to download approximately 1.5 MB packet	approximately 27363 milliseconds
Total time for initial download	approximately 4 minutes

You can use the above benchmarks to estimate the value of number or servers / instances required for a supporting larger number of users and expected system performance.