Kofax SafeCom HP Unified Client

Device Web Server Load Guidelines

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KOFAX

Table of Contents

Preface

Training

Kofax offers both classroom and computer-based training to help you make the most of your solution. Visit the Kofax website at www.kofax.com for details about the available training options and schedules.

Getting help with Kofax products

The Kofax Knowledge Base repository contains articles that are updated on a regular basis to keep you informed about Kofax products. We encourage you to use the Knowledge Base to obtain answers to your product questions.

To access the Kofax Knowledge Base, go to the Kofax website and select **Support** on the home page.

Note The Kofax Knowledge Base is optimized for use with Google Chrome, Mozilla Firefox or Microsoft Edge.

The Kofax Knowledge Base provides:

- Powerful search capabilities to help you quickly locate the information you need.

  Type your search terms or phrase into the **Search** box, and then click the search icon.
- Product information, configuration details and documentation, including release news.

  Scroll through the Kofax Knowledge Base home page to locate a product family. Then click a product family name to view a list of related articles. Please note that some product families require a valid Kofax Portal login to view related articles.
- Access to the Kofax Customer Portal (for eligible customers).

  Click the **Customer Support** link at the top of the page, and then click **Log in to the Customer Portal**.
- Access to the Kofax Partner Portal (for eligible partners).

  Click the **Partner Support** link at the top of the page, and then click **Log in to the Partner Portal**.
- Access to Kofax support commitments, lifecycle policies, electronic fulfillment details, and self-service tools.

  Scroll to the **General Support** section, click **Support Details**, and then select the appropriate tab.

How many devices can be controlled by a single Kofax Device Web Server?

To get a reliable answer a virtualized environment was built, and typical user workflow tests were run against this environment in multiple iterations covering the most common user activities. Measurement points were determined in the workflow in advance that represent the performance of the system under different levels of load. It must be emphasized that the measuring method does not influence the performance.

Virtualized automated test environment

The major goal of the environment setup was to substitute physical devices with a component that could simulate the behavior of a printer to some extent.

Environment setup

Version 5.10.0.1000 of Device Web Server and 10.520.12.120 of SafeCom G4 server were used in the test system.

The two server components, Device Web Server and SafeCom G4 server were installed on two different computers having 16 GB RAM and 8 cores. G4 server was pre-configured having different types of users with several print jobs in their Pull queue.

Controller services hosted by Device Web Server were configured in a special manner. Services controlling physical devices were omitted from the service set or replaced by other ones considering the special clients.

Devices were represented by headless Chrome instances running on Docker servers (12 GB RAM and 16 cores for each). Up to 420 devices were simulated this way. These devices had been added dynamically to G4 server according to the specified input test parameters.

Tomcat configuration

To support large number of clients, the Apache Tomcat server was reconfigured by increasing the necessary resources (server.xml). The following table indicates the changed properties of the server showing the original default values deployed with the software and the new values used during the load test.

Catgegory	Name	Original value	Value for load test
Executor	maxThreads	150	4000

Catgegory	Name	Original value	Value for load test
	minSpareThreads	4	1000
Connector (8444)	maxThreads	150	-
	acceptCount	-	4000
	maxKeepAliveRequests	-	2000
Connector (8443)	maxThreads	150	-
	acceptCount	-	4000
	maxKeepAliveRequests	-	2000
Context (DwsMain)	cacheMaxSize	-	1024000

Please see the *Kofax SafeCom HP Unified Client Administrator's Guide* for the location of the server.xml file. The specified values of the properties must be entered as xml attributes of the given xml node.

For further customization of the web server please refer to Tomcat documentation.

Test to run

Certain considerations had to be taken during compilation in the simulated user workflow. Printing and running other types of device jobs were not to be included. As many user actions must be simulated as possible. Pacing of user interactions should follow the real timing of user actions on a physical device.

Test workflow and its execution

The workflow running on each client consists of the following steps.
- User login
- Navigate to Pull Print screen
- Work on Pull Print application
  - Change job selection
  - Adjust copy count
  - Invoke Job Info screen for multiple jobs
  - Refresh job list
  - View About screen
  - Printing is emulated by a sleep (pause) operation
  - Logout from Pull Print menu

This workflow was repeated in multiple iterations under different conditions on each client. The total number of devices and iterations and the number of actively used devices were the input parameters of each test run.

The level of parallelism or concurrency was considered as one of the most important parameters. It was represented by the number of active devices. Obviously, increasing the number of actively used devices implies a raise in the likelihood of concurrency - number of attempts to perform the same operation on multiple clients at the same time.

To control the parallel usage, the tests had an input parameter of workload that determines the number of active devices in percentage. The given number of devices perform the workflow while the others just wait in an iteration.

Measurement points

Execution of user workflows was traced by the automation environment. It verified the expected result of each activity and measured the execution timespan. Detection of errors was based on verification of the

screen displayed by the client. An error was reported if the landing screen was different from the expected one.

It is important to emphasize that the measuring methods used in the process have minimal impact on the speed of execution.

It is important to emphasize that the measuring methods used in the process have minimal impact on the speed of execution:

- Login time
- Time to reach the Pull Print screen
- Time to retrieve and display job list
- Time to refresh job list
- Logout time

Measurement results

Series of test runs have been selected to indicate changes in performance of the system. The number of test iterations had been fixed and the total number of devices and the actively used devices changed in the series. The number of devices reached 420, and 25, 50 and 100 percent of the devices were used in parallel. The following charts show the execution time of a user operation. Please note that the times are presented in percent of the baseline measurement. Absolute values would be irrelevant since simulated clients were used.
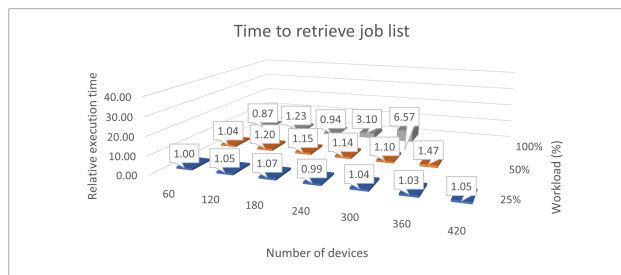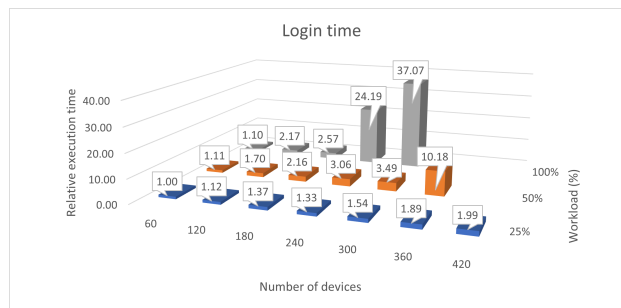
Chapter 3

Conclusion and recommendations

The results of the tests indicated that the total number of devices controlled by Device Web Server is not the most appropriate measurement parameter of the system. We can get a more reliable picture about the performance of the system if we consider the parallel usage of devices. All measurement data shows that as the parallel usage of devices grows, execution time of given activities increases. The inactive devices cause less load on the system since the background processes for maintaining these clients are less resource consuming.

Consequently, the total number of devices controlled by Device Web Server can be considered as a less relevant parameter when a system is being planned to deploy. The expected value of printers used in parallel is the more relevant property of the system that must be considered.

Note Considering the measurement results and the user experience, we recommend using maximum 180 concurrent devices while having 100% workload. In case of a higher level of workload, it is recommended to control the fleet of devices with multiple Device Web Servers.

The following table shows the maximum level of workload depending on the maximum number of devices.

Maximum number of devices	Workload
50	100%
100	100%
200	90%
500	36%

Device Web Servers can be organized into server groups. Temporary outage of group members increases the workload on others. This circumstance should also be taken into consideration in the planning phase or later as the fleet grows.