

Kofax Insight

Technical Architecture and High Availability Setup

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Introduction

This document describes the components and its technical architecture for Kofax Insight 6.0.0.

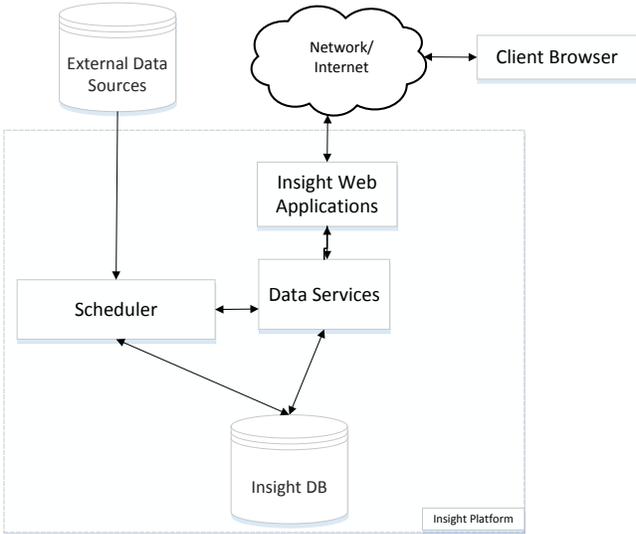
Kofax Insight is a browser-based system that runs on HTML5/JavaScript supported browsers. The server components are built on the Microsoft .NET Framework and run on Windows (64-bit)/IIS servers.

Kofax Insight consists of the following main components:

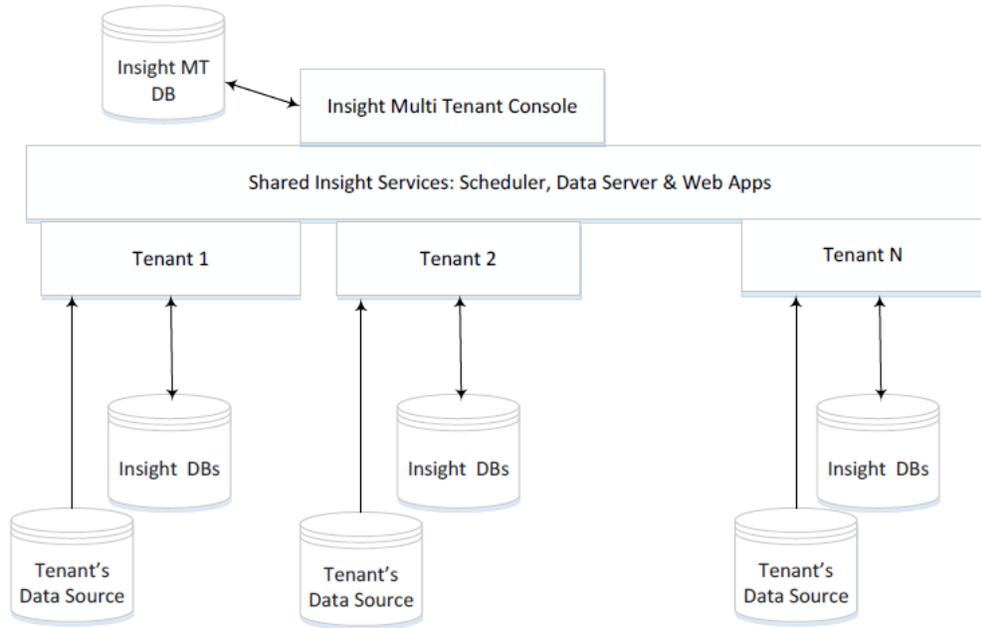
1. Insight Web Applications
2. Insight Data Services
3. Scheduler
4. Insight Database

Kofax Insight can be deployed in a single tenant or multi-tenant mode.

The following diagram displays the architecture of Insight deployed in a single tenant mode.



The following diagram shows the architecture of Insight deployed in a multi-tenant mode.



Each tenant can be set up with the help of the Kofax Insight Multi-Tenant Console application. Once a tenant is setup, use the following URL to access the Insight tenant environment .

```
http(s)://<tenant_id>.<host:port>/Insight/[Admin|Studio|View|Themes|DataLoader]
```

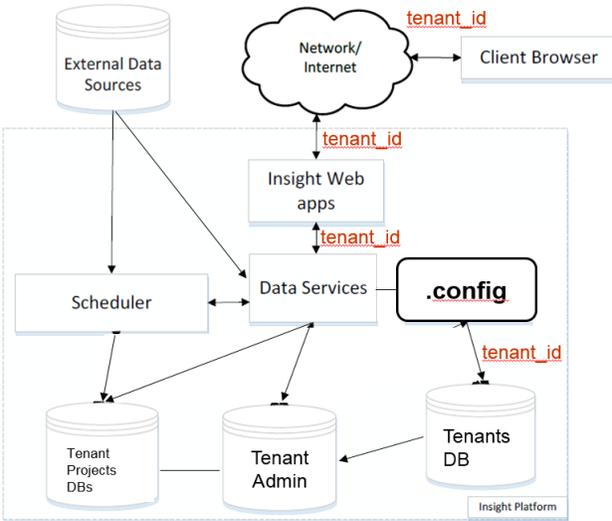
For example, if Insight is set up on a domain named MyInsight and a tenant with a tenant ID called tenant2, tenant2 can access Insight using the following URL:

```
http://tenant2.MyInsight.com/Admin
```

The Tenant (Customer) admin should have a record in the DNS for the subdomain pointed to the same IP as the domain.

When an Insight application gets a request, Insight reads the tenant ID and sends it to the Data Service as an additional parameter.

Insight Data Service reads the tenant ID from parameters and then retrieves the connection string to the tenant's Admin DB from the Insight MT database. Insight authenticates the user in the same way as in a single-tenant mode.



Insight Web Applications

The Insight Web Applications provides the user interface to the Insight platform. The user interface, which serves as the presentation layer of the Insight system, consists of the following applications that allow a user to configure and manage Insight:

Name	Physical Name	Type	Description/Functions
Admin	Admin	Web Site	Insight License Manager, configure authentication type, users, roles, access rights, create and manage Insight projects, import of Analytics solutions.
Data Loader	DataLoad	Web Site	Logs, manages and schedules data loads from various data sources into Insight Data Mart.
Studio	Studio	Web Site	Manages Insight project documents such as metrics and records, views (dashboards), data sources, execution plans, file processor, reports, and audit.
View	View	Web Site	Provides access to the view (dashboard) for the end user.
Themes & Formats	Themes	Web Site	Themes and formats used in the dashboards and Insight projects.

Insight Data Services

Data Services, the application layer of the Insight system, provides authentication, data management, and Analytics services for Insight. The data services connect to the Insight databases and communicate with the Web applications and Scheduler. Data Services components are listed in the table.

Name	Physical Name	Type	Description/Functions
WCFData	WCFDataService	.NET WCF Service	Provides authentication, Insight document management and data analytics services.

File Processor	DatafileProcessorService	.Net WCF Service	Parses the file and writes the data to the Staging DB.
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Insight Scheduler

The Insight Scheduler is a Windows service that launches a Scheduler-Data Loader EXE that loads the data from external data sources into the Insight data mart (Insight project data database).

Name	Physical Name	Type	Description/Functions
Scheduler	InsightSchedulerServiceXYZ	Windows Service	Launches the EXE which loads the data. <i>[The XYZ in the name is the version number: for example 600 is version 6.0.x.]</i>
Scheduler-Data Loader EXE		EXE	Performs the data load of one execution plan.

Ports

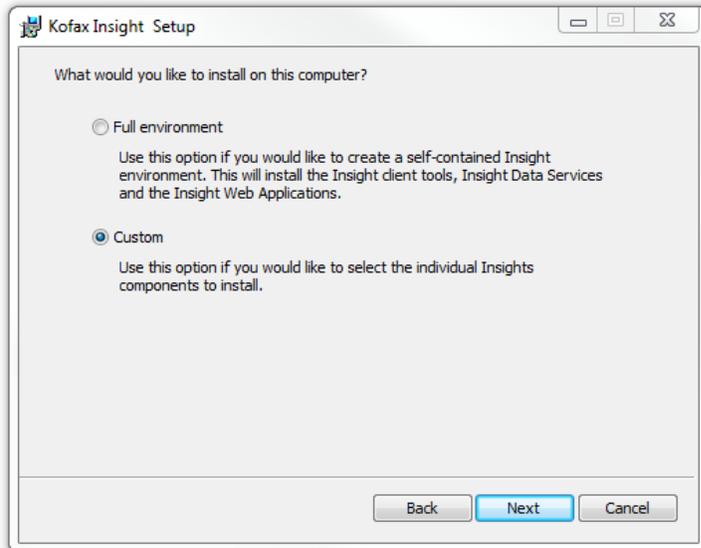
For more information about ports, see the Kofax Insight Installation Guide.

Insight deployment architecture

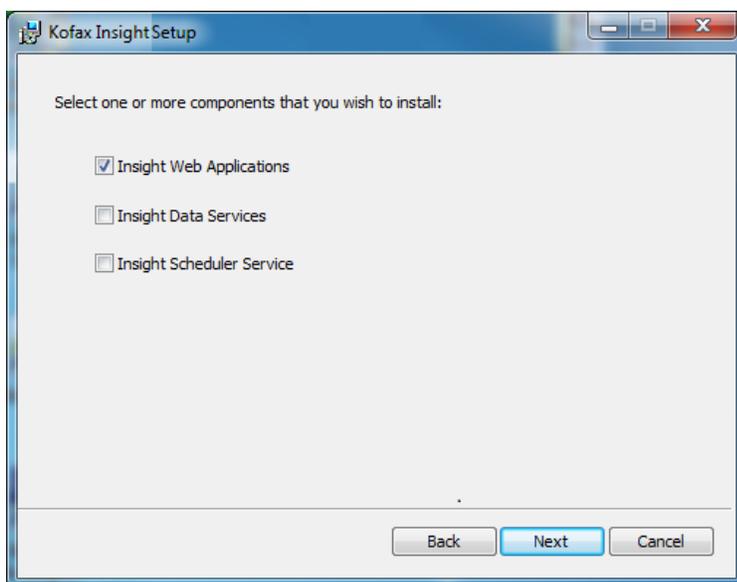
Insight may be deployed in a single-tier, two-tier or three-tier architecture.

Insight in a secure three-tier architecture

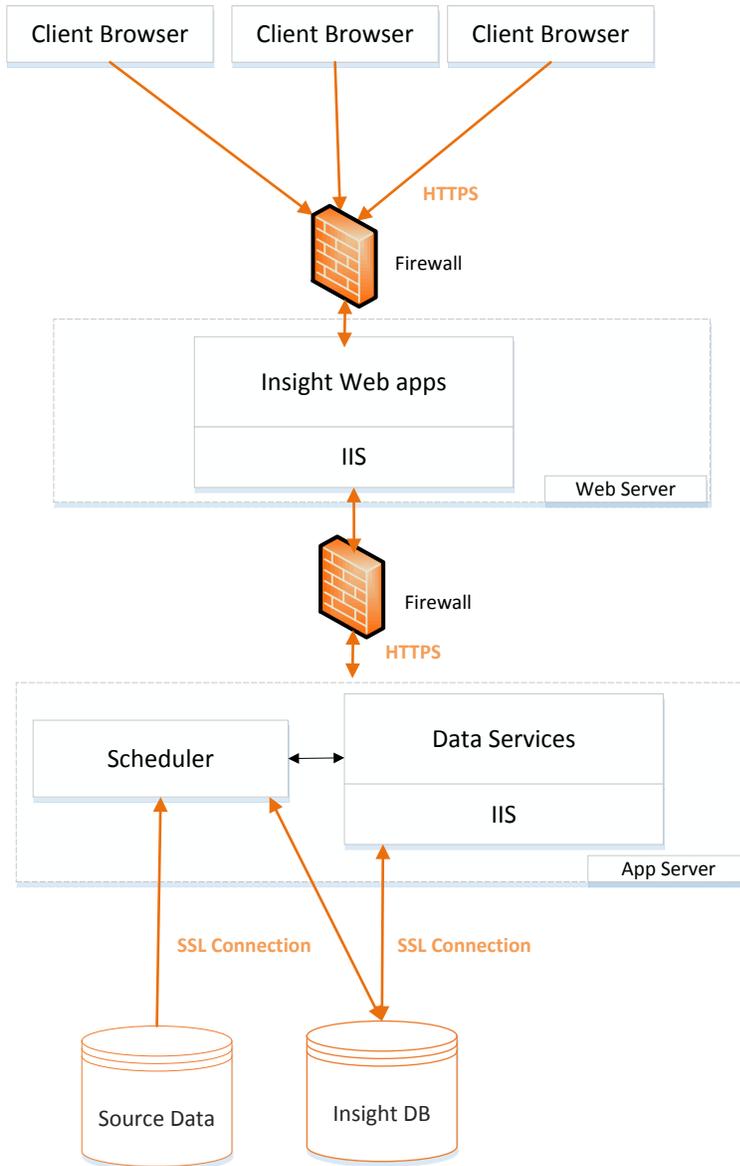
To deploy Insight 5.3.1 or higher in a three-tier architecture requires the Data Services & Scheduler to be installed on an application server running IIS. Insight web applications can be installed on a Web Server also running IIS. Use the “Custom” option when installing Insight.



Select the components to install.



Data Encryption: HTTPS and SSL can be used to encrypt data in transit. Standard DB encryption can be used to encrypt data at rest.



Web Server

User's browser will connect to the Insight Web Apps. Which in turn will make calls to the Insight Data Services. Users do not have direct access to the App server or Database layers.

Secure Communications via HTTPS

App Server

The Data Service runs on the App server over IIS. No direct connection from the user to this layer is allowed.

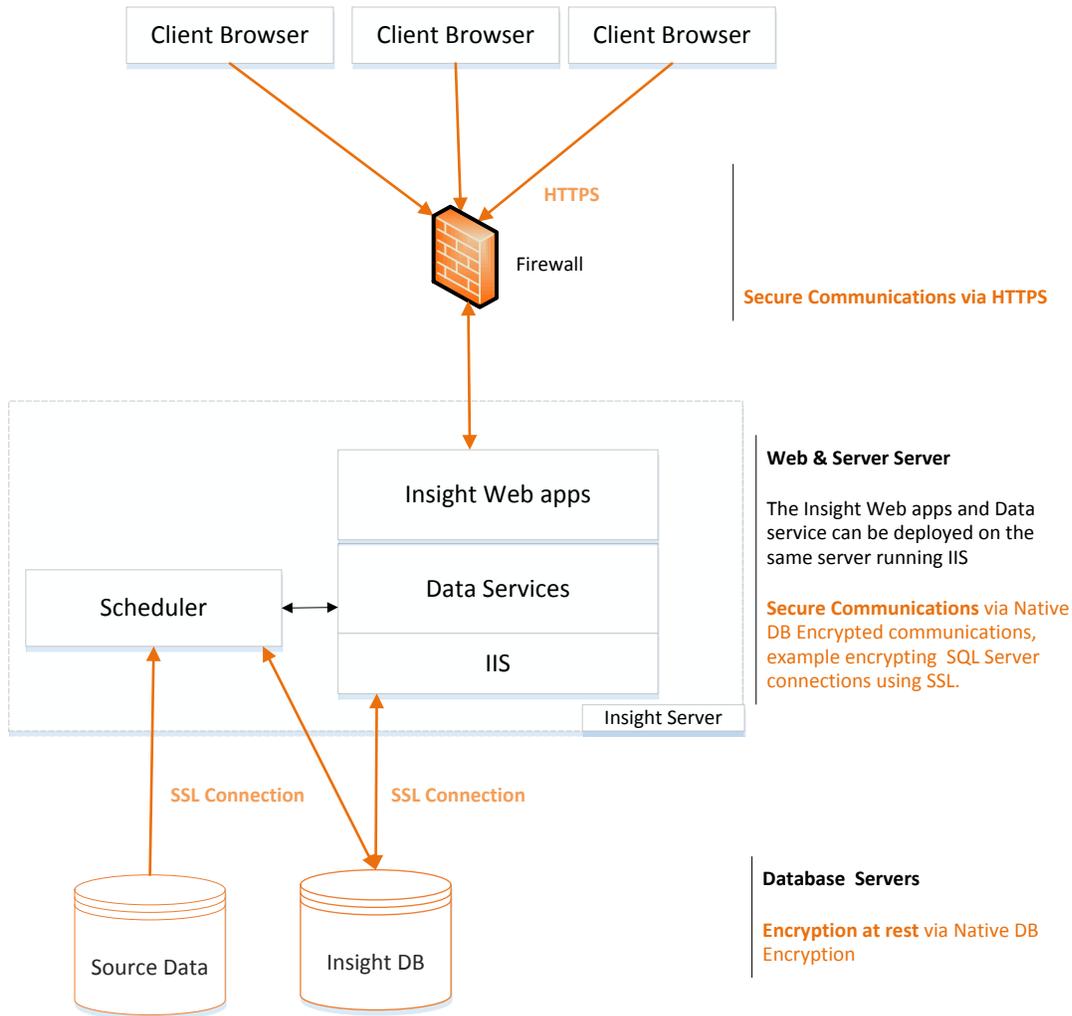
Secure Communications via Native DB Encrypted communications, example encrypting SQL Server connections using SSL.

Database Servers

Encryption at rest via Native DB Encryption

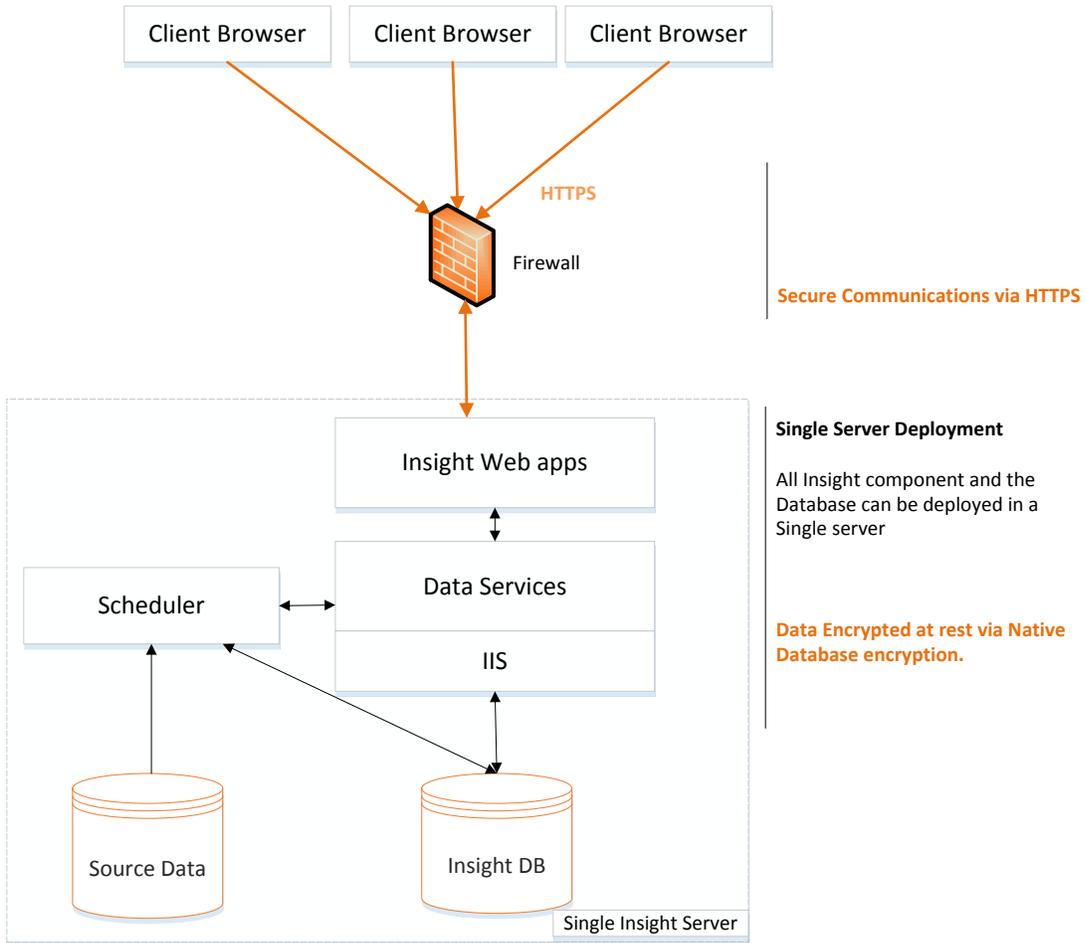
Insight in a Two-Tier Architecture

Insight can also be deployed as a two-tier system by installing the Insight Web Applications, Data Services and the Scheduler on the same IIS server as the other Insight Server Web applications. This is the default installation. In addition, although not recommended for a production environment, the Insight Database can also be installed on the same server.



Insight on a Single Server

Although not recommended for a production environment, Insight can be deployed on a single server environment. This is similar to the two-tier deployment, except that the databases resides on the same server.



Configuring Insight 6 - High Availability

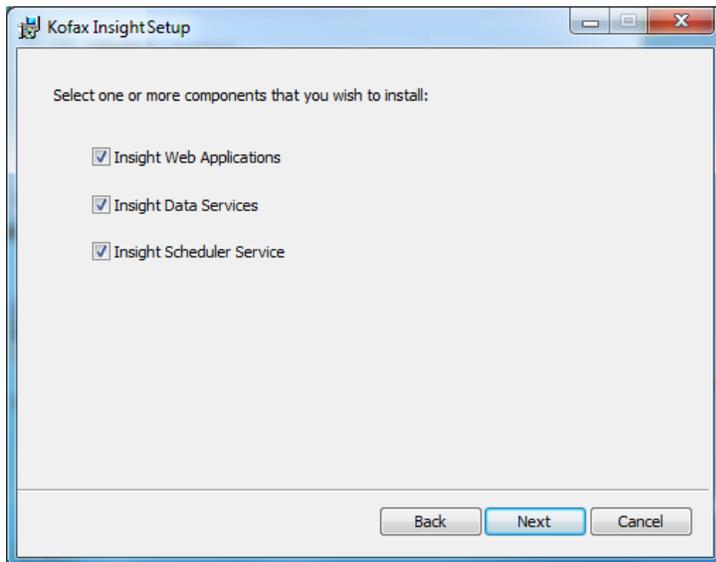
Introduction

Insight 6 dashboards can be configured to be Highly Available by running several Insight environments (web farm) on a load balancer, where each Insight environment consists of Web Applications, Data Services, and a Scheduler.

Note: When a change is needed, the instances on the web farm should be stopped. Run Studio or Admin to make the change, and then start all Insight instances on the web farm.

Setting up the Insight environment

For each server that is part of the web farm, install Insight using the custom installation option. Select to install the Insight Web Application, Insight Data Services, and the Insight Scheduler Service. Before proceeding, you need to know the entry point server of the load balancer.



When setting up the Insight root Data folder (see the *Kofax Insight Installation Guide* for details), you must set up the root Data folder to a shared drive. This approach allows all instances of Insight running on the web farm to access the Data folder, which is used for uploading files and projects to Insight.

The Scheduler can be installed on the same servers on the web farm or on separate machines outside of the web farm. If you install the Scheduler outside of the web farm or on a dedicated server, see the IMPORTANT NOTE below.

Enter the IP address or host name of the Insight Data Service (WcfDataService Web Application) as the **Host** for the Scheduler during the Scheduler installation. Provide the following information:

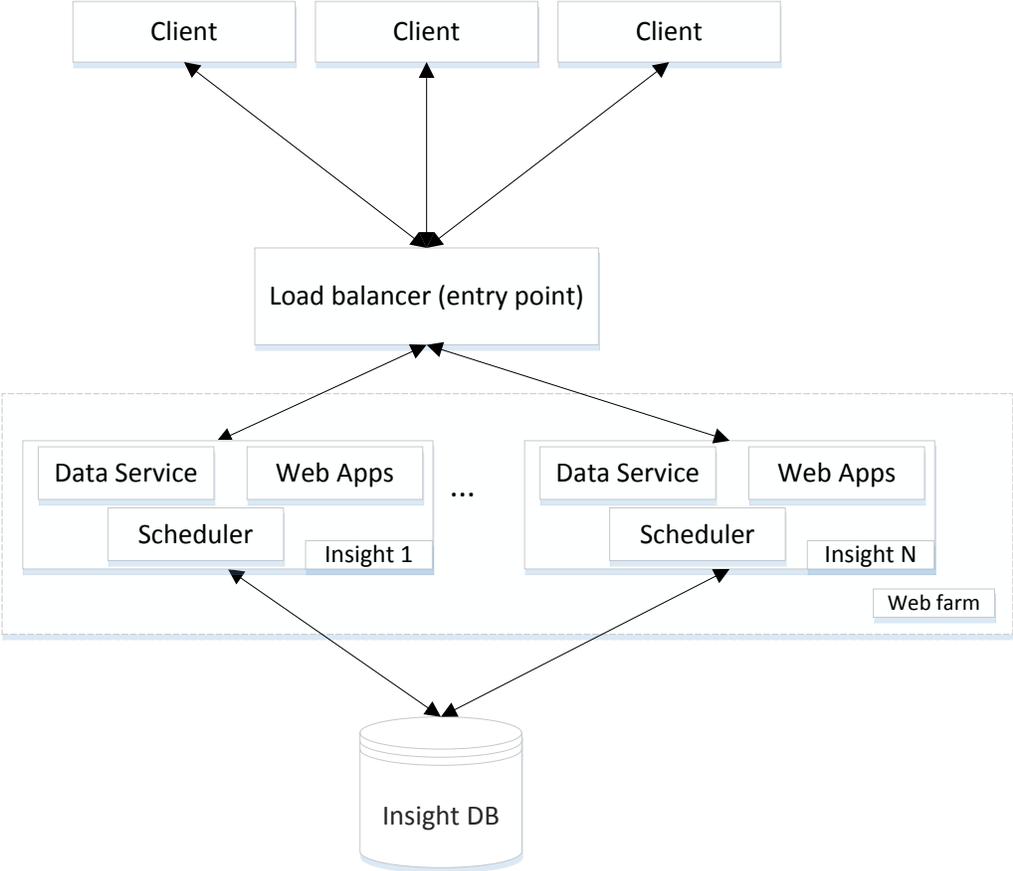
- **Host:** Enter the Load Balancer host name or IP address here.

- **Port:** Enter the Load Balancer port number, typically 80 (HTTP) or 443 (HTTPS).

IMPORTANT NOTE: If the Scheduler is installed on a different server than the WcfDataService or the Insight Web Application, configure the location of the scheduler in each Insight project from Studio. To do so, log in to Studio, select your project, and then navigate to **Tools > Settings > Scheduler Configuration**. Note that the port of the Insight 6.0 Scheduler is 13560.

In Insight 6.0, all schedulers are active and run in HA mode. One Scheduler is assigned as the “Main” scheduler, which executes plans and tasks and also assigns tasks to the other schedulers. Should the Main Scheduler fail, another Scheduler will take its role and become the Main Scheduler. If the failed Scheduler comes back online, it will begin executing tasks that it receives from the Main Scheduler.

In the following diagram, the Insight environment consists of the Web Applications, Data Service and the Scheduler, where all Schedulers are set up with the same host – the load balancer entry point.



Example: Insight setup for High Availability using IIS

Overview

This section provides instructions on how to configure Insight for HA using IIS. The high level steps include:

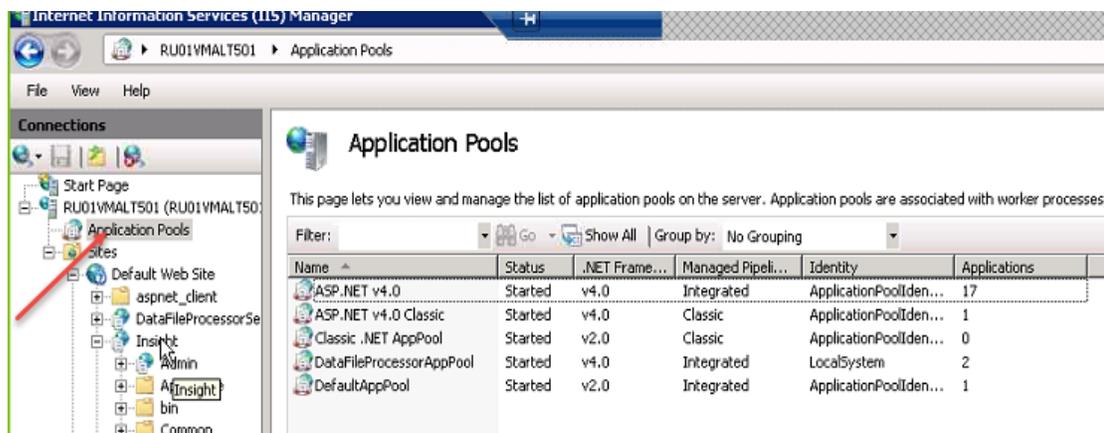
1. Identify the Load Balancer (entry point) server.
2. Set up Insight on a server and configure the scheduler host as the entry point server.
3. Log in to the Admin Console and set Insight in HA mode.
4. Repeat steps 2 and 3 for other Insight servers (for HA there must be at least two Insight servers).

Prerequisites

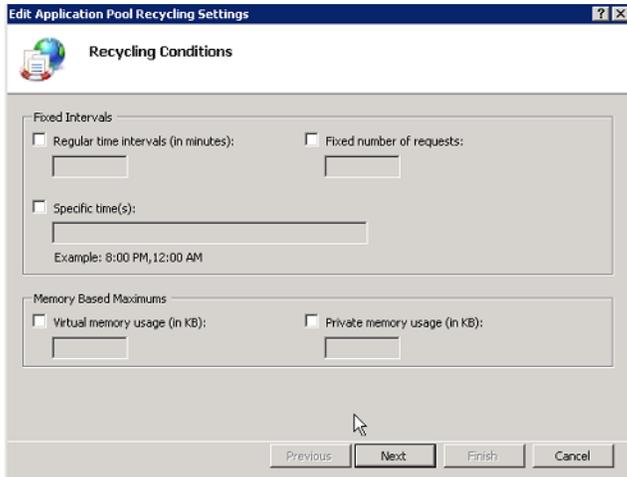
- Servers: You will need at least three Windows servers. In this example, one will be the load balancer server (entry-point), and the other two will be the Insight servers in the web farm.
- You must have administrator access to all the computers (or virtual machines) that run the Windows Server 2012 (or higher) operating system.

Setup steps

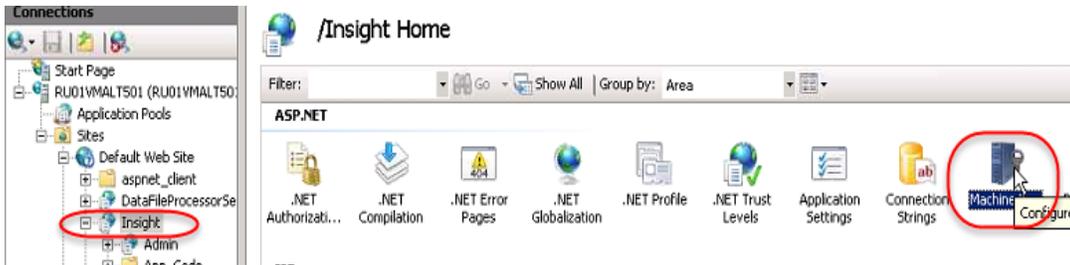
1. Identify the server that will be set up as the entry-point load balancing server and the others that will be part of the web farm and contain Insight.
2. Use the Custom option to install Insight Web Applications, Data Service and the scheduler on the one server. Make sure to specify the entry-point as the Scheduler host during installation.
3. Open **IIS (Internet Information Services) Manager > Application Pools** and select the application pool used in Insight. To check the pool, go to **Insight > Manage Application > Advanced Settings**.



4. For this selected pool:
 - a. Open **Advanced Settings**, set Idle Time-out (minutes) to zero.
 - b. Select **Recycling** and check the settings. The screen must contain the following settings:



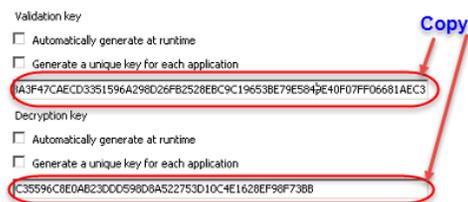
5. Go to **Insight > Machine Key**.



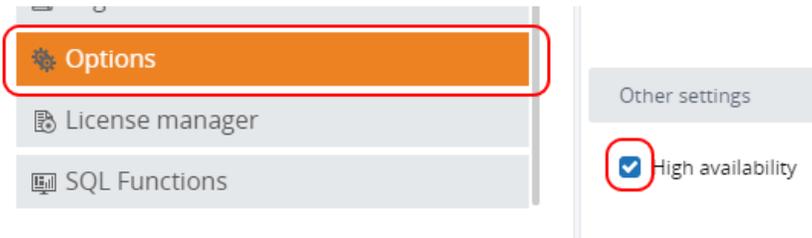
6. Deselect **Automatically generate at runtime** for Decryption key and click **Generate Keys**.



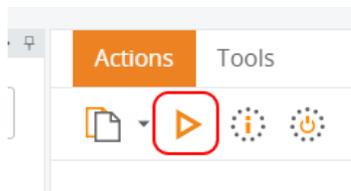
7. Copy the generated keys and paste them on the other machines with installed Insight.



8. Log in to the Insight Admin Console. From the left navigation panel, select **Options** then check the **High Availability** option.



When Insight is set to High Availability, the system is in Viewer mode and no updates can be made to the Admin or Projects. The Viewer application runs as usual. To update the Admin or Studio project, set Insight into Edit mode by clicking the Play icon in the Admin Console.



When the system is in Edit mode, the Viewer is no longer available. Click back to the stop icon to get Insight back to its Viewer mode and all Viewers will be accessible.

9. Repeat the preceding steps for all the servers except for the key generation. Keys are generated only once and then they are copied to all other machines.

IMPORTANT: *All the servers should be using the same set of database drivers, time settings (time zone) and all servers that are running the Scheduler should have their system time synchronized. An Insight license is required on all servers, and you can load the license on the servers in two ways:*

1. Load the license via the Admin Console or Multi-Tenant Console for each server
2. Once the license is loaded on the first server, copy the XML license from the `C:\ProgramData\Altosoft.Insight.Licenses` folder to the same folder on the other servers.

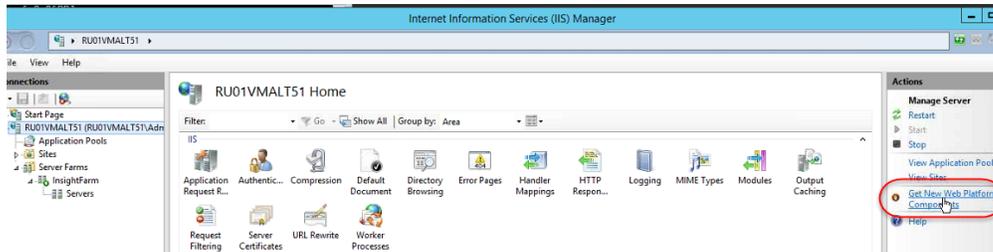
10. Once that is done you will need to restart all the Schedulers one at a time.
11. Repeat the preceding steps for all the machines except key generation. Keys are generated only once and then copied to all other machines.

Changing Admin password in High Availability mode

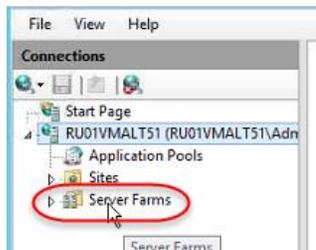
When you need to change the Administrator password in the Admin Console, the system will change the Insight password for the active scheduler. But you need to manually change all the admin passwords for the Scheduler services that are running. Edit the Scheduler configuration file which can be found under `C:\Program Files\Kofax\Insight 6.0.0\SchedulerServer\AltoSoft.Insight.Scheduler.exe.config` and look for the `key=Password` under the `<appSettings>` tag.

Configuring the entry-point (load balancer)

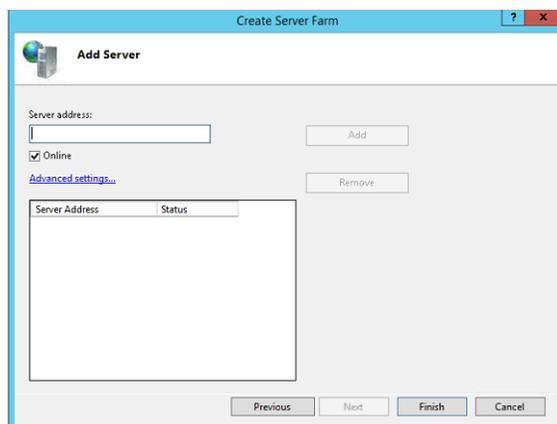
12. Select **Get New Web Platform Components**.



13. From the browser screen, download **Microsoft Web Platform Installer Download**, and then find Application Request Routing and install it.
14. Access IIS Manager: A new menu item "Server Farms" is now present. Right-click this item and select **Create Server Farm**.



15. Enter the farm name.
16. Enter all IP addresses for all the machines with Insight on the Add Server screen and click **Finish**.

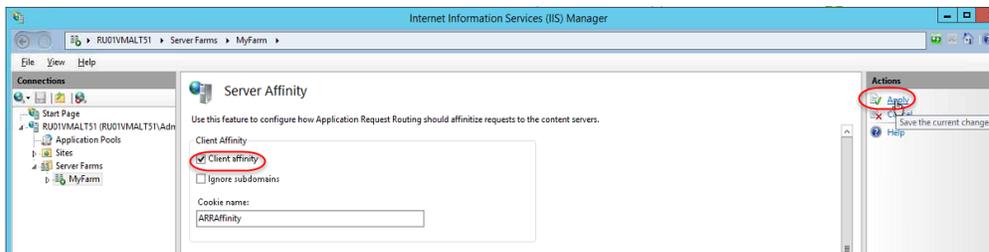


17. Click **Yes** on the next **Rewrite Rules** screen.

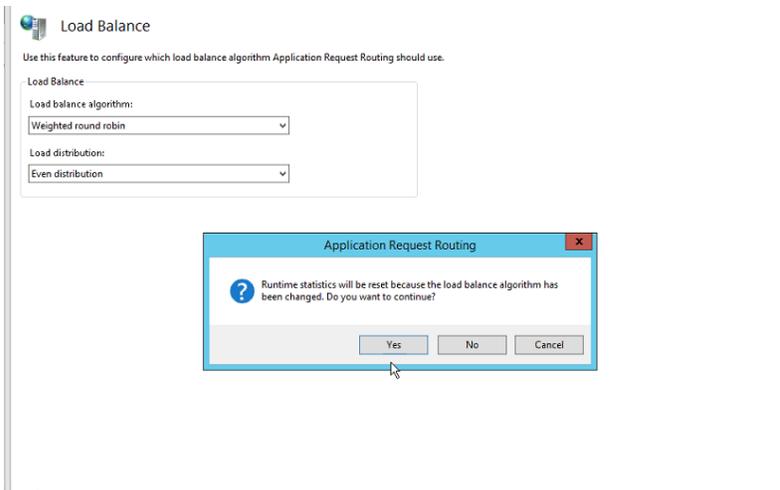


Settings for your farm

18. Go to **Server Affinity**, select the **Client Affinity** check box, and click **Apply**.



19. Go to **Load Balance**, set the applicable load balance algorithm and click **Apply**.



20. In this example, "Weighted round robin" is selected as an algorithm.

Useful resources

[Achieving High Availability and Scalability - ARR and Hardware Load Balancer](#)

[Build a Web Farm with IIS Servers](#)

[Configure a Service or Application for High Availability](#)