



Skills Management 8.5.648

# **System Overview and Operations**

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## 1 Purpose and Audience

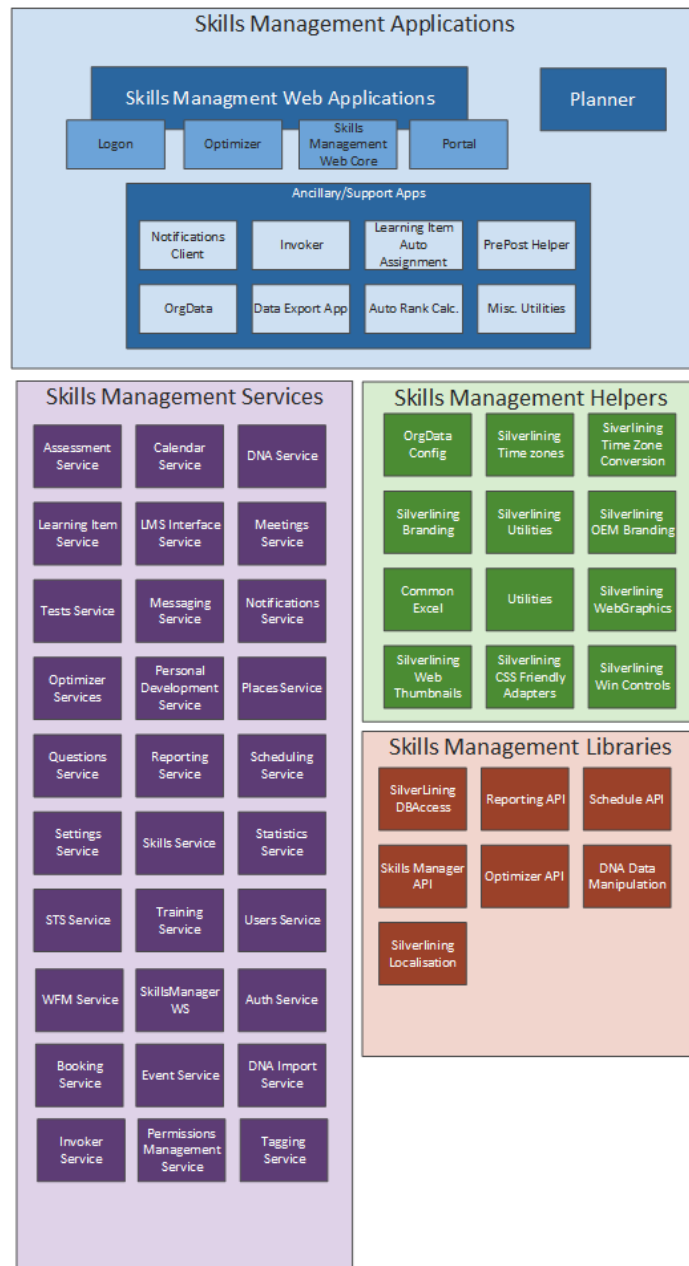
The purpose of this document is to give an overview of Skills Management architecture, included applications, services and daily operations. The target audience is a customer or potential customer's IT department.

## 2 Logical Overview

### 2.1 Functional Diagram

The Skills Management system consists of a number of websites and web services, several scheduled tasks and automated processes and a client Windows application.

The data stored is comprised of imported KPI data, assessment data, scheduling information imported from WFM and data stored about the users.



## 2.2 Protocols

The table below shows the protocols and ports used for interaction between the different parts of the installation.

Port/Port Range	From	To	Purpose	Notes
<b>80 or 443</b>	End user's machines	Skills Management Web Server	Allow HTTP traffic from user's browsers to the server	Port 443 if HTTPS is being used, Port 80 otherwise. If HTTPS is used a valid certificate will be required on the server.
<b>1433</b>	Web Server	Skills Management Database Server	Allow SQL traffic between Web and Database Servers	If SQL server is running on a different port, please adjust accordingly.
<b>2383 or 2382</b>	Web Server	Database Server	Allow SSAS traffic between Web and Database servers	Needs 2383 open (if default instance) or 2382 (if named instance).
<b>135, 5000-5020</b>	Web Server	Skills Management Database Server	Allow RPC Traffic between Web and Database Servers so that Microsoft Distributed Transaction Coordinator (MSDTC) can run	RPC range can be configured more tightly if required - (see: <a href="https://support.microsoft.com/en-gb/kb/250367">https://support.microsoft.com/en-gb/kb/250367</a> )
<b>80</b>	Web Server	WFM Server (IEX)	Allow Skills Management to access the NICE TV4 web services	This is the default port for the TV4/Smart Sync services. It may be configured differently in your environment.
<b>80</b>	Training Manager End user's machines	WFM Server (IEX)	Allow Training Manager to access the NICE TV4 Web services	This is the default port for the TV4/Smart Sync services. It may be configured differently in your environment.
<b>80</b>	Web Server	WFM Server (Teleopti)	Allow Skills Management to access the Teleopti web services	This is the default for the Teleopti SDK. It may be configured differently in your environment
<b>80</b>	Training Manager End user's machines	WFM Server (Teleopti)	Allow Skills Management to access the Teleopti web services	This is the default for the Teleopti SDK. It may be configured differently in your environment
<b>7610</b>	Web Server	Genesys Server hosting the EWM Capture Point	Allow Skills Management to access the EWM Web Service Capture Point	This is the default Capture Point port. Your capture point may be configured differently.

<b>5007</b>	Training Manager End user's machines	WFM Server (Genesys)	Allow Skills Management to access the Genesys WFM services	This is the default port. It may be configured differently in your environment.
<b>5007</b>	Web Server	WFM Server (Genesys)	Allow Skills Management to access the Genesys WFM services	This is the default port. It may be configured differently in your environment.

## 2.3 Installed Applications and Databases

The system is built using Microsoft technologies based on the .Net framework. Applications are written using C#, ASP .Net and JavaScript. Data is stored in SQL Server databases, and accessed using Entity Framework, ADO .Net and stored procedures. All communication uses standard protocols.

### 2.3.1 Client Windows Application

Skills Management includes a client application built in .Net. It is installed via an Executable package. This tool is primarily used by Training Managers or schedulers.

### 2.3.2 Scheduled Tasks and Windows Services

The system includes a number of scheduled tasks which run regularly for a variety of background processing tasks. In a load balanced environment, they are typically configured to run on only one application server, or on a dedicated background processing server.

Name	Type	Location	Purpose	Notes
Skills Management Cube Refresh	Scheduled Task	Application server, or dedicated background processing server	Refreshes the DNA cube with the latest KPI information. Typically runs nightly, but can be more frequent, depending on the schedule for loading KPI data.	In multi-server installations the task should only run on 1 server
Skills Management PDR Email Review Window Check	Scheduled Task	Application server, or dedicated background processing server	Checks for review window dates for PDRs, and triggers emails being sent at the appropriate times. Typically runs every minute, but only triggers events occasionally.	In multi-server installations the task should only run on 1 server

Skills Management ProcessQueues	Scheduled Task	Application server or dedicated background processing server	Runs in the background to initiate events scheduled through the events setting screen. Typically runs frequently.	In multi-server installations the task should only run on 1 server
Skills Management WFM Hierarchy Refresh	Scheduled Task	Application server or dedicated background processing server	Connects to the work force management system to download WFM hierarchy data, for use in Portal. Typically runs nightly, but may run more frequently if the WFM data is changing rapidly.	In multi-server installations the task should only run on 1 server
QMedia Sync Service	Scheduled Task	Application server or dedicated background processing server	Ensures that media files which were uploaded to one application server are synchronised to others in the load balance group. Typically configured to run every 2 or 3 minutes	Only needed in multi-server installations where suitable shared file storage is not available. Runs on one of the servers and syncs to the others.
Skills Management Invoker Service	Windows Service	Application server or dedicated background processing server	Runs regular background tasks	In multi-server installations the task should one run on 1 server
Email Messaging Service	Windows Service	Application server or dedicated background processing server	Responsible for sending emails to users on behalf of the system	In multi-server installations the task should only run on 1 server
DNA Import Service	Windows Service	Application server or dedicated background processing server	Responsible for automated import of KPI and DNA data	Typically imports new data nightly, but this depends on the frequency of availability of new data.



### 2.3.3 Web Applications

Skills Management includes two main web applications. Skills Assessor and Portal. They run on IIS and are written in .NET

There are also a number of micro services which are used to support the functionality of the web and windows applications. (see functional diagram in section 2.1)

### 2.3.4 Application/Web Server Security

A windows account is needed when Skills Management is installed. This should be a dedicated service account, with password set to never expire. The privileges required for this account are documented in the installation guide.

### 2.3.5 Database Security Objects

Skills Management uses two accounts – one during the installation/upgrade process and one during day to day running. This allows the account used for day to day running to run with a lower level of privileges, whilst still allowing the installer to create and modify the database schemas as necessary.

### 2.3.6 Databases

The automated installer creates and updates all databases. If the databases already exist, the installer will try to upgrade them to the most recent version.

By default, the databases that are created with the following names:

- Skills Assessor
- Training Manager
- DNA
- Skills ManagementReports

Unless point in time restore is specifically a requirement it is recommended that the databases are configured to use simple recovery model.

## 3 Operations – General

### 3.1 Responsibilities and Server Access

Unless the system is being deployed as part of a managed hosting solution, day to day maintenance of the servers and database is the responsibility of the customer. It is recommended that the servers are managed in line with your standard server management processes.

To allow Silver Lining Solutions to properly support the solution they should be provided with remote access to all servers which have part of the Skills Management solution installed. This should be via Terminal services connections or similar.

### 3.2 Installation

See the separate document: “Skills Management Automated Install and Upgrade Guide” for details on installation and prerequisites.

### 3.3 General

#### 3.3.1 IIS

##### 3.3.1.1 *Application Pools*

By default, each web application and service will run in its own application pool. These pools should be largely self-managing, and require no direct intervention. However, if the account or password for the account which the application is installed as changes, it will be necessary to update the application pools with the correct credentials so that the application continues to function as expected.

##### 3.3.1.2 *Log Files*

IIS Log files will be generated by the application. These can be managed using your standard policies for log retention and cleaning.

#### 3.3.2 Firewall

Please see the separate document: “Skills Management - Firewall Requirements” for information about the communication required between the different servers.

## 4 Operations – Applications and Services

This section describes the basic monitoring of Skills Management applications and services.

### 4.1 Monitoring

The following scheduled tasks need to be running on 1(one) server, if the following features of the product are being used:

Scheduled Task	Required for Skills Assessor	Required for Training Manager/Portal	Notes
Skills Management Cube Refresh	YES	NO	Required for correct functionality of all of Skills Assessor
Skills Management PDR Email Review Window Check	YES	NO	Required for correct operation of PDR functionality within Skills Assessor
Skills Management ProcessQueues	YES	YES	All of Skills Management
Skills Management WFM Hierarchy Refresh	NO	YES	Required for correct operation of Portal.
QMedia Sync Service	YES*	YES*	*Always needs to be running in multi-application server environments, where there is no shared storage between the servers.

The Windows services below should also be monitored:

Windows Service	Required for Skills Assessor	Required for Training Manager/Portal	Notes
Skills Management Invoker	YES	YES	Used throughout Skills Management
Email Messaging Service	YES	YES	Used to send emails to users throughout the system
DNA Import Service	YES**	NO	**Used if automated DNA imports are being used to automatically import KPI data into Skills Assessor

## 4.2 Log Files

The applications and services will log problems and errors to text based log files. The location for these files can be specified at installation time. The level of logging can be configured for each individual application and service using their individual configuration files.

## 5 Problem Handling

### 5.1 Support arrangements

Support arrangements will be explained by the professional services team as part of the discovery, installation and go live process. You will be given access to our help desk and provided with all necessary contact information.

### 5.2 Failover and Disaster Recovery

Skills Management can be configured for High availability and Disaster recovery. Please see the installation guide.

## 6 Shutdown

Shutdown is not typically necessary during day to day running of the Skills Management system, but if you do need to do so, the steps below describe the recommended approach.

If shutting down the Skills Management system, first make sure all windows clients are disconnected. Then stop the scheduled jobs, then the web sites and web services, then the scheduled jobs and finally the databases.

The suggested shut down order is:

1. Inform users not to use the system
2. Stop the scheduled jobs
3. Stop the Web sites and web services (using IIS)
4. Stop the databases

Reverse this process to restart the system.

Note that if the system is carrying out scheduling, or users are completing assessments at the time of a shutdown, there is the potential for data loss.