IBM Cúram Social Program Management
Version 7.0.2

IBM Cúram Provider Match with Watson Guide

IBM

Note

Before using this information and the product it supports, read the information in "Notices" on page 12

Contents

Chapter 1. IBM Cúram Provider Match with Watson

IBM Cúram Provider Match with Watson™ helps caseworkers to compare service providers and choose the most suitable provider for a client. IBM Cúram Provider Match integrates with the Watson Tradeoff Analytics service to analyze service providers based on selected criteria. Administrators can configure the connection to the Tradeoff Analytics service and the provider selection criteria.

When a client is referred to an organization, a caseworker adds the client to the system and gathers information about the client. The caseworker assesses the client information against a set of business rules to determine the client's needs and to create a plan. For example, the caseworker might create a plan in IBM Cúram Outcome Management that includes the provision of a service to the client. The caseworker can use IBM Cúram Provider Match to compare service providers based on all the necessary information and preconfigured selection criteria. The caseworker can compare and identify tradeoffs between providers based on the most important factors, and then apply filters to narrow down a list of possible providers.

Integration with the Watson Tradeoff Analytics service

IBM Cúram Provider Match integrates with the Watson Tradeoff Analytics service. Tradeoff Analytics helps with the process of making difficult choices from among conflicting alternatives. The service narrows down the results to highlight the number of alternatives that are presented to the caseworker. It analyzes the tradeoffs between the providers and can help guide the caseworker through the decision-making process.

An administrator can configure the service provider selection criteria to enable caseworkers to compare and select providers based on the most important factors in the context of the client and the organization.

Related information
Watson Tradeoff Analytics service

Benefits of IBM Cúram Provider Match with Watson

IBM Cúram Provider Match with Watson has benefits for all users, from caseworkers to planners and administrators.

Caseworkers and planners

- Automate the process of finding the right service provider with evidence-based provider selection assistance.
- Select, filter, and compare similar providers to assess suitability based on the appropriate, predefined criteria.
- Evaluate tradeoffs by using evidence to support decisions.
- Identify the most suitable providers for children, youths, and families based on specific criteria.
- Compare the suitability of matched service providers based on selection criteria.

Administrators
Manage the integration with the Watson Tradeoff Analytics service:

- Define the parameters for connecting to the Tradeoff Analytics service.
- Identify what the necessary tradeoff criteria are for selecting providers.

Selecting a provider

If you must select a service provider, you have the option of using IBM Cúram Provider Match with Watson to help with the selection process. For example, if a caseworker has added a service delivery to a plan in

Outcome Management, the caseworker can access IBM Cúram Provider Match from the plan in Outcome Management.

Before you begin

A service can be delivered for a client either through an outcome plan or through an integrated case. For an outcome plan, add a service delivery to an objective on a client's outcome plan. For an integrated case, create a service delivery from the integrated case.

About this task

The following procedure describes how to use the IBM Cúram Provider Match wizard to guide you through the process of selecting and comparing providers.

Alternatively, an administrator can enable access to the Watson Tradeoff Analytics visualization interface. Click **Visualize Provider Match** to match service providers by viewing a detailed graphical visualization in the user interface that is provided by Tradeoff Analytics. However, note that the Tradeoff Analytics visualization interface has limited accessibility. For more information about the Tradeoff Analytics user interface, see the related link.

Procedure

1. Choose the appropriate option:
   - If you are delivering a service through an outcome plan, open the plan that has a service for which you need to select a provider. If a service is already delivered on the plan, click the name of the service to open the service delivery tab.
   - If you are delivering a service through an integrated case, open the integrated case that has a service for which you need to select a provider. If a service is already delivered on the case, click the service tab and then click the name of the service to open the service delivery tab.
2. Click the **Provider Match with Watson** link.
3. Step through the **Provider Match with Watson** wizard to view and filter recommended providers.

   The wizard displays a list of recommended providers that are returned by the Tradeoff Analytics service based on the selection criteria that your administrator has configured.
4. Compare the recommended providers, and choose a provider.

Related information
Watson Tradeoff Analytics service

Configuring IBM Cúram Provider Match with Watson

To use IBM Cúram Provider Match with Watson, some prerequisites must be met. A system administrator must configure the connection to the Watson Tradeoff Analytics service. A business administrator can configure the provider selection criteria.

Prerequisites for using IBM Cúram Provider Match with Watson

IBM Cúram Provider Match with Watson requires the configuration of a connection to the Tradeoff Analytics Watson service. Also, the IBM Cúram Provider Management application module must be installed. The installation of IBM Cúram Outcome Management for the provisioning of services is optional for IBM Cúram Provider Match with Watson.

IBM Cúram Provider Management
IBM Cúram Provider Management provides a common repository of information, reusable business services, and enhanced accessibility for caseworkers and external providers. IBM Cúram Provider Match uses IBM Cúram Provider Management data to match service providers.

IBM Cúram Outcome Management

IBM Cúram Outcome Management helps caseworkers to assess needs, establish goals, and create plans. If a caseworker needs to select a service provider as part of a client's plan, the caseworker can access IBM Cúram Provider Match through a plan in IBM Cúram Outcome Management. IBM Cúram Outcome Management is an optional prerequisite.

Application server SSL certificates

A system administrator must install an SSL certificate on the application server to connect to IBM Bluemix®.

Cognitive service definition for Tradeoff Analytics

A system administrator must configure the cognitive service definition for connecting to the public Watson Tradeoff Analytics service. To complete the service definition configuration, administrators must enter the user name and a password to access the Watson Tradeoff Analytics service on IBM Bluemix. The data that is provided for this service definition includes a valid URL to the shared Watson Tradeoff Analytics service.

Geocoding configuration for the proximity service provider selection criterion

The application provides three predefined criteria for data that is available from IBM Cúram Provider Management, including a proximity criterion. For IBM Cúram Provider Match to use the proximity criterion effectively for matching service providers, a system administrator must enable geocoding in the application properties.

Related information

Outcome Management
Provider Management

Installing application server SSL certificates

Administrators must install an IBM Bluemix SSL certificate to enable IBM Cúram Provider Match to connect to Watson Tradeoff Analytics.

About this task

Complete the following procedure in the IBM WebSphere® Application Server administrative console.

For information about importing and using a public certificate to enable Oracle WebLogic Server to connect to IBM Bluemix, see the related link.

Procedure

1. Log on to the IBM WebSphere Application Server administrative console.
2. Expand **Security**, and then click **SSL certificate and key management**.
3. Under Configuration Settings, click **Manage endpoint security configurations**.
4. Select the appropriate outbound configuration to access the `(cell):CURAMNODECell:` `(node):CURAMNODE` management scope.
5. Under Related Items, click **Key stores and certificates**, and then click the **NodeDefaultTrustStore** keystore.
6. Under Additional Properties, click **Signer certificates and Retrieve From Port**.
7. Under Host, enter the following details:

   - For **Host name**, enter `gateway.watsonplatform.net`.
   - For **Port**, enter 443.
   - For **Alias**, enter `gateway.watsonplatform.net_cert`.

8. Click **Retrieve Signer Information**.
9. Verify that the certificate information is for a certificate that you can trust.
10. Click **Apply**, and then click **Save**.

Related information

Configuring Identity and Trust for Oracle Weblogic Server

Configuring geocoding

For IBM Cúram Provider Match to use the proximity criterion effectively for matching service providers, a system administrator must enable geocoding in the application properties.

Before you begin

You must log on to IBM Cúram Social Program Management as a system administrative user.

Procedure

1. Click **System Configurations**.
2. In the Shortcuts panel, click **Application Data** > **Property Administration**.
3. Search for the Geo-code Enabled property.
4. To enable geocoding, edit the property value and set it to YES.

   The default value is NO.
5. To publish the property change, click **Publish**.

What to do next

Valid service provider addresses must be recorded in IBM Cúram Provider Management.

Configuring the cognitive service definition

To connect IBM Cúram Provider Match with Watson to the Tradeoff Analytics Watson service, a system administrator must configure the cognitive service definition.

Before you begin

You must log on to IBM Cúram Social Program Management as a system administrative user.

About this task

In a default installation, a service definition is preconfigured for the public Watson Tradeoff Analytics service. To configure the service definition, click **System Configurations**. Then, in the Shortcuts panel click **Cognitive Services** > **Cognitive Service Definitions**. A cognitive service definition includes the following parameters:

Name

A descriptive name for the cognitive service definition, for example, Watson Tradeoff Analytics.

Type

For IBM Cúram Provider Match, select the **Provider Match with Watson** type.

System URL

The system URL for the Tradeoff Analytics Watson service.

User name and password

Enter the user name and the password for the Watson Tradeoff Analytics service on IBM Bluemix.

Cognitive service status

To enable the IBM Cúram Provider Match service to use the cognitive Tradeoff Analytics service, set the status to active.

Procedure

- To edit a cognitive service definition for Tradeoff Analytics, click the **Edit** icon next to the definition.

Enabling Watson Tradeoff Analytics visualization

Users might want to use IBM Cúram Provider Match with Watson to match service providers by viewing a graphical visualization in Watson Tradeoff Analytics. To enable access to the Watson Tradeoff Analytics

visualization user interface, a system administrator must configure the curam.providermatch.enableWatsonVisualization property in system administration. Also, a system administrator must update the web application deployment descriptor web.xml file in a web client custom component before the deployment of the application.

Before you begin

You must log on to IBM Cúram Social Program Management as a system administrative user.

About this task

If a system administrator sets the value of the curam.providermatch.enableWatsonVisualization property to true, the link to search for and compare providers through the Watson Tradeoff Analytics visualization interface is visible in the provider list page of a service delivery. Caseworkers can then choose to search for service providers either by using the IBM Cúram Provider Match wizard, or by using the Watson Tradeoff Analytics visualization interface. Both methods return the same matched providers. However, the Tradeoff Analytics visualization interface provides more information about why particular providers are excluded.

By default, access to the Watson Tradeoff Analytics visualization user interface is disabled.

For information about configuring the web application deployment descriptor web.xml file, see the related link.

Procedure

Configure the curam.providermatch.enableWatsonVisualization property:

1. Click **System Configurations**.
2. In the Shortcuts panel, click **Application Data** > **Property Administration**.
3. Search for the curam.providermatch.enableWatsonVisualization property.
4. To enable access to the Tradeoff Analytics user interface, edit the property value and set it to true.
   The default value is false.
5. To publish the property change, click **Publish**.

Update the web application descriptor file:

6. If a custom version of the web application deployment descriptor web.xml file does not exist, do the following substeps to create a custom version:
   a) Perform a build on the web client to generate the web.xml file for the application.
   b) Locate the web.xml file in the *application_installation_directory*/webclient/ WebContent/WEB-INF directory.
   c) Copy the web.xml file into a custom component in the same location, for example, custom/ WebContent/WEB-INF.
7. Open the web.xml file in a text editor and insert the following entries after the last servlet mapping entry:

```
<!-- Custom Watson -->
  <!-- This servlet is specified in the loadTradeoffAnalytics()
function.                        -->
  <!-- It sets the dilemmaServiceUrl parameter to ../demo as it is for a
Java application. -->
  <!-- When the url /demo/* is loaded, the WatsonTradeoffAnalytics
servlet is called.       -->
    <servlet>
    <servlet-name>ApplicationServlet</servlet-name>
    <servlet-class>curam.servlet.toa.WatsonTradeoffAnalytics</servlet-
class>
    <load-on-startup>1</load-on-startup>
  </servlet>
  <servlet-mapping>
```

```
      <servlet-name>ApplicationServlet</servlet-name>
      <url-pattern>/demo/*</url-pattern>
   </servlet-mapping>
   <!-- This servlet is called from the visualTAIndex.js getProblemData()
function -->
   <!-- that uses a Dojo xhrGet call. -->
   <servlet>
      <servlet-name>WatsonGetServiceProvider</servlet-name>
      <servlet-class>curam.servlet.toa.WatsonGetServiceProvider</servlet-
class>
      <load-on-startup>1</load-on-startup>
   </servlet>
   <servlet-mapping>
      <servlet-name>WatsonGetServiceProvider</servlet-name>
      <url-pattern>/servlet/toa/WatsonGetServiceProvider</url-pattern>
   </servlet-mapping>
   <!-- This servlet is called from the visualTAIndex.js
setProviderService() -->
   <!-- that uses a Dojo xhrGet call. -->
   <servlet>
      <servlet-name>WatsonSetServiceProvider</servlet-name>
      <servlet-class>curam.servlet.toa.WatsonSetServiceProvider</servlet-
class>
      <load-on-startup>1</load-on-startup>
   </servlet>
   <servlet-mapping>
      <servlet-name>WatsonSetServiceProvider</servlet-name>
      <url-pattern>/servlet/toa/WatsonSetServiceProvider</url-pattern>
   </servlet-mapping>
<!-- Custom Watson -->
```

8. Save the web.xml file.
   The updated web.xml file will be used in the next build of the client application.

Related reference
Customizing the Web Application Descriptor
Related information
Watson Tradeoff Analytics service

Configuring provider selection criteria

Caseworkers use selection criteria such as cost, quality of service, and proximity to compare service providers. As an administrator, you can create sets of service selection criteria, and configure existing selection criteria.

Before you begin
You must log on as an administrative user.

About this task

The following three selection criteria are provided in a default installation and are included as generic criteria when you create a new selection criteria set. You can configure the individual attributes of each criterion, and use the default criteria as the basis for creating your own criteria.

Cost
   The rate that is charged by a service provider. The goal of the cost criterion is set to a fixed rate if a fixed rate is specified. If a fixed rate is not specified, the goal of the cost criterion defaults to a maximum rate.

Proximity
   Proximity is determined based on the distance between the service provider and the client's primary address. A system administrator must enable geocoding in application properties. Also, valid service provider addresses must be recorded in IBM Cúram Provider Management.

Quality of service

Quality of service is measured through the number of incidents that are recorded for the service provider in IBM Cúram Provider Management:

- Excellent indicates no reported incidents.
- Above average indicates less than 5 reported incidents.
- Average indicates less than 10 reported incidents.
- Poor indicates 10 or more reported incidents.

Canceled and unsubstantiated incidents are not included in the counts.

⚠️ **CAUTION:** A selection criteria set must contain a minimum of three criteria for provider matching to be completed by Watson Tradeoff Analytics.

Take care if you edit the individual attributes of the default selection criteria that are used by Watson Tradeoff Analytics for the provider matching service.

To access the IBM Cúram Provider Match with Watson administrative options, click **Administration Workspace**. Then, in the Shortcuts panel click **Watson Manager** > **Provider Match with Watson**. A list of existing sets of service provider selection criteria is displayed.

Each service provider selection criterion has the following attributes:

Key

A unique identifier that connects the individual provider information to the selection criteria data that is passed to Tradeoff Analytics.

Full name

A descriptive name for the criterion.

Type

The types that Tradeoff Analytics supports are text, numeric, date, or categorical. Categorical values define a preferred order that is used in a tradeoff. For example, the quality of a service can have one of the following values: excellent, above average, average, and poor.

Goal

The goal of the selection criterion that Tradeoff Analytics uses to choose service providers, for example, minimum cost or maximum rating.

Range

If the criterion type is numeric, the range of valid values within 0 - 99999. If you do not specify a range, the system uses the available data to calculate the range. Do not set the range value for criteria whose type is either categorical or date.

Start date

Specify the start date from when the criterion is applied to provider matching for this selection criteria set.

Mandatory

If set to **Yes**, the criterion must be included in every selection criteria set for provider matching.

Use in Provider Tradeoff

If set to **Yes**, the criterion is used in the Tradeoff Analytics dominance calculations to identify tradeoffs between providers.

Description

A description of the criterion.

Procedure

To create or edit service provider selection criteria, choose one of the following options:

- To create a set of service selection criteria, click **New** and select the service for which you want to create the selection criteria.
  For example, you might want to create a set of selection criteria for selecting a childcare service provider.

Generic cost, quality of service, and proximity criteria are assigned to the set.

- To edit existing selection criteria, expand the list and click the **Edit** icon next to each criterion.
- To add either a new or an existing selection criterion to a service, click the service's list action menu and select the appropriate option.
- To delete a selection criterion from a selection criteria set, expand the list and click the **Delete** icon next to the criterion.

Customizing the default provider selection criteria

Developers can extend the provider selection criteria that IBM Cúram Provider Match with Watson uses for matching service providers.

About this task

Developers can customize the calculations that are used for the cost, proximity, and quality of service provider selection criteria. To modify an existing criteria calculation, you must create a custom hook point class that extends the appropriate default implementation.

Take care if you edit the individual attributes of the default selection criteria that are used by Watson Tradeoff Analytics for the provider matching service.

The following sample shows the signature of the getCriteriaValue method on the curam.providermatch.toa.infrastructure.impl.ProviderMatchCriteriaBuilderInterface interface:

```
package curam.providermatch.toa.infrastructure.impl;

public interface ProviderMatchCriteriaBuilderInterface {
  public String getCriteriaValue(COGNITIVECRITERIANAMEEntry criterionKey,
    ProviderDtls providerDtls, ServiceDelivery serviceDelivery)
      throws AppException, InformationalException;
}
```

The getCriteriaValue function that is specified in curam.providermatch.toa.infrastructure.impl has the following three default implementations:

- CostCriteriaBuilder
- ProximityCriteriaBuilder
- QualityOfServiceCriteriaBuilder

Procedure

1. To customize the getCriteriaValue method, implement the method in a new custom class that extends the relevant default curam.providermatch.toa.infrastructure.impl implementation class.
   For example, a custom cost class might extend the curam.providermatch.toa.infrastructure.impl.CostCriteriaBuilder implementation, as shown in the following example:

   ```
   package custom.providermatch.toa.infrastructure.impl;

   public class CustomCostCriteriaBuilder extends CostCriteriaBuilder {
     public String getCriteriaValue(
       final COGNITIVECRITERIANAMEEntry criterionKey,
       final ProviderDtls providerDtls, final ServiceDelivery
   serviceDelivery)
         throws AppException, InformationalException {
       // Custom implementation code goes here
   ```

```
      }
   }
```

2. To ensure that the application runs the new custom class instead of the default implementation, create a new `custom.providermatch.toa.infrastructure.impl.Module.java` class that extends `com.google.inject.AbstractModule`. The new class must implement the `configure` method, as shown in the following example:

```
package custom.providermatch.toa.infrastructure.impl;

public class Module extends AbstractModule {
   public void configure() {
      bind(CostCriteriaBuilder.class).to(CustomCostCriteriaBuilder.class);
   }
}
```

3. To insert the `custom.providermatch.toa.infrastructure.impl.Module` class name into the `ModuleClassName` column of the `ModuleClassName` database table, choose one of the following options:

   • Add an extra row to the `ModuleClassName.DMX` file.

   • Add an extra row directly into the `ModuleClassName` database table.

Results

When the application is redeployed, the system starts the customized implementation of the `getCriteriaValue` method instead of the default implementation.

Related concepts

Cúram Server Developer

Adding new provider selection criteria

Developers can implement new provider selection criteria for IBM Cúram Provider Match with Watson to use for matching service providers.

About this task

To add a selection criterion, you must create a custom hook point class that implements the `ProviderMatchCriteriaBuilderInterface`. You must also implement and maintain a new wizard for matching service providers.

The following sample shows the signature of the `getCriteriaValue` method on the `curam.providermatch.toa.infrastructure.impl.ProviderMatchCriteriaBuilderInterface` interface:

```
package curam.providermatch.toa.infrastructure.impl;

public interface ProviderMatchCriteriaBuilderInterface {
   public String getCriteriaValue(COGNITIVECRITERIANAMEEntry criterionKey,
      ProviderDtls providerDtls, ServiceDelivery serviceDelivery)
         throws AppException, InformationalException;
}
```

Procedure

1. To create a new criterion, insert a code table record for the new criterion into `CognitiveCriteriaName`, as shown in the following example:

```
<code
      default="false"
      java_identifier="TRANSPORT"
```

```
        status="ENABLED"
        value="NEW001"
      >
        <locale
          language="en"
          sort_order="0"
        >
          <description>Transport</description>
          <annotation/>
        </locale>
      </code>
```

2. Implement the `getCriteriaValue` method in a new custom class that extends the
   `curam.providermatch.toa.infrastructure.impl.ProviderMatchCriteriaBuilderDefa`
   `ultImpl` implementation class.

   Note: If you do not provide a custom implementation, the default implementation of the
   `getCriteriaValue` method returns null. Therefore, the Tradeoff Analytics calculation still occurs if
   you do not provide a custom implementation.

   The following sample shows an example custom implementation of the `getCriteriaValue` method:

   ```
   package custom.providermatch.toa.infrastructure.impl;

   public class TransportCriteriaBuilder extends
     ProviderMatchCriteriaBuilderImpl {
     public String getCriteriaValue(
       final COGNITIVECRITERIANAMEEntry criterionKey,
       final ProviderDtls providerDtls, final ServiceDelivery
   serviceDelivery)
       throws AppException, InformationalException {
       // Custom implementation code goes here
     }
   }
   ```

3. To ensure that the application runs the new custom class instead of the default implementation, create
   a new `custom.providermatch.toa.infrastructure.impl.Module.java` class that extends
   `com.google.inject.AbstractModule`. The new class must implement the `configure` method,
   as shown in the following example:

   ```
   package custom.providermatch.toa.infrastructure.impl;

   public class Module extends AbstractModule {
     public void configure() {
       // create a map binder for default criteria configuration
       final MapBinder<COGNITIVECRITERIANAMEEntry,
   ProviderMatchCriteriaBuilderInterface> relatedTypeBinder =
         MapBinder.newMapBinder(binder(), COGNITIVECRITERIANAMEEntry.class,
           ProviderMatchCriteriaBuilderInterface.class);
       relatedTypeBinder.addBinding(COGNITIVECRITERIANAMEEntry.TRANSPORT).to(
         TransportCriteriaBuilder.class);  }
   }
   ```

4. To insert the `custom.providermatch.toa.infrastructure.impl.Module` class name into the
   `ModuleClassName` column of the `ModuleClassName` database table, choose one of the following
   options:

   - Add an extra row to the `ModuleClassName.DMX` file.
   - Add an extra row directly into the `ModuleClassName` database table.

Results

After the application is redeployed, when a new criteria of the custom type is created in the criteria set, the system starts the new customized implementation of the `getCriteriaValue` method and uses it to build the data for the Tradeoff Analytics calculation.

Related concepts

Cúram Server Developer

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