



Infor PLM Accelerate 11

Enterprise Search Administrator Guide

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About this guide

This document provides information about the administrative setup required for Enterprise Search.

Intended audience

This guide is intended for system administrators. This document assumes that you have at least some knowledge in:

- System architecture and function for your Infor system
- SQL Server database

For the most up-to-date list of software and hardware requirements for Infor products, see the documentation for your system.

Related documents

You can find the documents in the product documentation section of the Infor Xtreme Support portal, as described in the "Contacting Infor" section below.

Contacting Infor

If you have questions about Infor products, go to the Infor Xtreme Support portal at www.infor.com/inforxtreme.

If we update this document after the product release, we will post the new version on this Web site. We recommend that you check this Web site periodically for updated documentation.

If you have comments about Infor documentation, contact documentation@infor.com.

Chapter 1. Overview

Enterprise Search now makes it even easier for users to quickly find information in PLM. It provides the ability to perform keyword / full text search across various Item Types such as Parts, Documents, ECOs, their Related Items and content in their associated Files at once. Users see results that they have access privileges to and can filter by properties to fine tune their search. Enterprise Search can be easily configured to include any custom Item Types, their Related Items, Files and properties.

End User Functionality

Enterprise Search allows end users to search items and files across multiple properties and ItemTypes. It also provides filters that end users may use to refine their search results as shown in the following example.

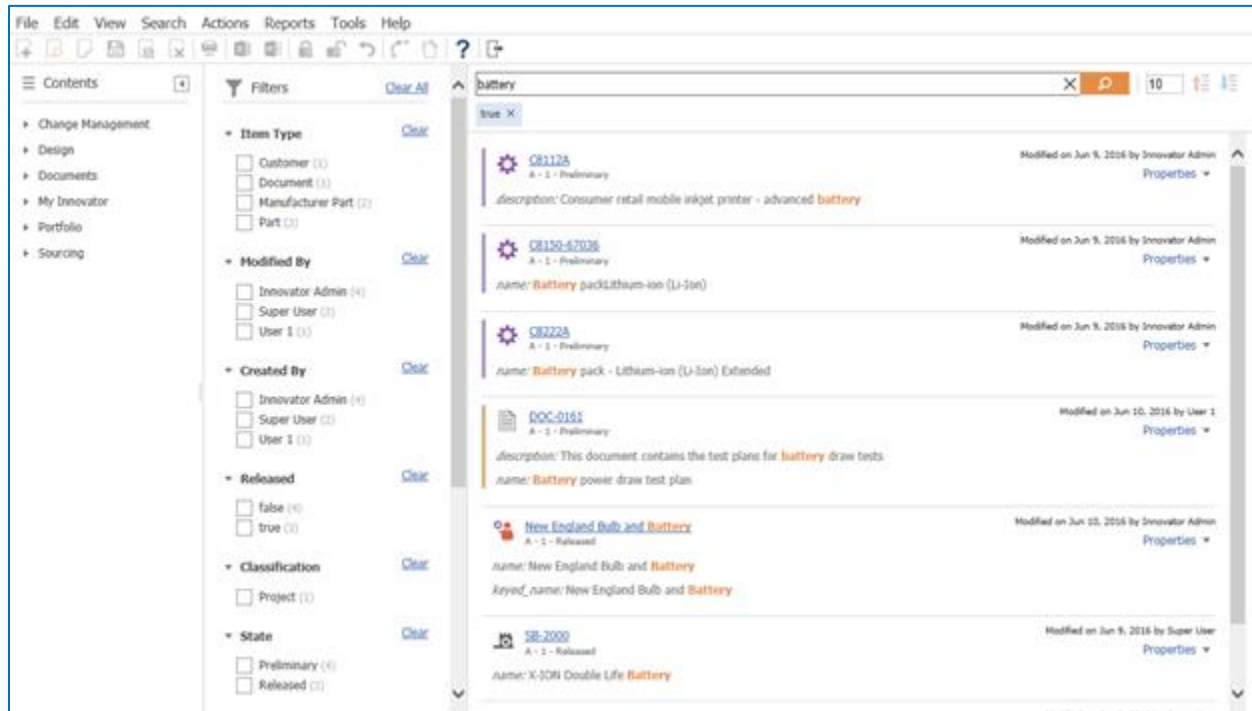


Figure 1.

Administrative Controls

Enterprise Search allows administrators to configure ItemTypes, properties, and File Types available for end user search. The main administrative components include the following:

- **Setting up search agent** – needed to update Index with information from the database

- **Setting up indexed items** – needed to select which items and properties show up in end user search results
- **Setting up crawlers** – needed to create and manage the index queue and to format the information for the search agent

Depending on business requirements, Enterprise Search may require appropriate resources. Administrators should review requirements outlined in *Infor PLM Accelerate - Enterprise Search Installation Guide* and allocate the necessary resources to ensure proper operation.

Chapter 2. Enterprise Search Agent Setup

The Enterprise Search Agent is responsible for querying the Infor PLM Accelerate Database for updates to the indexed items. If it finds updates, it sends appropriate information to Enterprise Search Index Service where the indexed data is stored in a cluster.

To log into the Infor PLM Accelerate database, the Agent Service uses **ESAdmin** user.

Note: **ESAdmin** user must have “get” access to all items that need to be indexed.

Adding New ES Agent Services

New ES Agent Services are installed from the **ESAgentSetup.msi** file during the installation process. This process creates a Windows Service and populates the specified database with appropriate information. This information includes:

- Agent item with associated Agent Service name
- Crawlers with default settings

Note: By default, these crawlers are disabled.

- Default Indexed Configurations
- Variables that point to Index Service

Before Enterprise Search is enabled, administrators should review and adjust these configurations to meet business requirements.

Configuring ES Agent Service

Agent Service is configured on both the server machine and in Infor PLM Accelerate database.

Configurations on the Server Machine

The required controls are available in **service.config** file, found at the root of the installation. The following shows the sample contents available in this file.

```
<configuration>
  <InstanceNumber>0</InstanceNumber>
  <ServiceName>Aras ES Agent</ServiceName>
  <AgentName>Aras ES Agent Service</AgentName>
```



```

<Aras_Innovator_URL>http://localhost/InnovatorServer</Aras_Innovator_URL>
<Aras_Innovator_DB>InnovatorSolutions</Aras_Innovator_DB>
<Aras_Innovator_Login>esadmin</Aras_Innovator_Login>
<Aras_Innovator_Password>innovator</Aras_Innovator_Password>
<Log_Severity>Disabled</Log_Severity>
<!--    Log_Severity values:
  <Log_Severity>Trace</Log_Severity>
  <Log_Severity>Debug</Log_Severity>
  <Log_Severity>Error</Log_Severity>
  <Log_Severity>Warning</Log_Severity>
  <Log_Severity>Info</Log_Severity>
  <Log_Severity>ArasInfo</Log_Severity>
  <Log_Severity>Disabled</Log_Severity>
-->
</configuration>

```

- `ServiceName` value must match the ES Agent Windows Service Name.
- `AgentName` value must match the Agent Name in Innovator.
- `Aras_Innovator_URL` value is the URL of the Innvator instance that the ES Agent is to connect to.
- `Aras_Innovator_DB` value is the database name of the Innvator instance that the ES Agent is to connect to.
- `Aras_Innovator_Login` value is the user in Innvator database that the ES Agent is to connect to. This value must be: "esadmin".
- `Aras_Innovator_Password` value is the password of the **esadmin** user. The default is "innovator". If the password is changed in Innovator, then it must be changed here also.

Note: If Windows Authentication environment is set up, the **esadmin** user must be specified in the `denied_domain_users` and `allowed_direct_users` attributes. For more information, please refer to the *Infor PLM Accelerate – Windows Authentication Setup* document.

Configurations in Infor PLM Accelerate Database

Infor PLM Accelerate Database includes an item linked to the ES Agent Service. To access this item, go to **Administration\Enterprise Search\Agents** in the TOC. The name listed on the Agent Service item must match the `AgentName` tag value from the `service.config` file described in Section 0 above.

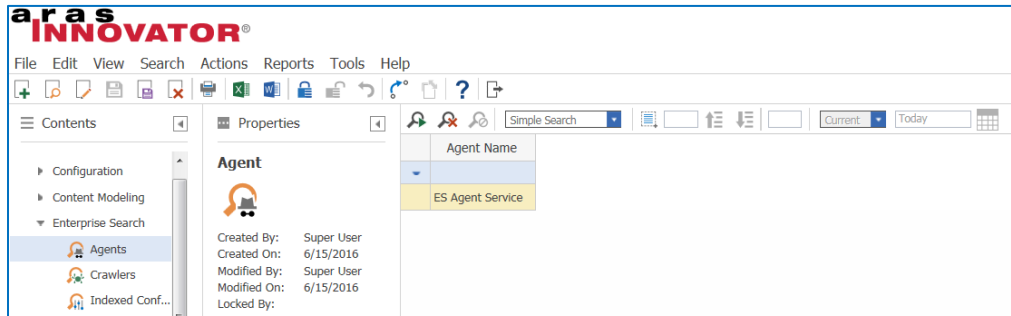


Figure 2.

The database also includes two variables that control connections to the Index Service:

- **ES_AIClusterUrl:** specifies URL used by Infor PLM Accelerate to connect to Index Service when end users run Enterprise Search queries
- **ES_SolrUrl:** specified URL used by ES Agent Service to update the Index Cluster

Sample Variable Value:

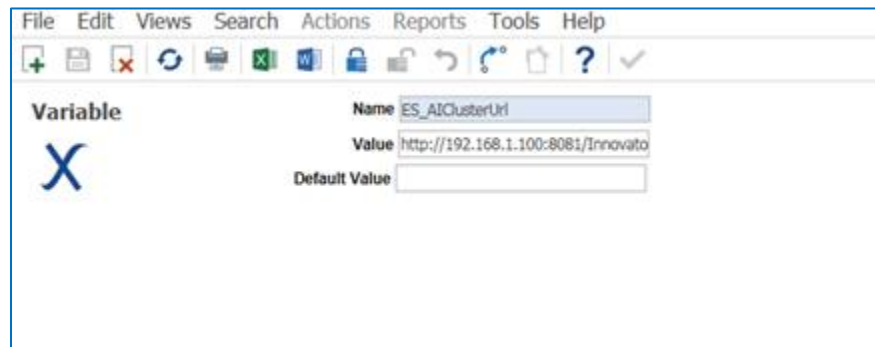


Figure 3.

Enabling and Disabling ES Agent

The Enterprise Search agent is enabled and disabled via Windows Services Console.

1. Open Windows Services Console.
2. Right click the ES Agent service.
3. Select “Start” or “Stop”, respectively.

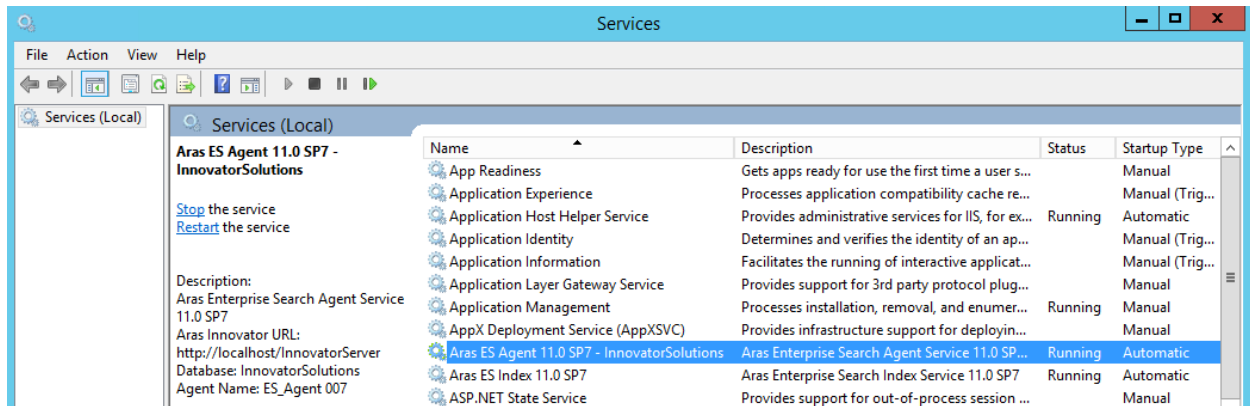


Figure 4.

Chapter 3. Enterprise Search Index Service Setup

The Enterprise Search Index stores information from selected items and files in an index cluster. It is possible to have a single Index Service contain multiple clusters, each associated with a different database. The main components of the service are shown below.

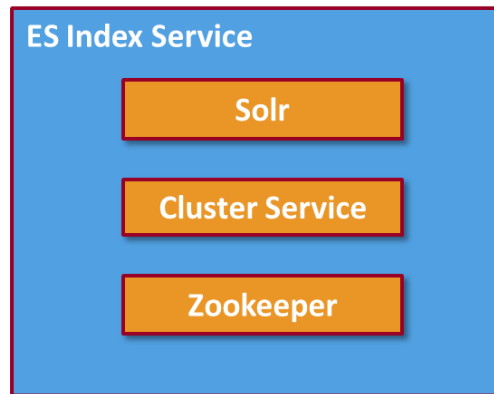


Figure 5.

Because databases could potentially contain a large number of items and files, the Enterprise Search Index Service could get resource intensive. It may require a large amount of processing power, memory, and disk space. See *Enterprise Search – Installation Guide* for details on system requirements.

For questions about Enterprise Search Index Service Setup, subscribers may go to the Infor Xtreme Support portal at www.infor.com/inforxtreme.

Configuring ES Index Service

Configuration of Enterprise Search Index Service is done on the server machine where the service is installed. The required controls are available in **service.config** file, found at the root of the installation. The default installation path is `C:\Program Files (x86)\Aras\EnterpriseSearch\ArasES_Index\`.

Note: Any changes to the service.config file requires that the Enterprise Search Service be restarted for the updates to take effect.

Solr Service

For the Solr Service, it is possible to redefine the Port number and allocated memory.

To change the Port number, edit the value in the `<Port>` tag as required.

To change the allocated memory for the service, edit the `<Params>` tag as required. The default setting is 1 GB.

Note: On a 16 GB system, Infor recommends changing this setting to 10 GB (-m 10g). The additional allocation will allow larger files to be indexed.

```
<Solr>
  <IsActive>1</IsActive>
  <Port>8983</Port>
  <NodesCount>1</NodesCount>
  <ReplicationFactor>1</ReplicationFactor>
  <Collection>0</Collection>
  <Params>-m 1g</Params>
</Solr>
```

Warning The standard installation for Enterprise Search does not include authentication or other security measures against external access. By default, the Solr Admin Center is left open to the public. Administrators are advised to implement their own authentication measures or to disable the management port from external access.

Cluster Service

For the Cluster Service, it is possible to redefine the IP address and the Port number.

To change the IP Address, edit the value in the <IpAddress> tag as required.

To change the Port number, edit the value in the <Port> tag as required.

```
<Service>
  <IsActive>1</IsActive>
  <IpAddress>localhost,127.0.0.1,192.168.1.100</IpAddress>
  <Port>8081</Port>
  <Params>-Xms512m -Xmx512m</Params>
  <ClusterTimeout>1000</ClusterTimeout>
</Service>
```

Zookeeper Service

For the Zookeeper Service, it is possible to redefine the IP address and the Port number.

To change the IP Address, edit the value in the <IpAddress> tag as required.

To change the Port number, edit the value in the <Port> tag as required.

```
<ZooKeeper>
```

```

<IsActive>1</IsActive>
<IpAddress>192.168.1.100</IpAddress>
<Port>2181</Port>
<Params>-Xms1024m -Xmx1024m</Params>
</ZooKeeper>

```

Managing Indexed Items

Managing Indexed Items is done in Infor PLM Accelerate database. Administrators can access the required configurations by going to **Administration --> Enterprise Search --> Indexed Configurations** in the TOC.

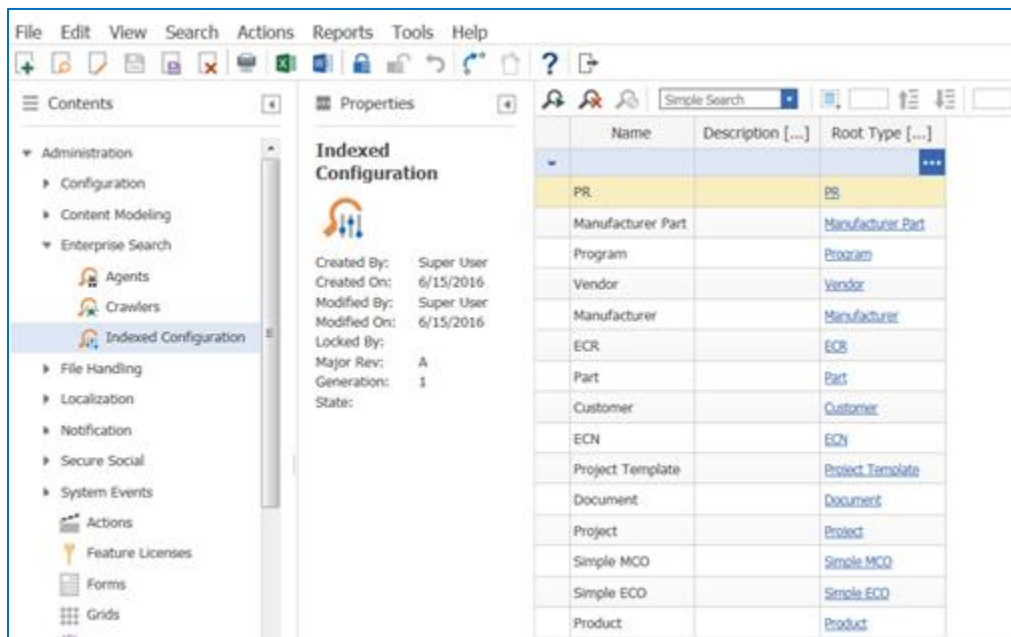


Figure 6.

Indexed Configuration

Indexed Configuration items are used to control the primary items that are going to be indexed. Indexed Configurations are used as containers for a set of indexes based on one root item. The following shows an example of an Indexed Configuration where **Part** is the root item.

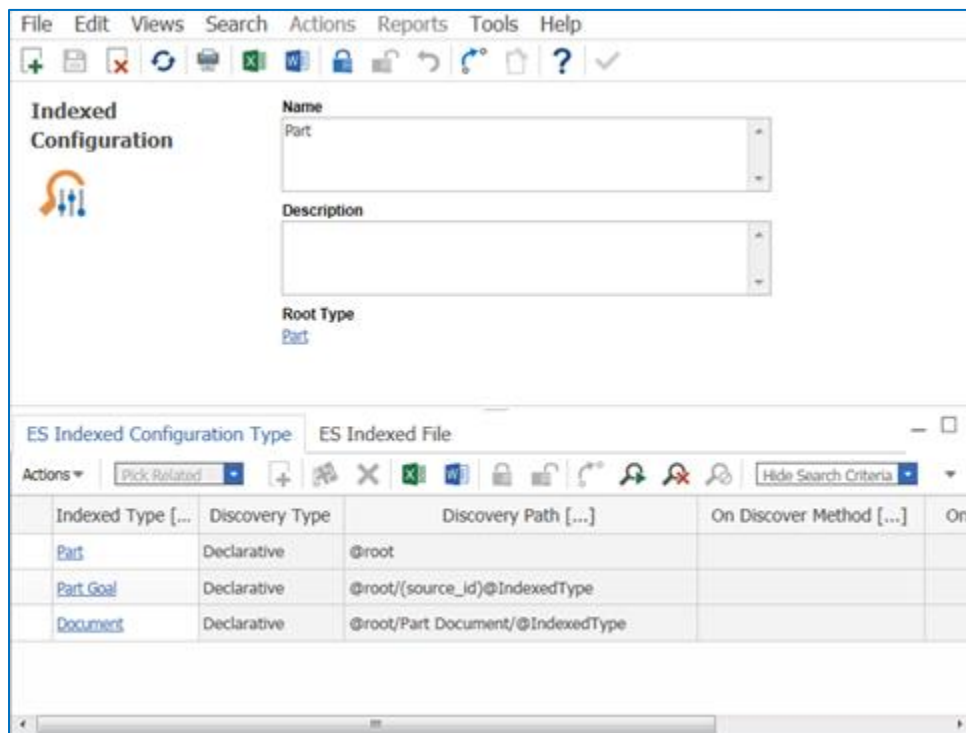


Figure 7.

- **Name:** The name used for identifying the Indexed Configuration item
- **Description:** Used for describing the Indexed Configuration
- **Root Type:** Specified the ItemType used as the starting point for indexing queries.

Indexing after Making a Change to the Configuration

If the Indexed Configuration is changed, the ES administrator can force an update to the index by selecting the “Reindex” Action from the Item window menu.

ES Indexed Configuration Type

ES Indexed Configuration Type items are used to define non-File ItemType that are going to be indexed. These items are grouped together under the collection defined by the Indexed Configuration.

Note: ES Indexed Configuration Types should not be used for **Files**. For Files, use **ES Indexed File** items.

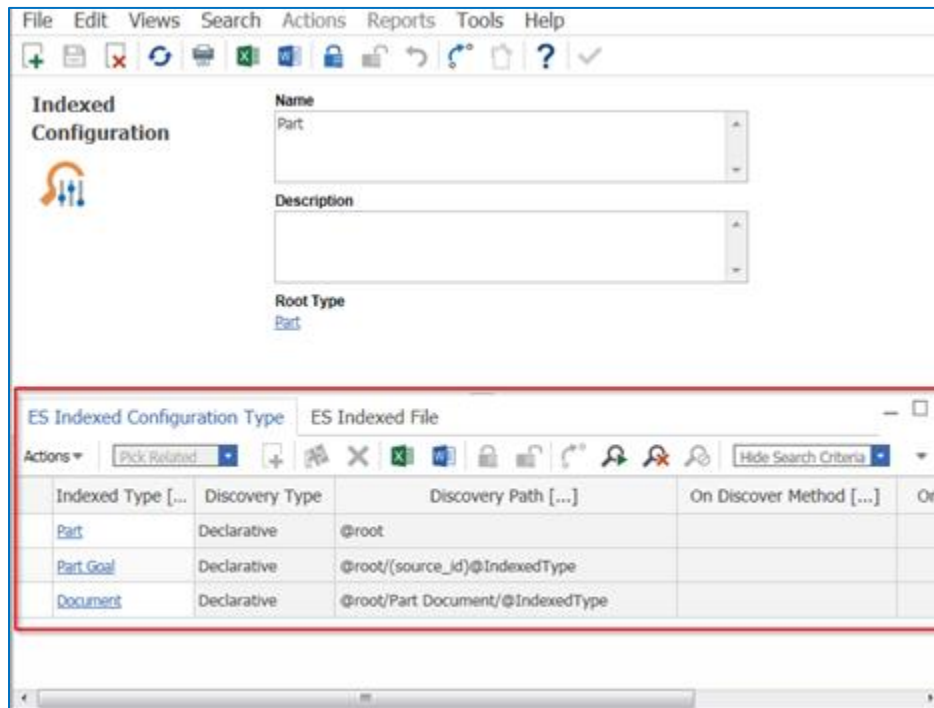


Figure 8.

- **Indexed Type [...]:** The ItemType that is to be indexed.
- **Discovery Type:** This should be set to “Declarative.” No other settings are supported at this time.
- **Discovery Path:** This is the path that links the ItemType specified in the Root to the item specified in the **Indexed Type** property. For more information on defining the Discovery Path, see section 0 below.

Other properties on the **ES Indexed Configuration Type** are not supported at this time.

Specifying Discovery Path

The Discovery path follows the following pattern:

```
{ITEM_TYPE} ({PROPERTY}) / ( {PROPERTY} ) {ITEM_TYPE} ( {PROPERTY} ) /.../ ( {PROPERTY} )
{ITEM_TYPE} /
```

The (PROPERTY) segments specify which property should be used to connect the ItemType to its left or right neighbor. If (PROPERTY) is not specified for a segment, the search logic assumes the following:

- If ItemType is either the first or last one in the string, use `id` property.
- Else, use `source_id` for joining to the item on the left and `related_id` for joining to the item on the right.

There are also two variables allowed for discovery path:

- **@root** refers to the ItemType specified in **Root Type** property of the **Indexed Configuration** item.

Note: **@root** should always be the first element in the **Discovery Path**.

- **@IndexedType** refers to the ItemType specified in **Indexed Type** property of the **ES Indexed Configuration Type** item.

In the following example, this is how the line would be interpreted:

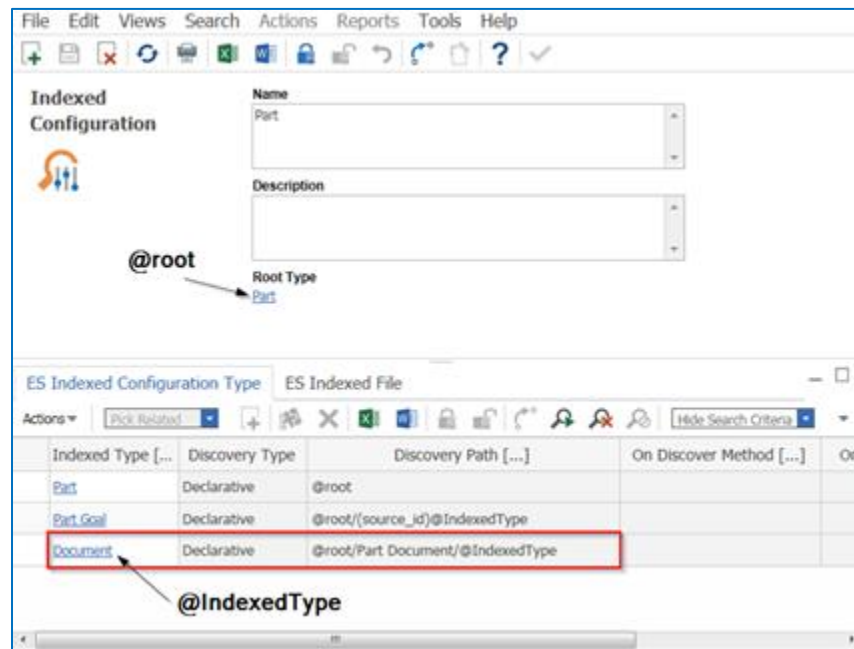


Figure 9.

@root/Part Document/@IndexedType

= Part (id) / (source_id) Part Document (related_id) / (id) Document

```
<Item type="Part" action="get">
  <Relationships>
    <Item type="Part Document" action="get">
      <related_id>
        <Item type="Document" action="get" />
      </related_id>
    </Item>
  </Relationships>
</Item>
```

ES Index Type

ES Index Type items are used to manage properties of the ItemType being queried. The following image shows the available controls for these properties:

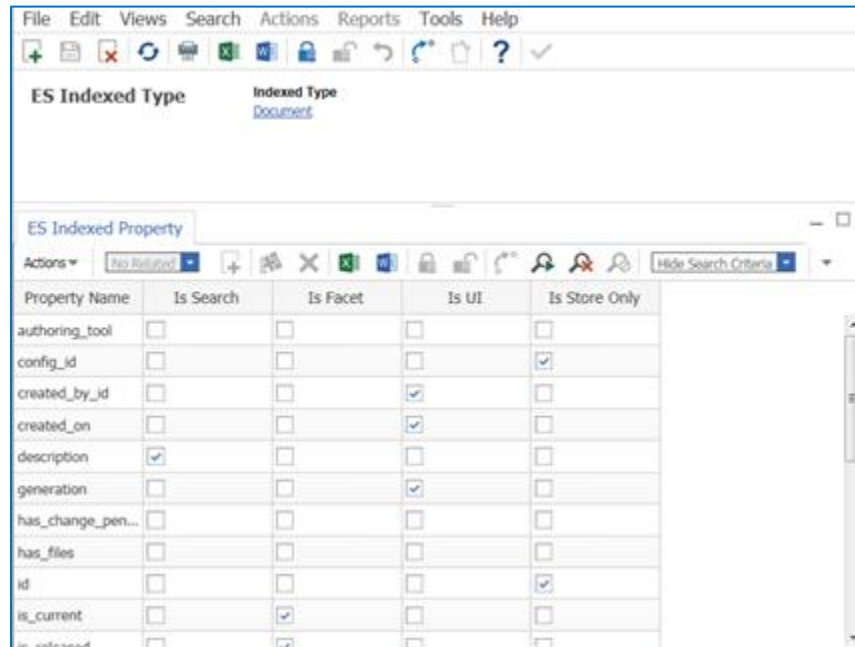


Figure 10.

- **Property Name:** the name of the Property on the ItemType
- **Is Search:** Properties that are searched when user fills in keywords in the search box
- **Is Facet:** Properties that can be filtered on the left panel of the results

Note: Only String properties can be used as Facets

- **Is UI:** Properties that are displayed in the Search Results as additional information
- **Is Store Only:** Properties that are stored in the index for system use but not shown to the end user

Note: The `id` and `config_id` properties must be included in the **Is Store Only** list.

The following is the list of properties that are required for every ItemType. They get added automatically and should remain in the list:

- `config_id`
- `is_current`
- `is_released`
- `keyed_name`

- modified_on
- modified_by_id
- major_rev
- generation
- state

ES Indexed File

ES Indexed File items are used exclusively to define the File ItemTypes that are going to be indexed. They are grouped together under the collection defined by the Indexed Configuration.

ES Indexed File items are configured the same way as **ES Indexed Configuration Type** shown above, except the **Indexed Type** property is automatically assumed as **File**. All **File** properties are also handled automatically with no additional settings required.

The **Extensions** property is used to specify a comma-separated list of file types that get added to the queue. Unless otherwise specified, all files will be added.

Note: Specified **Extensions** must also be defined under **FileTypes**.

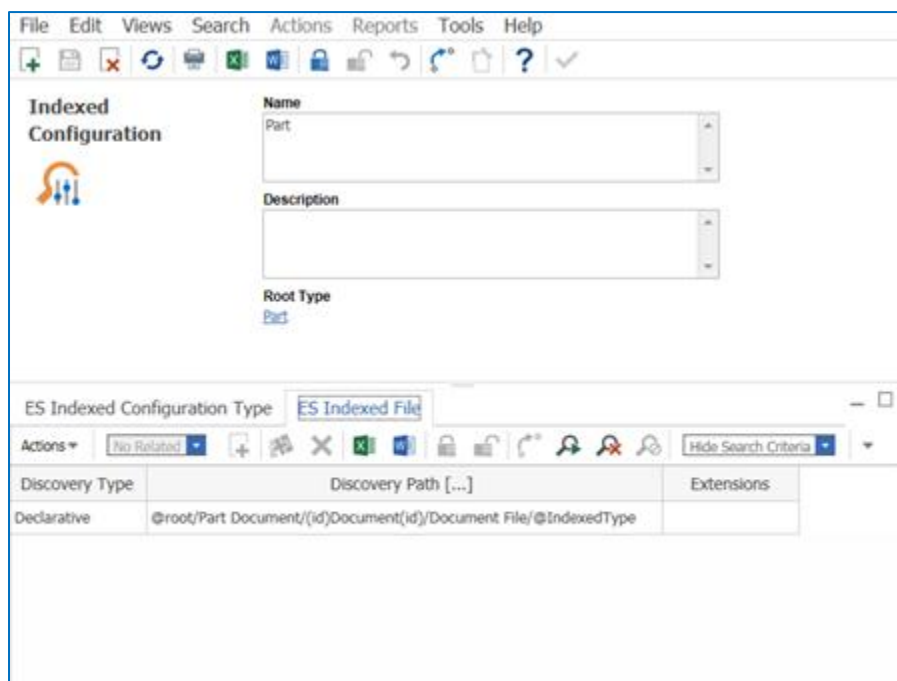


Figure 11.

Chapter 4. Enterprise Search Crawler Setup

Crawlers are required to set up and search through the queue of items to be indexed and format updates for Enterprise Search Agent. The controls for these crawlers can be accessed via Infor database by going to **Administration\Enterprise Search\Crawlers** in the TOC.

ES Crawler Overview

There are 6 types of Crawlers available with Enterprise Search:

- **ESQueueCrawler:** Responsible for creating a queue of items that need to be indexed.

Note: All other Crawlers rely on this queue to perform their functions.

- **ESItemCrawler:** Responsible for pulling information about all ItemTypes (except File) from the queue and formatting updates for the index.
- **ESFileCrawler:** Responsible for pulling File data, including text, from the queue and formatting updates for the index.
- **ESFileCombineCrawler:** Responsible for aggregating different parts of files into a searchable file document.
- **ESSolrCleanerCrawler:** Responsible for purging unlinked items from the queue.
- **ESPermissionCrawler:** Responsible for pulling permissions for each user per indexed item from the queue so that they may be applied when end users run Searches

Configuring ES Crawlers

Crawlers must be configured to meet the business requirements and manage server resources. The following is a list of settings that can be configured:

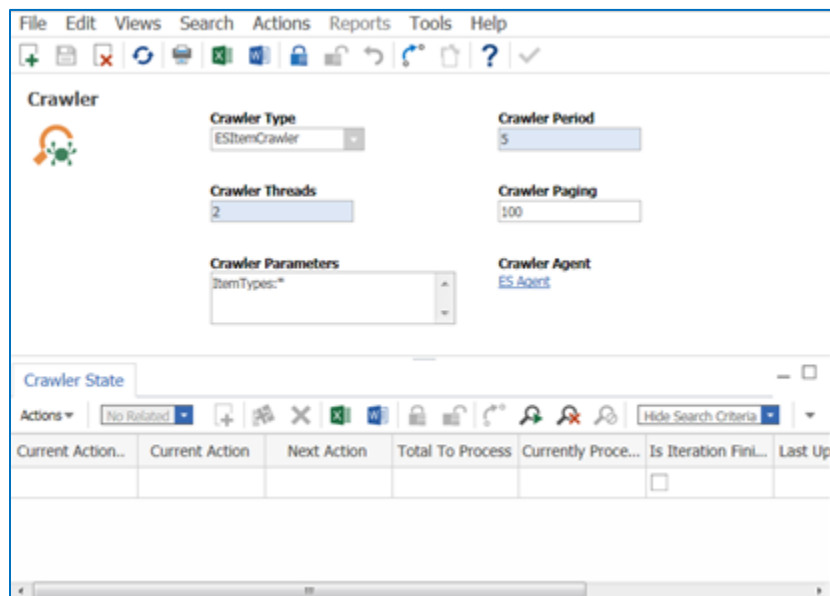


Figure 12.

- **Crawler Type:** Specifies the type of the Crawler from the list described in section 0.
- **Crawler Period:** Specifies the number of minutes between each execution of a crawler
- **Crawler Threads:** Specifies the number of threads dedicated to a given crawler
- **Crawler Paging:** Specified the number for pages dedicated to each crawler
- **Crawler Parameters:** Specifies the arguments passed to the Crawler for logic and filter purposes.

For more information on Crawler Parameters, see Section 0 below.

- **Crawler Agent:** Specifies the Enterprise Search Agent Service associated with Crawler

ES Crawler Guidelines

Crawler settings need to meet the following guidelines:

- There should only be 1 ESQueueCrawler with 1 Thread and 1000 paging.
- Paging for ESItemCrawler and ESFileCrawler should not be higher than 100.
- The number of threads available to Crawlers is limited by the number of processor cores on the server machine.
- ESPermissionsCrawler may need to run less often because it can require a lot of resources and could impact Infor PLM Accelerate performance.

Note: Users will not see indexed items in their search unless both the item and its permissions have been indexed.

Setting Crawler Parameters

Crawler Parameters are used as additional arguments that add filter logic to each crawler to process only the required items. The format of the arguments is the following:

```
key1:value1A,value1B,...;key2:value2A,value2B,...;...;keyN:valueNA,valueNB,...
```

If a key should accept all values, it is possible to use '*' character to indicate *all*. For example, the following sample shows a **Crawler Parameter** that indicates all ItemTypes are acceptable:

```
ItemTypes:*
```

Note: It is possible to set up multiple ESItemCrawlers to handle different ItemTypes differently depending on business requirements.

The following example shows a Crawler Parameter that handles only the specified file types but accepts all vaults:

```
Types:doc,docx,xls,xlsx,xml,rtf,txt,csv,ppt,pptx,log,epub,html,odf;Vaults:*
```

Note: By default, pdf files are *not* included in this list. It is possible to include these files, but the resulting performance may be slower.

Using ES Crawlers

Enterprise Search automatically installs all 6 crawlers, but they are disabled by default. To enable the crawlers:

1. Log into Infor PLM Accelerate as an Administrator.
2. In TOC go to Administration\Enterprise Search\Crawlers and do a search for all.
3. Confirm that each Crawler is associated with the correct ES Agent Service.
4. Select all Crawlers, right-click, and select **Enable**.

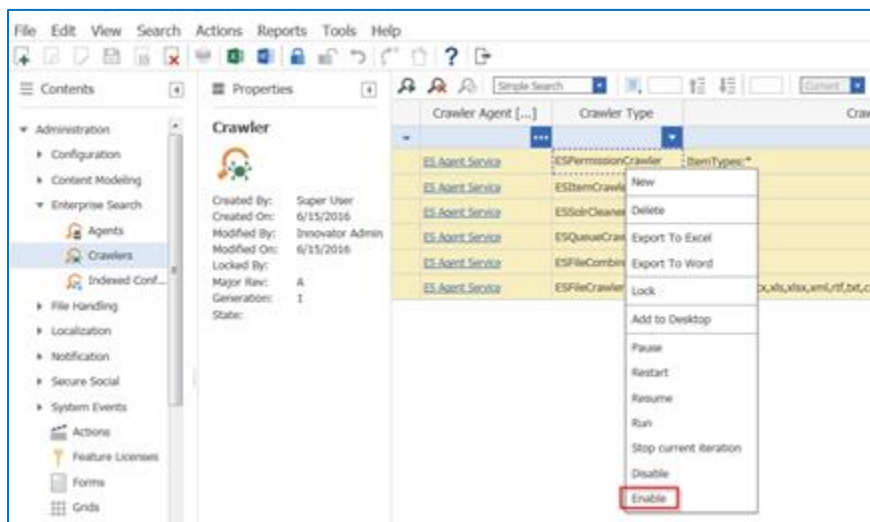


Figure 13.

Crawlers also offer the following Actions for administrative controls:

- **Enable:** Enables the selected Crawlers
- **Disable:** Disables the selected Crawlers
- **Run:** Forces the selected Crawlers to execute now rather than waiting for their designated wait periods
- **Pause:** Pauses the selected Crawlers
- **Resume:** Resumes the selected Crawlers
- **Stop current iteration:** Stops and cancels the current iteration of the selected Crawlers
- **Restart:** Restarts the selected Crawlers from the beginning of the queue

Note: Running any of the action may take up to 30 seconds for it to take effect.

Note: If index parameters change after an item has already been indexed, that item will not be re-indexed again.