ArcIMS® 9

Customizing ArcIMS®—ColdFusion® Connector

ArcGIS ESRI

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Contents

Introducing the ColdFusion Connector 1

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ESRI® ArcIMS® software provides a suite of tools allowing you to create effective Web sites for your mapping and geographic information system (GIS) needs. ArcIMS provides the foundation for the graphical and functional components of these Web sites. You can build on this foundation through customization of ArcIMS.

Customizing ArcIMS is a series of programming reference books that describes customizing the HTML and Java™ Viewers and creating viewers supported by the ActiveX®, ColdFusion®, and Java Connectors.

This book explains the foundation for customizing a ColdFusion client and provides a reference to the ArcXML element specification designed to work with ColdFusion.

This book assumes that you have a working knowledge of HTML and building applications in ColdFusion. You should also have experience creating ArcIMS services.

In this chapter, you are introduced to

- Reasons for customizing the ColdFusion Connector
- How different mapping functionality is implemented with ColdFusion
- The ColdFusion samples provided with ArcIMS

What is the ColdFusion Connector?

In general a connector is used to connect the Web server to the ArcIMS Application Server. The ColdFusion Connector allows the ArcIMS Application Server to communicate to the ColdFusion server, which, in turn, communicates to the Web server.

Considerations for choosing the ColdFusion Connector

As a ColdFusion developer, you are already familiar with the power ColdFusion can offer you in working with databases over the Web. The ColdFusion Connector allows you to work with ArcIMS directly through a set of defined ColdFusion elements specific to GIS and mapping. The inclusion of these elements into a design-time control inside of ColdFusion Studio gives you the ability to put GIS mapping and database functionality on your Web sites as easily as you add any other elements.

You may want to consider these points when deciding to customize ArcIMS using ColdFusion:

- All requests are handled on the server side offering three advantages—client-side processing is minimized, browser compatibility is reduced, and your client-side code is not exposed.
- Elements for performing sophisticated database programming tasks are simplified.
- The amount of programming expertise required is less than conventional programming languages.
- A new ArcIMS toolbar is loaded into ColdFusion Studio to handle the new custom elements.
- Only Image and ArcMap™ Image Services are supported because map images are created server-side.
- Multibyte characters can be used for international support.

See *ArcIMS Installation Guide* for information on installing and configuring the ColdFusion Connector.

ColdFusion Connector sample applications setup

Several samples and a template are included with ArcIMS. The samples are simple demonstrations of the basic mapping functionality of the ColdFusion Connector that can be used in ColdFusion. The samples can be incorporated as needed into an existing user application.

The ColdFusion Template is a general purpose viewer that uses the ArcIMS custom ColdFusion elements to implement basic mapping functions. Functions like zoom, pan, identify, query, and geocoding have been incorporated in this template. The ColdFusion Template is a valuable starting point in creating custom applications. For example, you can use it as a simple ArcIMS data browser for Image and ArcMap Image Services, then create a more sophisticated application later.

Installing the samples

Before you can use the sample applications, you must have the ColdFusion Server, ColdFusion Studio, and ArcIMS ColdFusion Connector installed and configured.

To install the samples, click Samples from the ArcIMS components dialog box and choose ColdFusion Applications. This installs the samples to `<ArcIMS Installation Directory>\ArcIMS\Samples\ColdFusion` on Windows and to `<ArcIMS Installation Directory>/ArcIMS/Samples` on UNIX.

See `Readme_samples.html`, which is installed in the same directory as the ColdFusion Samples, for information on setting up the samples.

Using the ColdFusion Template

The ColdFusion Template is a framework for using the ColdFusion Connector. The template shows the foundation of an application built with ColdFusion. Functions like zoom, pan, identify, query, add layers, and change symbols have been incorporated in this template. The ColdFusion Template is a valuable starting point in creating custom applications.

Starting the SanFrancisco Service

The SanFrancisco Image Service used in the template is based on SanFrancisco.axl. It can be found in the `<ArcIMS installation directory>\ArcIMS\Samples\TutorialData\AXL` subdirectory on Windows and in the `<ArcIMS installation directory>/ArcIMS/Samples/TutorialData/AXL` subdirectory on UNIX.

The SanFrancisco.axl file points to data in the default installation location, `C:\Program Files\ArcGIS\ArcIMS\Samples\TutorialData`. If you are a UNIX user or you did not accept the default installation location, you must edit the SanFrancisco.axl file to use UNIX path structures or to look for the sample data in the location you specified. The directory attribute of the <SHAPEWORKSPACE> element must be changed as follows:

Windows:
```
<SHAPEWORKSPACE name="shp_ws-60"
directory="<My Installation Location>\ArcIMS\Samples\TutorialData" />
```

UNIX:
```
<SHAPEWORKSPACE name="shp_ws-60"
directory="<My Installation Location>/ArcIMS/Samples/TutorialData" />
```

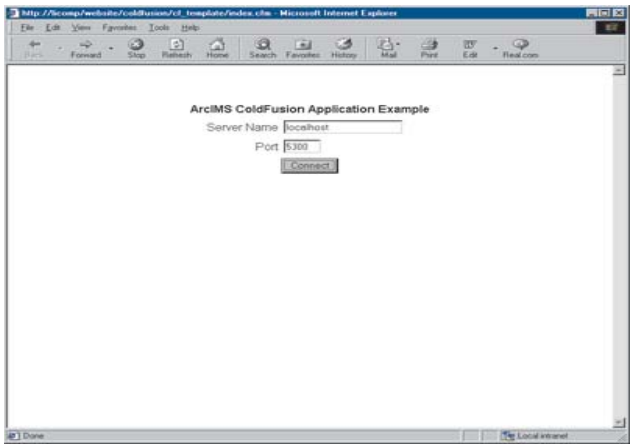
In ArcIMS Administrator, use the SanFrancisco.axl file to create an Image Service named SanFrancisco (case sensitive). See *ArcIMS Help* for instructions on creating ArcIMS Services.

Opening the template

If you copied the \ColdFusion directory to your \ArcIMS\Website directory, in a browser, type http://<local host>/website/ColdFusion/CF_Template/index.cfm.

If you copied the \ColdFusion directory to your Web server root directory, in a browser, type http://<local host>/ColdFusion/CF_Template/index.cfm.

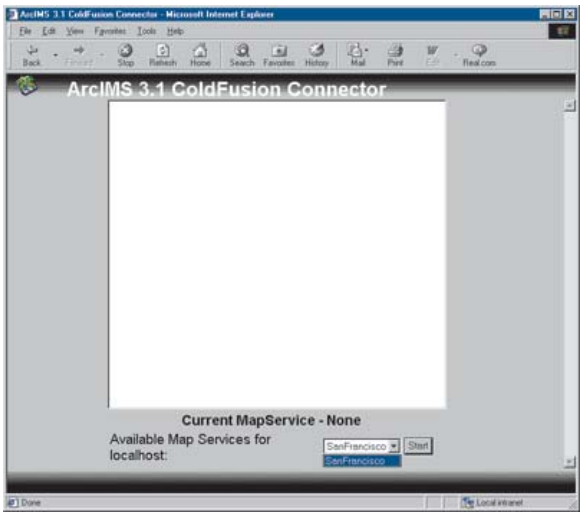
If you crested a virtual directory to the current location of \ColdFusion, in a browser, type http://<local host>/<virtual directory name>/CF_Template/index.cfm.



Type the server name and port number where the ArcIMS Application Server is running, then click Connect.

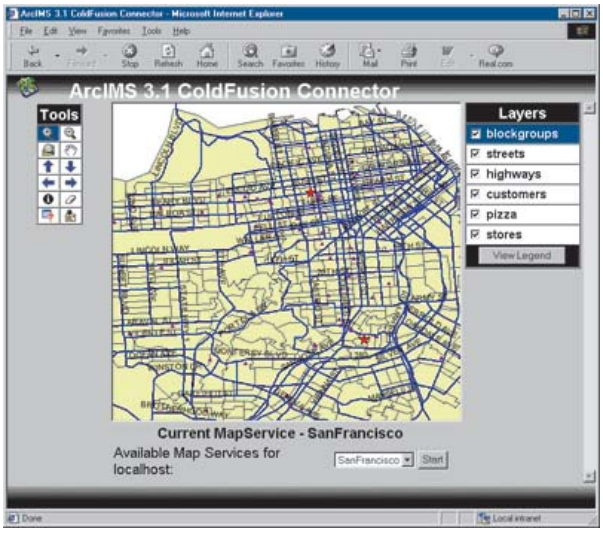
The main page appears with an area for the map and a scrolling list of ArcIMS Services.

Note: If you don't get a list of services on the scrolling list and receive an error about CFX_ESRIMAP, you haven't correctly configured ColdFusion for ArcIMS. Follow the configuration steps outlined in the *ArcIMS Installation Guide*, 'Step 3: Installing ArcIMS custom Application Server Connectors', and try connecting to the sample again.



Choose the SanFrancisco Service and click Start.

A list of layers should appear on the right, a toolbar on the left, and a map image in the middle.

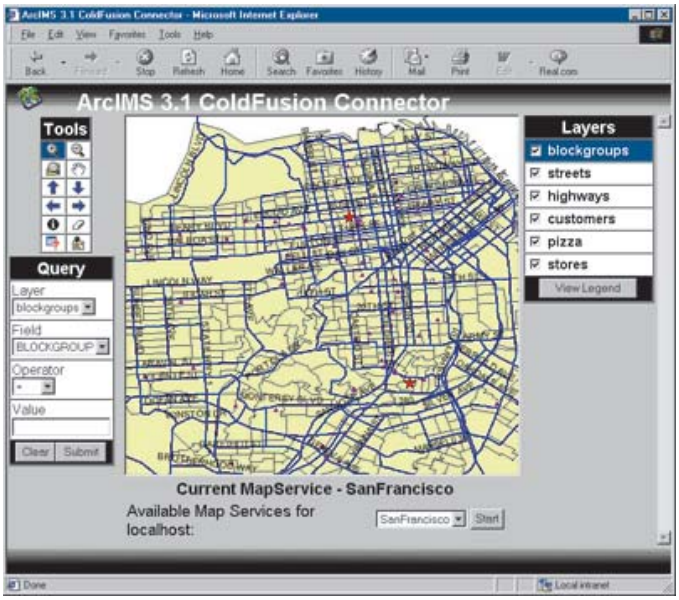


Layer list and toolbar interface

The template shows how to work with the layer list and toolbar functions of the interface.

- Layers can be turned on or off using check boxes in the layer list. The point layers, such as Art Galleries, have scale factors set, so they don't display until you zoom in.
- The View Legend button, located below the Layer list, opens the legend in a new browser window. There is a known issue with point layers not appearing on the legend image.
- Each tool displays its name via a tooltip when you rest the cursor over the tool for a couple of seconds.

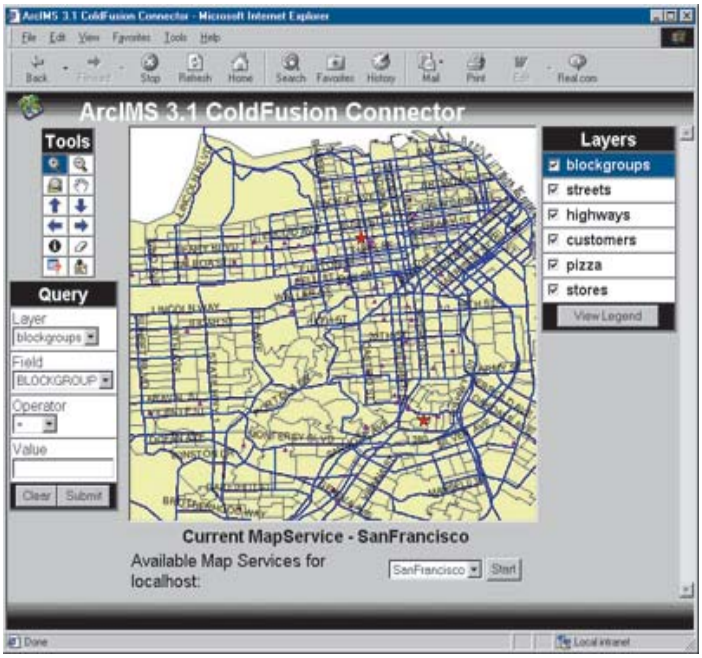
- The ZoomIn tool allows the user to center and zoom in to the map on the point clicked on the map image. This viewer does not support zoom to rectangle.
- The ZoomOut tool works the same way, allowing the user to center and zoom out from the point clicked on the map image.
- The Pan tool allows the user to reposition the map, centered on the point clicked on the map.
- Pan North, Pan South, Pan East, and Pan West buttons pan north, south, east, and west, respectively, over approximately half of the map extent.
- The Identify tool identifies selected features from the active layer. Select a layer in the LayersFrame to make it active, click on the tool, then click a feature on the map image. A new window appears with the attributes of the identified feature.
- The Query Form button opens a new form below the toolbar. This form is used to perform an attribute query on a layer. To make an attribute query, choose a layer, field, and an operator and type in the value you are looking for. For example, choose County and create the query Name = San Francisco. A table of the selected features appears in a new browser window.



- The GeoCode Form tool displays a form to type in your address for geocoding. This tool requires an ArcIMS Service with geocoding properties set up. To create this service, you can either update the SanFrancisco Service or create a new service. Whichever you choose, add in the layer `<ArcIMS Installation Directory>\Samples\TutorialData\streets` and set the geocoding properties to US Street with Zone. To get more information on how to prepare an ArcIMS Service for geocoding, see *ArcIMS Help*.

  Addresses can be geocoded based on a street address or a street intersection. To get the address point location, select the layer from the Layer list, fill the ZIP and Address or Cross Street fields, and click Submit. A list of candidates, their coordinates, and their scores is opened in a new browser window.

ColdFusion Template frames



The ColdFusion Template is composed of a series of files that open in sequence. The starting page, index.cfm, initializes the application, then calls ai_Frameset.cfm, which divides the main page of the template into seven frames—TopFrame, ToolFrame, QueryFrame, MapFrame, ServicesFrame, LayersFrame, and BottomFrame.

TopFrame and BottomFrame

The TopFrame and BottomFrame hold the graphics for the top and bottom of the template. Ai_Top.cfm and ai_Bottom.cfm fill these frames.

ToolFrame

The ToolFrame holds the toolbar for the template. The file ai_Toolbar.cfm fills the ToolFrame.

For many of the tools, when one is clicked it is selected but not executed. Instead, these tools are executed when the Map is clicked or a Submit button is clicked. The JavaScript function switchTool, in ui.js, gets called when a tool is clicked.

QueryFrame

The QueryFrame is positioned below the toolbar. It initially holds ai_Blank.cfm, then is replaced by either the query or geocoding interface found in ai_QueryForm.cfm or ai_GeoCodeForm.cfm, respectively.

MapFrame

The MapFrame holds the map for the template. The purpose of the MapFrame is to hold the map image and the hidden inputs passed from the ToolFrame. The file ai_Map.cfm opens the MapFrame.

ServicesFrame

The ServicesFrame is positioned below the MapFrame and provides the user with a list of ArcIMS Services. The file ai_Services.cfm fills the ServicesFrame.

LayersFrame

The LayersFrame holds the layer list for an ArcIMS Service. The file ai_Layers.cfm fills the LayersFrame. The layer list is dynamically generated when a service is chosen. The LayersFrame controls three types of functionality: controlling layer visibility, setting the active layer, and toggling between the layer list and the legend.

The following files are included in the ColdFusion Template. All files are located in the `<ArcIMS installation directory>\Samples\ColdFusion\ColdFusionTemplate`. See 'Installing the samples' earlier in the chapter if you can't locate the directory. They are briefly introduced here and are discussed in more detail later in this chapter.

- ai_Blank.cfm—displays blank silver background for ai_QueryForm.cfm.
- ai_Bottom.cfm—displays the gray graphic at the bottom of the template.
- ai_Frameset.cfm—creates the frame structure of the page and gathers server access information.
- ai_GeoCode.cfm—processes geocode request from ai_GeoCodeForm.cfm and displays the results in HTML table.
- ai_GeoCodeForm.cfm—contains user interface for building geocode requests and sends form to ai_GeoCode.cfm.
- ai_Globals.cfm—contains the CFApplication declaration; sets attributes for server access.
- ai_Identify.cfm—displays the results of the Identify function.
- ai_Layers.cfm—turns layers on/off and selects the active layer; uses ui.js for toggling layers.
- ai_Legend.cfm—shows the legend image.
- ai_Map.cfm—generates a new map.
- ai_Query.cfm—processes query from ai_Query.cfm and displays the results in HTML table.
- ai_QueryForm.cfm—contains user interface for building queries and sends form to ai_Query.cfm.
- ai_Results.cfm—not used in template application.
- ai_Service.cfm—allows users to select a Service. This is the first screen of the template.
- ai_Toolbar.cfm—defines structure and contains icons for toolbar. Uses ui.js for toggling functionality.
- ai_Top.cfm—displays the gray header graphic and ArcIMS logo at the top of the template.
- index.cfm—starts the template application.
- ui.js—JavaScript file containing a function to handle the dynamic toolbar.

Functionality of the ColdFusion Template

In this section you are introduced to the ColdFusion techniques used to implement the functionality of the ColdFusion Template presented earlier in the chapter. Each section builds on the previous to construct the template application.

Setting server access

The ColdFusion Template provides a file named ai_Globals.cfm. The purpose of this file is to set global variables for the session that defines server access. For example, ai_Globals.cfm sets the ServerName and ServerPort that describe access to the server. These attributes are the basis for having a successful connection to the server.

```
<!—-
   ai_Globals.cfm
   CFApplication declaration; sets default attributes for server access; sets
global attributes
—>
<cfapplication name="CF ARCIMS Sample" sessionManagement="yes">
<cfparam name="Session.ServerName" default="localhost">
<cfparam name="Session.ServerPort" default="5300">
<cfif NOT isDefined("Session.Connected")>
    <!— Session expired or never existed, throw user back to index.cfm —>
   <cflocation url="index.cfm">
</cfif>
```

Opening page and frames

The starting page, index.cfm, contains a simple form to get the host name and port and calls ai_frameset.cfm. Ai_Frameset.cfm reads the server information from ai_Globals.cfm and divides the main page of the template into seven frames—TopFrame, ToolFrame, QueryFrame, MapFrame, ServicesFrame, LayersFrame, and BottomFrame. The MapFrame is in the middle, the ToolFrame is on the left, the legend is on the right, and the ServicesFrame is on the bottom. When the page first opens, only the bottom frame, ServicesFrame, contains content.

Getting the Services

The source file for ServicesFrame is ai_Service.cfm. This file contains the CF_ARCIMS GetMapServices action, comprising the <CF_ARCIMS> element and action ‘GetMapServices’, and creates a form with a drop-down list of Services returned in the response.

```
<CF_ArcIMS Action="GetMapServices"
   ServerName="#Session.ServerName#"
   ServerPort="#Session.ServerPort#">
<!— If nothing is returned, then give user error message. —>
<cfif not isDefined("Out_ServicesTable")>
   <cflocation url="index.cfm?error=#Out_Error#&ServerName=#Session.ServerName#&
   ServerPort=#Session.ServerPort#">
</cfif>
```

Notice that the technique used above checks if any ArcIMS Services are returned. If the host has no services, Out_ServicesTable is not created. The programmer, therefore, must check for the existence of the table before trying to use any values in it.

Here is the code in ai_Service.cfm that creates the form containing the drop-down list of ArcIMS Services:

```
<form id=SelectService method="post" action="ai_Frameset.cfm" target="_top">
<input type=hidden name="ServerName" value=#Session.ServerName#>
<input type=hidden name="ServerPort" value=#Session.ServerPort#>
<tr>
<td>
  <font face="arial" size=3>
    Available ArcIMS Services for #Session.ServerName#:
  </font>
</td>
<td>
  <!— Build available service selection list from the info returned by
getmapservices action —>
  <select name="ServiceName">
  <cfloop Query="OUT_ServicesTable">
    <cfloop index="curName" list="#Out_ServicesTable.Name#">
      <option value=#curName# <cfif #curName# eq #Session.ServiceName#>SELECTED
      </cfif>>#curName#
    </cfloop>
  </cfloop>
  </select>
</td>
<td>
  <input type=submit value="Start">
</td>
</tr></table></form>
```

The <cfloop Query> loop goes through the Out_ServicesTable to create <option> elements for the <select> field. Notice that the <cfif> element is used to check if there is already a Service selected in the Session.ServiceName variable and selects it by default.

Selecting a Service from the list

After a Service is selected, ai_Frameset.cfm gets reloaded. The section of code below contains the CF_ARCIMS GetServiceInfo request. All of the layer and field information is stored in the Session.LayerInfo structure. Notice how structure is used to store the entire ColdFusion query.

```
<CF_ArcIMS Action="GetServiceInfo" ServerName="#Form.ServerName#"
ServerPort="#Form.ServerPort#" ServiceName="#Form.ServiceName#">
<cfif isDefined("OUT_LayerTable")>
  <!— Store server info in Session variables —>
  <cfset Session.ServerName = Form.ServerName>
  <cfset Session.ServerPort = Form.ServerPort>
  <cfset Session.ServiceName = Form.ServiceName>
  <cfset Session.Initialize = "true">
```

```
  <!— Store layer information in a Session Struct variable —>
  <cfset Session.LayerInfo = StructNew()>
  <cfset temp = StructInsert(Session.LayerInfo, "LayerTable", OUT_LayerTable)>
  <cfset temp = StructInsert(Session.LayerInfo, "ActiveLayerID", OUT_LayerTable.ID)>
  <cfset temp = structInsert(session.LayerInfo, "ActiveLayerName", OUT_LayerTable.Name)>

  <!— Set up list of layer names that have field tables —>
  <cfset LayerFieldList = "">
  <cfloop query="Out_LayerTable">
    <cfif Featuretype neq "Image">
      <cfset LayerFieldList = Listappend(LayerFieldList, Name)>
    </cfif>
    </cfloop>

  <!— Loop through Layers and set field query objects to LayerInfo struct —>
  <cfloop index="curLayer" list="#LayerFieldList#">
      <cfset temp = StructInsert(Session.LayerInfo,"#curLayer#_FIELDTABLE",
      Evaluate("OUT_#curLayer#_FIELDTABLE"))>
  </cfloop>
  <!— Store extent information in a Session Struct variable —>
  <cfset temp = StructInsert(Session.LayerInfo,"MaxX",OUT_MapEnvelopeTable.MaxX)>
  <cfset temp = StructInsert(Session.LayerInfo,"MaxY",OUT_MapEnvelopeTable.MaxY)>
  <cfset temp = StructInsert(Session.LayerInfo,"MinX",OUT_MapEnvelopeTable.MinX)>
  <cfset temp = StructInsert(Session.LayerInfo,"MinY",OUT_MapEnvelopeTable.MinY)>
  <cfset temp = StructInsert(Session.LayerInfo,"MMaxX",OUT_MapEnvelopeTable.MaxX)>
  <cfset temp = StructInsert(Session.LayerInfo,"MMaxY",OUT_MapEnvelopeTable.MaxY)>
  <cfset temp = StructInsert(Session.LayerInfo,"MMinX",OUT_MapEnvelopeTable.MinX)>
  <cfset temp = StructInsert(Session.LayerInfo,"MMinY",OUT_MapEnvelopeTable.MinY)>

  <!— Store default image dimensions —>
  <cfset temp = StructInsert(Session.LayerInfo, "ImageWidth", "400")>
  <cfset temp = StructInsert(Session.LayerInfo, "ImageHeight", "300")>
  <cfelse>
    <!— We can't connect to the server, reload index.cfm with an error message —>
    <cflocation url="index.cfm?error=#OUT_Error#&ServerName=#Form.ServerName#&
    ServerPort=#Form.ServerPort#">
</cfif>
```

Creating the layer list and legend

Ai_Frameset.cfm calls ai_Layers.cfm. This section of code from ai_Layers.cfm uses the Out_LayerTable stored in the Session.LayerInfo structure to create a list of layers.

```
<form name="LayerForm" action="ai_Map.cfm" target="MapFrame" method="post">
<input type="hidden" name="layers" value="">
```

```
<table style="cursor:hand;" border="1" cellspacing="0" cellpadding="2" align="CENTER"
valign="MIDDLE" bgcolor="white" bordercolor="Gray" bordercolorlight="Silver"
bordercolordark="Black" width="95%">
<tr bgcolor="000000">
   <td align="center" title="Layer Control Form"><b><font face="Arial" size=3
   color="ffffff">Layers</font></b></td>
</tr>
<!— Loop through the layers, to build layer menu —>
<cfoutput query="Session.LayerInfo.LayerTable">
<tr>
   <td id="#name#" onMouseDown="switchTool(this, 'yes');
      parent.MapFrame.MapForm.ActiveLayerID.value ='#id#';
      parent.MapFrame.MapForm.ActiveLayerName.value = '#Name#'">
      <input type="checkbox" name="layers" value="#name#" onClick="LayerForm.submit();"
      <cfif visible eq "true">checked</cfif>>
      <b><font face="Arial" size=2>
      #replacelist(name, "_ESRIDOT_,_ESRIDASH_", ".,-")# </font></b>
   </td>
</tr>
</cfoutput>
<tr bgcolor="000000">
   <td align="center"><input type="button" value="View Legend" onClick="NewWin()";
   </td>
</tr>
</table>
```

The check box on the onClick event handler is associated with LayerForm.Submit. This ensures the map is refreshed every time the user turns a layer on or off. Also, ‘ _ESRIDOT_’ and ‘_ESRIDASH_’ are used to replace dots and dashes to re-create original layer names. Dots and dashes are not allowed in ColdFusion variable names but are legal in ArcIMS layer names.

The View Legend button has an associated JavaScript™ function, named NewWin, that loads ai_Legend.cfm into a new browser window.

The form action reloads ai_Map.cfm to the map frame.

Using the map interaction tools—zoom, pan, and identify

Almost every map application requires some kind of user interaction with the map. In the ColdFusion Template, most of the tool interaction is handled in ai_Map.cfm. It is reloaded from itself each time the user clicks on the map to zoom, pan, or identify.

Although the user clicks the toolbar to choose the function to perform, ai_Toolbar.cfm only contains the interface elements and defines the onMouseDown event. The onMouseDown event calls the JavaScript function named switchTool from ui.js.

The following code is excerpted from ai_Map.cfm. Each time a tool is used on the map, this code gathers information about the click location and layers, then creates a new image. The action on the form is a ColdFusion system variable that points to the current *.cfm file.

The OUT_ImageURL variable is used in the <input> element. The <input> type image is used for the map instead of the <img> element, because it is the easiest way to capture click coordinates. Click coordinates are captured in the image coordinate system and are calculated into a map coordinate system.

```
<!— Setup form to use when user clicks on map —>
<form name="MapForm" action="#cgi.script_name#" method="post">
<input type="hidden" name="ImageWidth" value="#Session.LayerInfo.ImageWidth#">
<input type="hidden" name="ImageHeight" value="#Session.LayerInfo.ImageHeight#">
<input type="hidden" name="MinX" value="#OUT_MinX#">
<input type="hidden" name="MinY" value="#OUT_MinY#">
<input type="hidden" name="MaxX" value="#OUT_MaxX#">
<input type="hidden" name="MaxY" value="#OUT_MaxY#">
<input type="hidden" name="ActiveLayerID" value="#Session.LayerInfo.ActiveLayerID#">
<input type="hidden" name="ActiveLayerName" value="#Session.LayerInfo.ActiveLayerName#">
<input type="hidden" name="SelectionLayer" value="#Session.SelectionLayer#">
<input type="hidden" name="SelectionField" value="#Session.SelectionField#">
<input type="hidden" name="SelectionFieldValuesList"
  value="#Session.SelectionFieldValuesList#">
<input type="hidden" name="Tool" value="#Session.Tool#">
<cfif isDefined("Form.FieldNames") or (CGI.HTTP_USER_AGENT does not contain "MSIE")>
  <div align="center">
  <input name="Map" type="image" src="#OUT_ImageURL#"
  width="#Session.LayerInfo.ImageWidth#" height="#Session.LayerInfo.ImageHeight#"
  border=0>
  </div>
</form>
```

How the ZoomIn, ZoomOut, and Pan tools work

The following code is excerpted from ai_Map.cfm. The Map.X and Map.Y variables are defined with the x,y coordinates of the click. In this case, a new map extent is calculated. There is also a section of code in the file for directional pan and zoom to full extent.

```
<!— Calculate the x y from image width —>
<cfif isDefined("Map.X")>
  <cfset CurWidth = MaxX - MinX>
  <cfset CurHeight = MaxY - MinY>
  <cfset X = MinX + CurWidth * (Map.X / ImageWidth)>
  <cfset Y = MaxY - CurHeight * (Map.Y / ImageHeight)>
  <cfswitch expression="#Session.Tool#">
    <!— If user clicked on map with zoom or pan tools, calculate new LRTB —>
    <cfcase value="ZoomIn,ZoomOut,Pan">
      <cfset ZoomFac = IIF(ListFindNoCase(Session.Tool, "ZoomIn"), ZoomFactor,
      "1/#ZoomFactor#")>
      <cfset ZoomFac = IIF(ListFindNoCase(Session.Tool, "Pan"), 1, ZoomFac)>
      <cfset NewWidth = CurWidth / ZoomFac>
      <cfset NewHeight = CurHeight / ZoomFac>
      <cfset Session.LayerInfo.MaxX = X + (NewWidth / 2)>
      <cfset Session.LayerInfo.MaxY = Y + (NewHeight / 2)>
```

```
      <cfset Session.LayerInfo.MinX = X - (NewWidth / 2)>
      <cfset Session.LayerInfo.MinY = Y - (NewHeight / 2)>
    </cfcase>
```

Since the ArcIMS ColdFusion Connector does maintain state, it is necessary to keep map extent information in session variables and recalculate it for every zoom or pan. Also, there are no Zoom In or Zoom Out functions provided by the connectors; therefore, the application must calculate a new map extent and give it to every GenerateMap request.

A GenerateMap request follows.

```
<CF_ArcIMS action="GenerateMap"
   ServerName="#Session.ServerName#"
   ServerPort="#Session.ServerPort#"
   ServiceName="#Session.ServiceName#"
   Envelope="#Session.LayerInfo.minx#,#Session.LayerInfo.miny#,
   #Session.LayerInfo.maxx#,#Session.LayerInfo.maxy#"
   Imagesize="#Session.LayerInfo.ImageWidth#,#Session.LayerInfo.ImageHeight#"
   TransparencyColor="255,255,0"
   LayerListOrder="false"
   SelectionLayer="#session.SelectionLayer#"
   SelectionField="#session.SelectionField#"
   SelectionFieldValuesList="#session.SelectionFieldValuesList#"
   SelectionFillColor="255,255,0"
   SelectionBoundaryColor="0,0,0">
   <!— Pass layer values to sub tag for processing —>
   <cfloop query="Session.LayerInfo.LayerTable">
      <CF_ArcIMS_Layer layerID="#id#" visible="#visible#">
   </cfloop>
</CF_ArcIMS>
```

Most of the map parameters are stored in session variables. This is typical for an ArcIMS ColdFusion application. Layer visibility is set by looping through the LayerTables stored in the Session.LayerInfo structure and using the CF_ARCIMS_LAYER element to get the visibility.

How the Identify tool works

The Identify tool works in a similar way. All that is required are the x,y coordinates of the user's click on the map. Ai_Map.cfm launches ai_Identify.cfm, and the coordinates are contained in the variables PosX and PosY.

Below is the code excerpted from ai_Map.cfm that displays the results of the Identify.

```
<script>
   QueryWin = window.open("ai_Identify.cfm?x=#Map.X#&y=#Map.Y#&
   layer=#activelayerID#&LayerName=#Activelayername#",
   "QueryResults","toolbar=no,location=no,directories=no,status=no,resizable=yes,
   scrollbars=yes,width=400,height=300");
</script>
```

The following code is from ai_Identify.cfm.

```
<!— Identify action —>
<CF_ArcIMS action="Identify"
   ServerName="#Session.ServerName#"
   ServerPort="#Session.ServerPort#"
```

```
   ServiceName="#Session.ServiceName#"
   LayerID="#Layer#"
   PosX="#X#"
   PosY="#Y#"
   Envelope="#Session.LayerInfo.minx#,#Session.LayerInfo.miny#,
   #Session.LayerInfo.maxx#,#Session.LayerInfo.maxy#"
   Imagesize="#Session.LayerInfo.ImageWidth#,#Session.LayerInfo.ImageHeight#"
   Tolerance=1>
```

#X# and #Y# are the same as #Map.X# and #Map.Y#. The Identify request creates the map envelope and performs the image coordinate to map coordinate transformation.

The following code from ai_Identify.cfm creates the output table columns, minus the shape, ID, and x,y fields.

```
<cfif isdefined("OUT_QueryTable")>
<table bgcolor="000000" cellpadding=3 cellspacing=1 border=1>
<tr>
   <!— Loop through the output table to grab column names —>
   <cfloop index="curCol" list="#Out_QueryTable.ColumnList#">
      <!— Grab the ID field to use as the selection highlight field —>
      <cfif curCol eq "POUND_ID_POUND">
        <cfset FieldName="ID">
      </cfif>
      <!— Do not display the ID or Shape fields in the results —>
      <cfif (not curCol eq "pound_shape_pound") and (not curCol eq "pound_id_pound") and
      (not curCol eq "minx") and (not curCol eq "miny") and (not curCol eq "maxx") and (not
      curCol eq "maxy")>
      <cfoutput>
      <td>
        <font face="Arial" size="2" color="ffffff"><b>#curCol#</b></font>
      </td>
      </cfoutput>
      </cfif>
   </cfloop>
</tr>
```

Using the Query tool

Ai_QueryForm.cfm creates the query form for the user input. It is positioned below the toolbar and uses Session.Layerinfo structure to get the names of the fields. After the user submits the query, ai_Query.cfm is loaded into a new browser window with the results. The CF_ArcIMS query request is executed with the parameters from the form, and the results are formatted to a table. The following is excerpted from ai_Query.cfm.

```
<!— Sql Query Action —>
<CF_ArcIMS action="Query"
   ServerName="#Session.ServerName#"
   ServerPort="#Session.ServerPort#"
   ServiceName="#Session.ServiceName#"
   ReturnEnvelope="false"
```

```
   LayerID="#Form.LayerID#"
   Where="#Form.QueryField# #Form.WhereClause# #SQLClause#">

<body bgcolor="silver" text="000000">
<font face="arial" size=2>
<cfoutput>
   <u>QUERY RESULTS</u>: <b>#Ucase(replacelist(layername, "_ESRIDOT_,_ESRIDASH_", ".,-"))# -
   WHERE #form.QueryField# #form.WhereClause# #form.SQLClause#</b><br>

   <!— Determine if any results were returned —>
   <cfif not isdefined("OUT_QueryTable")>
      <br>
      <div align="center">No features found.</div>
   <cfelse>
      Records: <b>#OUT_QueryTable.RecordCount#</b><br>
   </cfif>
</cfoutput>
```

As shown above, it is good practice to check the existence of the OUT_QueryTable with <cfif> and report the number of selected records in the results window.

The code continues to define the output table columns and values. Some field name checking is done, and results are printed to the HTML table. Field name checking is done to elimate fields of no interest to the user. In this case fields containing the internal ID, Shape field (as integer), and AXL_GEOMETRY field are not displayed in the table. The code for defining the columns of the output table follows.

```
<!— If a result is returned, then build a table to display results —>
<cfif isdefined("OUT_QueryTable")>
<table bgcolor="000000" cellpadding=3 cellspacing=1 border=1>
<tr>
   <!— Loop through results to grab column names —>
   <cfloop index="curCol" list="#Out_QueryTable.ColumnList#">
      <!— Set the selection field highlight to the ID field —>
      <cfif curCol eq "POUND_ID_POUND">
        <cfset FieldName = "ID">
      </cfif>
      <!— Do not display the shape or id fields —>
      <cfif (not curCol eq "pound_shape_pound") and (not curCol eq "pound_id_pound")>
      <cfoutput>
      <th>
        <font face="Arial" size="2" color="ffffff"><b>#curCol#</b></font>
      </th>
      </cfoutput>
      </cfif>
   </cfloop>
</tr>
```

Using the Geocoding tool

When you choose the Geocoding tool, ai_GeoCodeForm.cfm loads and creates the geocoding form for the user input. The Geocode tool requires that your Service has a layer with defined geocoding properties and the user input form only supports US Street or US Street with Zone geocoding styles. If you are not sure which geocoding style is associated with a layer, check the Out_GeoCodeStyles table or look at the map configuration file. See 'Using the ColdFusion Template' earlier in the chapter for more information on setting up your Service to work with the Geocode tool.

Ai_GeocodeForm.cfm makes a CF_ArcIMS GetServiceInfo request to establish session information. The Out_GeoCodeStyles table contains names of the layers that can be used for the geocoding. If no layers in the selected Service can be used for geocoding, an Out_GeoCodeStyles table is not created.

The following code is taken from ai_GeoCodeForm.cfm.

```
<!— Send GetServiceInfo request to find geocode defined layers —>
<cf_ArcIMS Action="Getserviceinfo"
   Servicename="#session.ServiceName#"
   ServerName="#Session.ServerName#"
   ServerPort="#Session.ServerPort#">

<body bgcolor="silver">

<!— Do not show geocode panel, if no service has been choosen —>
<cfif "#Session.ServiceName#" neq "None">

<!— Form used to get user input to send to server —>
<form action="ai_GeoCode.cfm" method="post" target="GeoCodeResults" onSubmit="NewWin();">
<table  border="1" cellspacing="0" cellpadding="2" bgcolor="white" bordercolor="Gray"
bordercolorlight="Silver" bordercolordark="Black">
   <tr bgcolor="000000">
      <td align=center title="Dynamic GeoCode Form"><b><font face="Arial" size=3
      color="ffffff">GeoCode</font></b></td>
   </tr>
<!— Check to see if geocodestyles was returned —>
<cfif parameterexists(out_geocodestyles)>
<cfif not isdefined("Layer")>
   <cfset Layer = "#out_geocodestyles.layername#">
</cfif>
   <tr>
      <td>
      <!— Select list for layer to geocode on. When user changes selection, script updates
      value in "fields" select list —>
      <font face="Arial" size=2>Layer</font><br><select name="LayerID" onchange="location =
      'ai_GeoCodeForm.cfm?Layer=' + LayerID.options[LayerID.selectedIndex].id">
      <cfoutput>
        <!— Loop through geocodestyles query object to build layer choices —>
        <cfloop query="Out_GeoCodeStyles">
               <cfloop query="Out_LayerTable">
                     <cfif #Out_GeoCodeStyles.LayerName# eq #Out_LayerTable.Name#>
```

```
                        <cfset LayerID = #Out_LayerTable.ID#>
                    </cfif>
                </cfloop>
                <option  value="#LayerID#" id="#LayerName#" <cfif #LayerName# eq
                #Layer#>SELECTED</cfif>>#LayerName#
            </cfloop>
        </cfoutput>
        </select>
    </td>
```

Most of the other procedures require the LayerID, contained in Out_LayerTable, but Out_GeoCodeStyles returns the layer name. The code loops through Out_LayerTable and the Out_GeocodeStyles table, compares every layer name, and returns the LayerID.

When the geocoding form is submitted, ai_GeoCode.cfm gets loaded into a new browser window. It sends the geocode request, checks the existence of OUT_GeocodeResults, and builds and presents the result. See the section of code below.

```
<!— Geocode action —>
<CF_ArcIMS action="GeoCode"
   ServerName="#Session.ServerName#"
   ServerPort="#Session.ServerPort#"
   ServiceName="#Session.ServiceName#"
   LayerID="#form.LayerID#"
   Street="#Street#"
   CrossStreet="#CrossStreet#"
   Zone="#form.Zip#"
   PinPoint="true">


<body bgcolor="silver" text="000000">
<font face="arial" size=2>
<cfoutput>
<u>GEOCODE RESULTS</u>: <b>#Ucase(form.LayerName)# - #Street# <cfif CrossStreet eq
"">#Zip#<cfelse>and #CrossStreet# #Zip#</cfif></b><br>


<!— Check if any results where returned —>
<cfif not isdefined("OUT_GeoCodeResults")>
<br>
   <div align="center">No features found.</div>
<cfelse>
Records: <b>#OUT_GeoCodeResults.RecordCount#</b><br>
</cfif>
</cfoutput>
</font>
<!— If results were returned, build a table to display results —>
<cfif isdefined("OUT_GeoCodeResults")>
<table bgcolor="000000" cellpadding=3 cellspacing=1 border=1>
```

```
<tr>
   <!— Loop through the results to grab column names —>
   <cfloop index="curCol" list="#OUT_GeoCodeResults.ColumnList#">
      <cfoutput>
      <td>
        <font face="Arial" size="2" color="ffffff"><b>#curCol#</b></font>
      </td>
      </cfoutput>
   </cfloop>
</tr>
<!— Loop through results to grab values —>
<cfloop Query="OUT_GeoCodeResults">
<tr bgcolor="ffffff">
   <cfloop index="curCol" list="#OUT_GeoCodeResults.ColumnList#">
      <cfoutput>
      <td>
        <font face="Arial" size="2"><b>#evaluate(curCol)#</b></font>
      </td>
      </cfoutput>
   </cfloop>
</tr>
</cfloop>
</table>
</cfif>
```

Using the ColdFusion Connector samples

Sample 1: Show map, list of layers

Shows the map image and the layers list.

Sample 2: Change layer visibility, legend

Controls the visibility of the layer with the layer list. The check box values are on or off. Click Refresh to update the map.

Sample 3: Zoom in, zoom out, and pan

Changes the extent of the map using zoom in, zoom out, or pan. Select one of the choices and click on the map.

Sample 4: Change marker symbol properties

Sets the size, type, color, outline color, and shadow for a layer. Click apply to see the changes on the map. The layer must have at least one SimpleRenderer with a SimpleMarkerSymbol.

Sample 5: Change polygon symbol properties

Sets the color, type, and interval of the fill and color, width, and style of the outline for a layer. Click apply to see the changes on the map. The layer must have at least one SimpleRenderer with a SimplePolygonSymbol.

Sample 6: Create acetate layer

Sets the properties of the North arrow and displays it on the acetate layer of the map.

Sample 7: Query attribute data

Queries attribute data on the active layer. Type a where clause and click Find.

Sample 8: Identify features

Displays feature attribute data based on an active layer when you click features in the map.

Sample 9: Make spatial query

Specifies an area to make a selection. Click Refresh to see the selection on the map.

ArcIMS ColdFusion element reference

2

IN THIS CHAPTER

Note

For information on how to install and configure the ArcIMS ColdFusion Connector, see the ArcIMS Installation Guide.

This chapter provides a reference to the ArcIMS ColdFusion elements and their attributes as well as debugging tips. It also shows how ArcIMS is incorporated into the ColdFusion Studio interface.

This chapter assumes a familiarity with HTML, ColdFusion elements, and ArcXML. If you are unfamiliar with ArcXML, see the *ArcXML Programmer's Reference Guide*.

How ArcIMS and ColdFusion work together

The ArcIMS ColdFusion Connector brings map publishing and GIS capabilities to the ColdFusion Server. Using ColdFusion Studio, Web developers can create geographic Web pages in a fraction of the time that would be required using other technologies such as JavaScript or client Java programming. Moreover, since all of the processing is done at the server, the Web site is less dependent on the client browsers and less demanding on the client system and network, making it a good solution for Internet map publishing.

In the ArcIMS architecture, the ColdFusion connector replaces the ArcIMS Servlet Connector. Instead of communicating with the servlet using low-level ArcXML requests, the developer can concentrate on the program logic and use high-level Cold Fusion Markup Language (CFML) elements. ArcIMS mapping functions are accessed from CFML using custom ArcIMS connector elements.

ArcIMS custom ColdFusion elements and attributes

All of basic mapping and GIS functions are performed using the <CF_ARCIMS> custom element and its child elements:

- <CF_ARCIMS_LAYER>—specifies layer visibility
- <CF_ARCIMS_SQL>—contains the WHERE clause of the SQL statement
- <CF_ARCIMS_MULTIPOINT>—defines points drawn on the acetate layer
- <CF_ARCIMS_POLYLINE>—defines polylines drawn on the acetate layer
- <CF_ARCIMS_POLYGON>—defines polygons drawn on the acetate layer

The details of the elements are specified in the element attributes. All of the elements have these attributes.

- SERVERNAME—specifies the name of the host that runs ArcIMS Application Server
- SERVERPORT—specifies the port number that the ArcIMS server is listening on
- GENERATEHTML—indicates whether the element should generate HTML code with the result
- ACTION—sets the type of the action to be performed

<CF_ARCIMS> ACTION attributes

There are several possible values for the ACTION attribute that perform different operations. A short description is found below, and a complete reference to each value is described later in the chapter.

- GENERATEMAP—generates a map image
- LEGEND—generates a legend image
- QUERY—performs attribute, spatial, or combined query to the database
- IDENTIFY—identifies features at specified coordinates
- GETMAPSERVICES—returns a list of Services running on the server
- GETSERVICEINFO—returns information about a specific Service
- GEOCODE—geocodes an address
- EXTRACT—extracts features from ArcIMS layers and creates a shapefile
- REQUEST—executes any kind of a request specified by ArcXML code

There are two main ways to use CF_ARCIMS element—with a true or false setting of the GENERATEHTML attribute.

When the GENERATEHTML attribute is set to true, the CF_ARCIMS element generates the appropriate HTML code to present the result. For example, if the action is GENERATEMAP, the HTML <IMG> element generated on the result page points to the new image, and the image appears on the page in the browser; if the action is QUERY, an HTML table is created. This frees the developer from writing HTML code to present the result.

When GENERATEHTML is set to false, no HTML code is generated. All required information is placed in CFML variables, and a developer can use them to present the data. For example, if the action is GENERATEMAP, the

CF_ARCIMS element creates a variable OUT_IMAGEURL that contains the URL of the map image generated by the ArcIMS Spatial Server. That variable can then be used inside HTML <IMG> or <INPUT> element to display the image.

Some requests generate CFML queries that you can use in <cfoutput>, <cfloop>, or any other CFML element or function that works with CFML queries. For example, the QUERY action creates OUT_QUERYTABLE, which contains all of the records returned by the query. You can use <cftable> or <cfoutput> to present the result. An example of this is found in the QUERY topic.

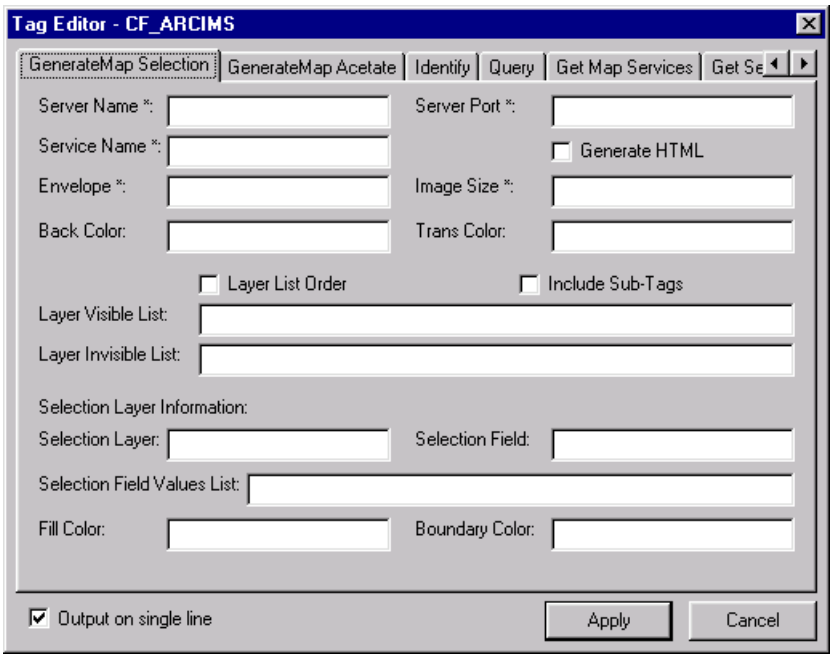
It is important to note that, with the exception of using the REQUEST action, all ArcXML processing is completely hidden from the ColdFusion developer. The developer only works with high-level CFML elements, while the ColdFusion Connector does the ArcXML creation and parsing of the response returned by the ArcIMS server. For more information on the REQUEST action, see its reference pages and 'Application development and debugging tips' later in this chapter.

ArcIMS in ColdFusion Studio

Perhaps the simplest way to learn the elements and attributes that are defined by the ArcIMS ColdFusion Connector is through the ColdFusion Studio interface. After installing the connector, ColdFusion Studio contains a new toolbar for ArcIMS.

The toolbar contains six tools for working with the new ArcIMS elements: <CF_ARCIMS>, <CF_ARCIMS_LAYER>, <CF_ARCIMS_SQL>, <CF_ARCIMS_MULTIPOINT>, <CF_ARCIMS_POLYLINE>, and <CF_ARCIMS_POLYGON>.

When you choose the <CF_ARCIMS> tool, a dialog box opens presenting all the element attributes.



The tabs across the top represent the different values of the ACTION attribute of the <CF_ARCIMS> element. For example, the element code for the GenerateMap Selection might look like the following:

```
<CF_ARCIMS ACTION="GENERATEMAP"
   SERVERNAME="bear"
   SERVERPORT="5300"
   SERVICENAME="SanFrancisco"
   ENVELOPE="-122.46,37.76,-122.42,37.79"
   IMAGESIZE="400,400"
   LAYERLISTORDER="true"
   GENERATEHTML="true">
</CF_ARCIMS>
```

You can use ColdFusion Studio to give you an introduction to the new custom elements for ArcIMS and help build your applications. See the following section for a detailed description of the ACTION attribute values and child elements.

GENERATEMAP

Purpose

Generates a map image based on an Image Service.

Syntax

Acetate layer objects and layer visibility can be specified using either CF_ARCIMS element attributes or child elements.

Basic syntax

```
<CF_ARCIMS ACTION="GENERATEMAP"
   SERVICENAME="service name"
   SERVERNAME="server name"
   SERVERPORT="server port"
   ENVELOPE="minx,miny,maxx,maxy"
   IMAGESIZE="width,height"
   LAYERLISTORDER="TRUE|FALSE"
   LAYERVISIBLELIST="layer_id1, layer_id2, layer_id3…"
   LAYERINVISIBLELIST="layer_id1, layer_id2, layer_id3…"
   BACKGROUNDCOLOR="R,G,B"
   TRANSPARENCYCOLOR="R,G,B"
   SELECTIONLAYER="selected layer id"
   SELECTIONFEATURETYPE="POINT|LINE|POLYGON"
   SELECTIONFIELD="selected field name"
   SELECTIONFIELDVALUESLIST="ID1, ID2, ID3, …"
   SELECTIONFILLCOLOR="R,G,B"
   SELECTIONBOUNDARYCOLOR="R,G,B"
   ADDPOINTS="X1,Y1,X2,Y2"
   POINTCOLOR="R,G,B"
   ADDLINES="x1,y1,x2,y2,x3,y3 ; x4,y4,x5,y5,x6,y6"
   LINECOLOR="R,G,B"
   ADDPOLYGONS="x1,y1,x2,y2,x3,y3,x4,y4 ; x5,y5,x6,y6,x7,y7"
   POLYGONCOLOR="R,G,B, R,G,B"
   ADDIMAGES="image icon path"
   IMAGESPOSITION="x1,y1,x2, y2, x3, y3"
   LINEWIDTH="value"
   POINTWIDTH="value"
   POLYGONWIDTH="value"
   ADDTEXT="STRING1, STRING2, STRING3"
   TEXTSTARTPOSITION="X1,Y1, X2, Y2, X3, Y3"
   TEXTFONT="FONTNAME,SIZE,STYLE,FONTCOLOR(R),FONTCOLOR(G),FONTCOLOR(B)"
   TEXTBACKGROUNDCOLOR="R,G,B"
   TEXTROTATIONANGLE="Angle of rotation in degrees"
   TEXTSHADOW="R,G,B"
   TEXTGLOW="R,G,B"
   GENERATEHTML="TRUE|FALSE">
```

Extended syntax

Specify layer visibility using the CF_ARCIMS_LAYER child element as shown below instead of LAYERVISIBLELIST or LAYERINVISIBLELIST attributes shown in the basic syntax example. Use one or more CF_ARCIMS_LAYER child elements to define layers inside the CF_ARCIMS element.

```
   <CF_ARCIMS_LAYER  LayerID="Layer_ID"  Visible=[true|false] >
```

Specify acetate layer objects using the following child elements instead of acetate layer attributes shown on the basic syntax. For example, use CF_ARCIMS_MULTIPOINT instead of ADDPOINTS, CF_ARCIMS_POLYLINE instead of

ADDLINES, CF_ARCIMS_POLYGONS instead of ADDPOLYGONS, and CF_ARCIMS_TEXT instead of ADDTEXT. Many acetate layer object elements can be combined inside one CF_ARCIMS element.

```
<CF_ARCIMS_MULTIPOINT>
   <Point x="x1" y="y1"/>
   <Point x="x2" y="y2"/>
   <Point x="x3" y="y3"/>
</CF_ARCIMS_MULTIPOINT>

<CF_ARCIMS_POLYLINE>
   <path><Point x="x1" y="y1"/><Point x="x2" y="y2"/><point x="x3" y="y3"/></path>
   <path><Point x="x4" y="y4"/><Point x="x5" y="y5"/></path>
</CF_ARCIMS_POLYLINE>

<CF_ARCIMS_POLYGON>
   <RING>
   < Point x="x1" y="y1"/><Point x="x2" y="y2"/><Point x="x3" y="y3"/>
   </RING>
   <RING>
   <Point x="x4" y="y4"/><Point x="x5" y="y5"/><Point x="x6" y="y6"/>
   </RING>
</CF_ARCIMS_POLYGON>

<CF_ARCIMS_TEXT>
   <TEXT String="value" Position="x,y"/>
   <TEXT String="value" Position="x,y"/>
</CF_ARCIMS_TEXT>
```

Attributes

Attribute Name	Required	Value Type	Default Value	Possible Values	Usage
ADDIMAGES	N	String	N/A	N/A	Path or URL of image to draw on the map.
ADDLINES	N	Doubles	N/A	N/A	List of coordinates in image coordinate system (pixels) of lines to be drawn on an acetate layer. Lines are separated by a semicolon, so list format is: x11,y11,x12, y12;x21,y21,x22,y22, ...
ADDPOINTS	N	Doubles	N/A	N/A	List of point coordinates to draw on the acetate layer (x1,y1,x2,y2, ...) in image coordinates (pixels).
ADDPOLYGONS	N	Doubles	N/A	N/A	List of coordinates (x1, y1, x2, y2, ...) in image coordinate system (pixels) of polygons to draw on an acetate layer. Polygons are defined by rings separated by a semicolon, so list format is: x11,y11,x12, y12;x21,y21,x22,y22, ...

Attribute	Required Name	Value	Default Type	Possible Value	Usage Values
ADDTEXT	N	String	N/A	N/A	Acetate layer text to draw on the map. Separate with commas to render multiple strings. Text is placed at location specified by TEXTSTARTPOSITION.
BACKGROUNDCOLOR	N	Color	From Service	0,0,0–255,255,255	Map image background color.
ENVELOPE	Y	Doubles	N/A	N/A	Extent of map to be generated in map units as a comma-separated list (MinX, MinY, MaxX, MaxY).
GENERATEHTML	N	Boolean	False	True, False	If true, HTML IMG element and output variables are generated in place of CF_ARCIMS during run time. If false, only output variables are set, and no element is generated.
IMAGESPOSITION	N	Doubles	N/A	N/A	Coordinates (in pixels) where images should be placed (x1, y1, x2, y2,...). First pair is used for first image in ADDIMAGE list, second for second image, and so on.
IMAGESIZE	Y	Doubles	N/A	N/A	Size of map image to be generated (width, height) in pixels.
LAYERINVISIBLELIST	N	Integer	N/A	N/A	List of IDs of layers that are available to be turned on.
LAYERLISTORDER	N	Boolean	False	True, False	If true, layers are drawn in the order listed in LAYERVISIBLELIST, and only layers specified in LAYERVISIBLELIST are used. If false, layers are drawn in the order they appear in the map file, and all visible layers are used.
LAYERVISIBLELIST	N	Integer	N/A	N/A	List of IDs of layers that are available to be turned off.
LINECOLOR	N	Color	N/A	0,0,0–255,255,255	Color to render acetate layer lines.
LINEWIDTH	N	Integer	1	N/A	Width of acetate layer lines.
POINTCOLOR	N	Color	N/A	0,0,0–255,255,255	Color to render acetate layer points.
POINTWIDTH	N	Integer	8	N/A	Size of acetate layer points in pixels.
POLYGONCOLOR	N	Colors	N/A	0,0,0–255,255,255	Two colors to render acetate layer polygons. First RGB value is polygon fill color, and second RGB value is polygon outline color.

Attribute Name	Required	Value Type	Default Value	Possible Values	Usage
POLYGONWIDTH	N	Integer	1	N/A	Width of acetate layer polygon outline.
SELECTION BOUNDARYCOLOR	N	Color	255,0,0	0,0,0–255,255,255	Color to outline highlighted features.
SELECTION FEATURETYPE	N	String	Polygon	Point, Line, Polygon	Feature type of the features to highlight.
SELECTIONFIELD	N	String	N/A	N/A	Name of field to select features to highlight.
SELECTIONFIELD VALUESLIST	N	String	N/A	N/A	List of values to select features to highlight.
SELECTIONFILLCO	N	Color	255,0,0	0,0,0–255,255,255	Color to render highlighted features.
SELECTIONLAYER	N	String	N/A	N/A	ID of the layer containing features to highlight.
SERVERNAME	Y	String	N/A	N/A	Name of the server running ArcIMS Application Server.
SERVERPORT	Y	Integer	N/A	N/A	Server port number.
SERVICENAME	Y	String	N/A	N/A	Name of the Service to be drawn.
TEXTBACKGROUND COLOR	N	Color	N/A	0,0,0–255,255,255	Text background color of acetate layer text.
TEXTFONT	N	String	N/A	N/A	Font to draw acetate layer text on the map. String is composed of font name, font size, font style, font color. Font name must exist on Spatial Server. Font size is in points. Font styles are Regular, Bold, Italic, Underline, and Outline. Font color is RGB specification of the text color.
TEXTGLOW	N	Color	N/A	0,0,0–255,255,255	Acetate layer text glow color. Text can have shadow, glow, or none but not both.
TEXTROTATION ANGLE	N	Integer	N/A	0–360	Angle in degrees used to rotate the acetate layer text.
TEXTSHADOW	N	Color	N/A	0,0,0–255,255,255	Acetate layer text shadow color.
TEXTSTARTPOSITION	N	Doubles	N/A	N/A	Coordinates (in pixels) where acetate layer text should be placed on map (x1,y1,x2,y2,...). First coordinate pair is used for first string in ADDTEXT, second for the second, and so on.
TRANSPARENTCOLOR	N	Color	From Service	0,0,0–255,255,255	Color to render image as transparent.

Child element

Name	Required	Occurrences	Notes
CF_ARCIMS_LAYER	N	Many	Used to specify layer visibility. There should be one CF_ARCIMS_LAYER for every layer that needs to be turned on or off. If LAYERLISTORDER is false, only layers with visibility different from the default need to be specified. If LAYERLISTORDER is true, only layers specified with CF_ARCIMS_LAYER are rendered. All layers that need to be visible should be specified regardless of the default visibility. Replaces LAYERVISIBLELIST and LAYERINVISIBLELIST attributes.
CF_ARCIMS_MULTIPOINT	N	One	Defines points to be drawn on the acetate layer. Multiple points can be specified using the POINT element inside one CF_ARCIMS_MULTIPOINT element. If used, specify point size and color with POINTCOLOR and POINTWIDTH attributes. Replaces ADDPOINTS attribute.
CF_ARCIMS_POLYGON	N	One	Defines polygons to be drawn on the acetate layer. Polygons are specified using RING elements. Only polygons without holes are supported for an acetate layer; the child element HOLE is not permitted. Replaces ADDPOLYGONS attribute.
CF_ARCIMS_POLYLINE	N	One	Defines polylines to be drawn on the acetate layer. Multiple lines can be specified using the PATH element inside CF_ARCIMS_POLYLINE. Each PATH element can have two or more POINT elements. Replaces ADDLINES attribute.
CF_ARCIMS_TEXT	N	One	Defines text to be drawn on the acetate layer. Text is specified using the TEXT child element. The TEXT element contains String and Position attributes. There can be multiple TEXT elements inside. Replaces CF_ARCIMS_TEXT. ADDTEXT attribute.

Output variables

Variable Syntax	Always Generated	Variable Type	Usage
OUT_IMAGEPATH	Y	String	Path of images generated by the Spatial Server as seen by the Spatial Server.
OUT_IMAGEURL	Y	String	URL of images generated by the Spatial Server.
OUT_MAXX	Y	Integer	Envelope of the returned map in map coordinates. Coordinates can be different from those in the ENVELOPE attribute in request because of the difference in the aspect ratio between map extent and image size. OUT_MAXX is x coordinate of the upper-right corner.

Variable Syntax	Always Generated	Variable Type	Usage
OUT_MAXY	Y	Integer	See usage for OUT_MAXX. OUT_MAXY is y coordinate of the upper-right corner.
OUT_MINX	Y	Integer	See usage for OUT_MAXX. OUT_MINX is x coordinate of the lower-right corner.
OUT_MINY	Y	Integer	See usage for OUT_MAXX. OUT_MINY is y coordinate of the lower-right corner.
IN_REQUESTAXL	Y	String	ArcXML code of the request sent to the Spatial Server. Used primarily for debugging.
OUT_RESPONSEAXL	Y	String	ArcXML code of the response received from the Spatial Server. As the CF_ARCIMS element does the ArcXML parsing internally and places all relevant information in CF variables, this is used primarily for debugging.
OUT_ERROR	Y	String	Where the Spatial Server returns error messages.

Restrictions

- Since GENERATEMAP sends the request to the Spatial Server to generate a map image, it can be used only with Image Services. Feature Services can't be rendered using the ColdFusion Connector.
- This element exposes just part of the functionality of the ArcIMS Image MapServer. To use more advanced functionality, such as changing symbols, use CF_ARCIMS element with the REQUEST action.

Notes

- GENERATEMAP is used for all map display functions. Zoom in, zoom out, pan, turn layers on or off, and highlight features use GENERATEMAP. For any kind of query (including a spatial query), use the QUERY tab of Design Time Control (DTC). For spatial queries, the QUERY element is often combined with a map image generated by GENERATEMAP.
- Layers and symbols used in the map depend on the Service definition. If a layer is turned off, it does not appear on the map unless it is on the LAYERVISIBLELIST. If a layer is invisible at the current scale, it will not appear even if it is on the LAYERVISIBLELIST. Layers that are turned on and visible at the current scale are rendered unless they are on the LAYERINVISIBLELIST. The only exception is if LAYERLISTORDER is true; in that case, only the layers in LAYERVISIBLELIST are drawn, and no other layer is used regardless of the Service settings.
- The map extent must be specified, even if the Service has a default extent. To use the default extent, get the extent using CF_ARCIMS GETSERVICEINFO and use that extent for the GENERATEMAP request. The same is true for the image size.
- The map extent returned from the Spatial Server is often different from the one requested because of the difference in aspect ratio between the map and image. Output variables contain the extent of the generated map.
- The SELECTION attributes provide a way to highlight selected features. However, to highlight them, the Spatial Server must be able to find selected features. The Spatial Server is stateless and does not keep track of the selected set. Since it is not possible to keep the selection on the Spatial Server, the ColdFusion client application must track the selected features in session variables. This can be done only if the layer has a field with unique values for every row or a

unique key. The typical procedure to select and highlight features involves using the QUERY element to retrieve selected features including some unique identifier field, creating a list from the result query key field using a ColdFusion function such as valueList() or quotedValueList() and submitting results to GENERATEMAP. The SELECTIONLAYER attribute specifies a layer that contains a feature or features to be highlighted. Only features from one layer can be highlighted per request. SELECTIONFIELD contains the name of the key field, and SELECTIONFIELDVALUELIST contains a list of values. The Spatial Server highlights features that have values from the list in the field. Values in SELECTIONFIELD do not have to be unique. It is not possible to select features based on more than one field or use any other operator except IN.

- All colors are specified as RGB values in a comma-separated list of three integers (0–255) specifying red, green, and blue values, respectively.

Examples

1. To draw a simple map:

```
<CF_ARCIMS ACTION="GENERATEMAP"
   SERVERNAME="bear"
   SERVERPORT="5300"
   SERVICENAME="SanFrancisco"
   ENVELOPE="-122.54,37.65,-122.32,37.84"
   IMAGESIZE="400,400"
   GENERATEHTML="true"/>
```

Since GENERATEHTML is set to true, this element creates the following IMG HTML element:

```
<IMG SRC="http://bear/output/SanFrancisco_BEAR902562.png" height=400 width=400 >
```

2. This example demonstrates how to turn a layer on and how to use the resulting OUT_IMAGEURL variable. The layer to be turned on is Zipcodes (layer ID of 1). It uses OUT_IMAGEURL to create the form with the input type image element.

```
<CF_ARCIMS ACTION="GENERATEMAP"
   SERVERNAME="bear"
   SERVERPORT="5300"
   SERVICENAME="SanFrancisco"
   ENVELOPE="-122.54,37.65,-122.32,37.84"
   IMAGESIZE="400,400"
   LAYERVISIBLELIST="1"
   GENERATEHTML="false"/>
<cfoutput>
<form action="" method="POST">
   <input type="Image" name="Map_Image" src="#OUT_IMAGEURL#" width="400" height="400">
</form>
</cfoutput>
```

Since GENERATEHTML is false, no code is generated by the CF_ARCIMS element. The output variable #OUT_IMAGEURL# is used in the input element instead.

The resulting HTML code is:

```
<form action="" method="POST">
   <input type="Image" name="Map_Image" src="http://bear/output/
SanFrancisco_BEAR902563.png" width="400" height="400">
</form>
```

3. The following example uses CF_ARCIMS_LAYER child elements with LAYERLISTORDER set to true. The output image only has the layers listed in the elements.

```
<CF_ARCIMS ACTION="GENERATEMAP"
   SERVERNAME="bear"
   SERVERPORT="5300"
   SERVICENAME="SanFrancisco"
   ENVELOPE="-122.46,37.76,-122.42,37.79"
   IMAGESIZE="400,400"
   LAYERLISTORDER="true"
   GENERATEHTML="true">
   <CF_ARCIMS_LAYER  LayerID="2"  Visible="true">
   <CF_ARCIMS_LAYER  LayerID="3"  Visible="true">
   <CF_ARCIMS_LAYER  LayerID="5"  Visible="true">

   </CF_ARCIMS>
```

This creates a map image with only layers 2, 3, and 5 turned on.

4. This example creates a map image with some acetate layer objects.

```
<CF_ARCIMS ACTION="GENERATEMAP"
   SERVERNAME="bear"
   SERVERPORT="5300"
   SERVICENAME="SanFrancisco"
   ENVELOPE="-122.46,37.76,-122.42,37.79"
   IMAGESIZE="400,400"
   ADDPOLYGONS="50,50,100,50,50,100;200,250,300,250,300,350"
   POLYGONCOLOR="255,200,200,255,0,0"
   POLYGONWIDTH="6"
   ADDTEXT="Some text,Some other text"
   TEXTSTARTPOSITION="100,300,15,250"
   TEXTFONT="Times,20,Bold,255,255,100"
   TEXTSHADOW="200,200,200"
   GENERATEHTML="true" />
```

This creates a map image with two polygons and two text strings.

5. The same request can be written using acetate layer object elements.

```
<CF_ARCIMS ACTION="GENERATEMAP"
   SERVERNAME="bear"
   SERVERPORT="5300"
   SERVICENAME="SanFrancisco"
   ENVELOPE="-122.46,37.76,-122.42,37.79"
   IMAGESIZE="400,400"
   POLYGONCOLOR="255,200,200,255,0,0"

   POLYGONWIDTH="6"
   TEXTSTARTPOSITION="100,300,150,250"
   TEXTFONT="Times,40,Bold,255,255,100"
   TEXTSHADOW="200,200,200"
   GENERATEHTML="true" >

   <CF_ARCIMS_POLYGON>
      <Ring>
        <point x="50" y="50" />
        <point x="100" y="50" />
        <point x="50" y="100" />
```

```
      </Ring>
      <Ring>
        <point x="200" y="250" />
        <point x="300" y="250" />
        <point x="300" y="350" />
      </Ring>
    </CF_ARCIMS_POLYGON>

    <CF_ARCIMS_TEXT>
      <Text String="Some text" Position="100,300" />
      <Text String="Some other text" Position="150,250" />
    </CF_ARCIMS_TEXT>

</CF_ARCIMS>
```

LEGEND

Purpose

Creates an image with a map legend for a specific ArcIMS Service.

Syntax

Layer visibility can be specified using either CF_ARCIMS element attributes or child elements.

Basic syntax

```
<CF_ARCIMS ACTION="LEGEND"
   SERVICENAME="service name"
   SERVERNAME="server name"
   SERVERPORT="server port"
   ENVELOPE="minx,miny,maxx,maxy"
   IMAGESIZE="width,height"
   LAYERLISTORDER="TRUE|FALSE"
   LAYERVISIBLELIST="id1, id2, id3…"
   LAYERINVISIBLELIST="id1, id2, id3…"
   TITLE="title of the legend"
   FONT="font name, title font size, layer font size, value font size"
   LEGENDSIZE=" width, height, autoextend"
   SWATCHSIZE="width, height"
   BACKGROUNDCOLOR="R,G,B"
   TRANSCOLOR="R,G,B"
   CELLSPACING="int value"
   REVERSEORDER="TRUE|FALSE"
   VALUEMAPSPLIT="cansplit, split text, column no"
   GENERATEHTML="TRUE|FALSE"  >
```

Extended syntax

To specify layer visibility using child elements instead of LAYERVISIBLELIST and LAYERINVISIBLELIST attributes, use one or more CF_ARCIMS_LAYER elements inside CF_ARCIMS.

```
   <CF_ARCIMS_LAYER  LayerID="Layer_ID"  Visible=[true|false] >
```

Attributes

Attribute Name	Required	Value Type	Default Value	Possible Values	Usage
BACKGROUNDCOLOR	N	Color	255, 255, 255	0,0,0–255,255,255	Background color of legend.
CELLSPACING	N	Integer	3	N/A	Number of pixels between entries.
FONT	N	String	Arial	N/A	Specification of font to draw text in (font name) the legend. String is composed of font name, font size, font style, font color. Font name must exist on Spatial Server. Font size is in points. Font styles are Regular, Bold, Italic, Underline, and Outline. Font color is RGB specification of the text color.
ENVELOPE	N	Doubles	Initial Extent	N/A	Extent of map to be generated in map units as a comma-separated list (MinX, MinY, MaxX, MaxY). The initial extent defined for the service is the envelope's default value.

Attribute	Required Name	Value	Default Type	Possible Value	Usage Values
GENERATEHTML	N	Boolean	False	True, False	If true, HTML IMG element is generated in placeof CF_ARCIMS during run time. If false, all variables are set, but no element is generated.
IMAGESIZE	Y	Doubles	N/A	N/A	Size of map image to be generated (width, height) in pixels.
LAYERINVISIBLELIST	N	Integers	N/A	N/A	List of IDs of layers that are available to be turned on.
LAYERLISTORDER	N	Boolean	False	True, False	If true, layers are drawn in order listed in LAYERVISIBLELIST, and only layers specified in LAYERVISIBLELIST are used. If false, layers are drawn in the order they appear in the map file, and all visible layers are used.
LAYERVISIBLELIST	N	Integers	N/A	N/A	List of IDs of layers that are available to be turned off.
LEGENDSIZE	N	String	125,300, True	N/A	The width and height of legend image and autoextend value. Autoextend is a Boolean value for overriding the legend height if there are more layers to show than fit in the specified size. If autoextend is true, legend image may be higher than the specified height.
REVERSEORDER	N	Boolean	False	True, False	If true, layer order is reversed.
SERVERNAME	Y	String	N/A	N/A	Name of the server running ArcIMS Application Server.
SERVERPORT	Y	Integer	N/A	N/A	Server port number.
SERVICENAME	Y	String	N/A	N/A	Name of the Service to draw the legend for.
SWATCHSIZE	N	Double	18, 12	N/A	Width and height of the area containing the symbol.
TITLE	N	String	N/A	N/A	Title of the legend.
TRANSCOLOR	N	Color	N/A	0,0,0–255,255,255	Image color to be transparent.
VALUEMAPLIST	N	String	False	N/A	Defines how to split value map layers between columns in format Boolean, string, integer. First value determines if values are split. Second value is the text at the bottom of the column that is wrapped into the new column. Last value specifies how many columns layers can be split into.

Child elements

Name	Required	Occurrences	Notes
CF_ARCIMS_LAYER	N	Many	Used to specify layers used in the legend. There should be one CF_ARCIMS_LAYER for every layer that needs to be turned on or off. If LAYERLISTORDER attribute is false, only layers with visibility different from the default need to be specified. If LAYERLISTORDER is true, only layers specified with CF_ARCIMS_LAYER are extracted, so all layers that need to be extracted should be specified, regardless of the default visibility. Replaces LAYERVISIBLELIST and LAYERINVISIBLELIST.

Output variables

Variable Syntax	Always Generated	Variable Type	Usage
OUT_IMAGEPATH	Y	String	Path of image generated by the Spatial Server as seen by the Spatial Server.
OUT_IMAGEURL	Y	String	URL of image generated by the Spatial Server.
OUT_RESPONSEAXL	Y	String	ArcXML code of the response received from the Spatial Server. As the CF_ARCIMS element does the ArcXML parsing internally and places all relevant information in CF variables, this is used primarily for debugging.
OUT_ERROR	Y	String	Where the Spatial Server returns error messages.

Restrictions

None

Notes

- A LEGEND request creates an image that contains the legend for the Service. It is usually used in conjunction with a GENERATEMAP action—GENERATEMAP creates the map image, and LEGEND creates the legend.
- A legend created by the request is an image, just like the map image, and can be used in the same way. If the GENERATEHTML attribute is set to true, an IMG HTML element is generated for the user. For more control, a developer can set GENERATEHTML to false and use an OUT_IMAGEURL CF variable that contains the URL of the generated legend image.
- The legend created has a section for every active layer and an entry for every class used. The user has control over class descriptions using the “label” attribute of EXACT or RANGE elements in the map configuration file.
- LEGEND is scale sensitive. Scale dependencies for legend layers are based on an image size of 400x300 pixels, and the extent defined by the ENVELOPE attribute. Only layers that are visible at the scale determined by these two attributes will appear in the legend. If the optional attributes ENVELOPE and IMAGESIZE are not set, only layers visible at the default scale appear in the legend. To explicitly set the scale, specify values for IMAGESIZE and ENVELOPE.

- More customized legends can be created using the REQUEST action with the ArcXML LEGEND element. Using this approach a developer can define on-the-fly custom layers and renderers in the same way as a GET_IMAGE request. A developer can change the scale to keep the legend in sync with the map. For more information on how to use the ArcXML LEGEND element, see the *ArcXML Programmer's Reference Guide*.
- The ColdFusion Connector supports ArcMap Image Services but treats them as Image Services, which may cause problems. The following attributes have no effect when generating a legend against ArcMap: transcolor, reverseorder, cellspacing, and valuemapsplit.

  If you use a legend with ArcMap server, set the legendsize attribute to "*,*,True" because ArcMap Server does not support setting a height and width for the legend. You must also set autoextend to true.

  These limitations are limitations of ArcMap Server, as explained in more detail in the ArcXML Programmer's Reference under the legend element.

Examples

1. Creating a simple legend based on the ArcIMS Service defaults.

```
<cf_arcims  action="legend"
   ServiceName="SanFrancisco"
   ServerName="bear"
   ServerPort="5300"
   Title="San Francisco Map"
   LegendSize="200,400,true"
   generateHTML="true"/>
```

This generates the following image:

2. To turn the County layer off and leave only Highways, you need to know the ID of the County layer. In this Service, the County layer has ID 0. To turn it off, it can either be included at LAYERINVISIBLELIST or be specified using CF_ARCIMS_LAYER.

```
<cf_arcims  action="legend"
   ServiceName="SanFrancisco"
   ServerName="bear"
   ServerPort="5300"
   Title="San Francisco Map"
   LegendSize="200,400,true"
   layerinvisiblelist="0"
   generateHTML="true" />
```

3. This example shows a page that displays both the map and appropriate legend. This works only at the default map extent and scale. If the map was zoomed in (e.g., extent is other than the default), layers on the map and on the legend do not match. To resolve this issue, the developer must use CF_ARCIMS REQUEST.

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">

<html>
<head>
   <title>Untitled</title>
</head>
```

```
<body>
<table>
<tr>
   <td>
   <cf_arcims action="generatemap"
          ServiceName="SanFrancisco"
          ServerName="bear"
          ServerPort="5300"
         envelope="-122.52809,37.634806,-122.310880,37.840374"
          imagesize="400,400"
          generateHTML="true" />
   </td>
   <td>
   <cf_arcims  action="legend"
          ServiceName="SanFrancisco"
          ServerName="bear"
          ServerPort="5300"
          Title="San Francisco Map"
          LegendSize="200,400,true"
          generateHTML="true" />
   </td>
</tr>
</table>

</body>
</html>
```

QUERY

Purpose

Performs an attribute, spatial, or combined ArcIMS query and returns feature attributes and geometry description.

Syntax

SQL query and spatial filter can be specified using either attributes or child elements. The advantage of using child elements is that single quotes can be used; however, ColdFusion special characters such as '<' and '>' still need to be escaped.

Basic syntax

```
<CF_ARCIMS ACTION="QUERY"
   SERVERNAME="server name"
   SERVERPORT="server port"
   SERVICENAME="service name"
   RETURNGEOMETRY="TRUE|FALSE"
   RETURNENVELOPE="TRUE|FALSE"
   RETURNCOMPACT="TRUE|FALSE"
   LAYERID="id"
   LAYERDISPLAYFIELDS="field1 field2…"
   FEATURELIMIT="number"
   RELATION="relation"
   ENVELOPE="minx, miny, maxx, maxy"
   Multipoint="x1,y1,x2,y2,x3,y3,x4,y4"
   PolyLine="x1,y1,x2,y2,x3,y3 ; x4,y4,x5,y5,x6,y6"
   Polygon="x1,y1,x2,y2,x3,y3,x4,y4 ; x5,y5,x6,y6,x7,y7 : x8,y8,x9,y9,x10,y10"
   WHERE="SQL expression"
   BUFFER="distance, smoothedges, unit"
   BUFFERTARGETLAYER="id"
   JOINTABLES="table"
   GENERATEHTML="TRUE|FALSE" >
```

Extended syntax

The CF_ARCIMS_SQL child element can be used instead of the WHERE attribute.

```
<CF_ARCIMS_SQL>
      [User SQL Statement]
</CF_ARCIMS_SQL>
```

Child elements can also be used instead of the MULTIPOINT, POLYLINE, and POLYGON attributes.

```
<CF_ARCIMS_POLYLINE>
   <path><Point x="x1" y="y1"/><Point x="x2" y="y2"/><point x="x3" y="y3"></path>
   <path><Point x="x4" y="y4"/><Point x="x5" y="y5"/></path>
</CF_ARCIMS_POLYLINE>

<CF_ARCIMS_POLYGON>
   <Ring><Point x="x1" y="y1"/><Point x="x2" y="y2"/><Point x="x3" y="y3"/></Ring>
   <Ring><Point x="x4" y="y4"/><Point x="x5" y="y5"/><Point x="x6" y="y6"/><Point
x="x7" y="y7"/>
<Hole>
   <Point x="x8" y="y8"/><Point x="x9" y="y9"/>
</Hole>
</Ring>
</CF_ARCIMS_POLYGON>
```

```
<CF_ARCIMS_MULTIPOINT>
   <Point x="x1" y="y1"/>
   <Point x="x2" y="y2"/>
   <Point x="x3" y="y3"/>
</CF_ARCIMS_MULTIPOINT>
```

Attributes

Attribute Name	Required	Value Type	Default Value	Possible Values	Usage
BUFFER	N	String	N/A	N/A	If specified, a buffer is created around selected features on LAYERID, and the buffer is applied to select features on BUFFERTARGETLAYERID. Features from BUFFERTARGETLAYERID are returned. Format of attribute value is distance, units. Distance is buffer distance. Units are distance units. Valid keywords for units are DECIMAL_DEGREES, MILES, FEET, KILOMETERS, and METERS (case sensitive). If BUFFER attribute is used, BUFFERTARGETLAYERID is also required.
BUFFERTARGET LAYER	N	String	N/A	N/A	Specifies layer containing the features that are selected by the buffer specified in BUFFER attribute. If BUFFER and BUFFERTARGETLAYER are specified, features from BUFFERTARGETLAYER are returned and not those from LAYERID. This attribute is always used with BUFFER.
ENVELOPE	N	String	N/A	N/A	Envelope used as a spatial filter. Features inside the envelope are selected. Coordinates are in map coordinate system.
FEATURELIMIT	N	Integer	All Features	N/A	Maximum number of features returned.
GENERATEHTML	N	Boolean	False	True, False	If true, HTML table is generated in place of CF_ARCIMS element during the run time; if false, all variables are set, but no table is generated.
JOINTABLES	N	Strings	N/A	N/A	List of tables that take part in a query. Join statement must be specified in the WHERE attribute, and fields to retrieve from join tables must be listed in LAYERDISPLAYFIELDS. Depending on the data source type, a fully qualified table name (owner.table) may be required. Base layer table does not need to be specified. Tables can be joined only if the layer uses an ArcSDE® data source. dBASE® tables (.dbf) can't be joined.

Attribute Name	Required	Value Type	Default Value	Possible Values	Usage
LAYERDISPLAY	N	Strings	N/A	#ALL#	List of layer attributes to return from the TABLES Spatial Server. To retrieve all fields, use #ALL#. Depending on the data source type and the query structure, a fully qualified column name (user.table.column) may be required.
LAYERID	Y	String	N/A	N/A	ID of the layer to query.
MULTIPOINT	N	String	N/A	N/A	Coordinates (x1,y1,x2,y2,...) of points used as a spatial filter.
POLYGON	N	String	N/A	N/A	Polygon to use as a spatial filter. Polygon is defined as a set of one or more rings. Each ring contains points. Multiple rings are separated by ';'. A ring can contain holes. Holes are defined inside a ring by adding the points representing them after defining the points representing the ring but separating them by ':'. Coordinates are in map units (x11,y11,x12,y12; x21,y21,x22,y22;...).
POLYLINE	N	String	N/A	N/A	Coordinates of the polyline used as a spatial filter. Polyline is defined as one or more paths. A path consists of points. Multiple paths in polyline are separated by ';'. Coordinates are in map units (x11,y11,x12,y12;x21,y21, x22,y22;...).
RELATION	N	String	area_ intersection envelope_ intersection	area_ intersection	The type of spatial relation between the intersection spatial filter and the query features.
RETURNCOMPACT	N	Boolean	False	True, False	If true, ArcXML geometry is returned in compact form. It should be used only if RETURNGEOMETRY="True".
RETURNENVELOPE	N	Boolean	False	True, False	If true, feature envelope is returned with other attributes. If using ArcSDE layers, spatial column name must be specified in LAYERDISPLAYFIELDS. Envelope is in four new OUT_QUERYTABLE fields: MINX, MINY, MAXX, and MAXY.
RETURNGEOMETRY	N	Boolean	False	True, False	If true, ArcXML representation of feature geometry is returned with other attributes. If using ArcSDE layers, spatial column name must be specified in LAYERDISPLAYFIELDS. Geometry map file is in the OUT_QUERYTABLE column AXLGEOMETRY.

Attribute Name	Required	Value Type	Default Value	Possible Values	Usage
SERVERNAME	Y	String	N/A	N/A	Name of the server running ArcIMS.
SERVERPORT	Y	Integer	N/A	N/A	Server port number.
SERVICENAME	Y	String	N/A	N/A	Name of the Service to be drawn.
WHERE	N	String	N/A	N/A	Contains the where clause of the SQL statement. Used instead of the WHERE features.

Child element

Name	Required	Occurrences	Notes
CF_ARCIMS_MULTIPOINT	N	One	Defines points to be used as a spatial filter. Multiple points can be specified using the POINT element inside one CF_ARCIMS_MULTIPOINT element.
CF_ARCIMS_POLYGON	N	One	Defines polygons to be used as a spatial filter. Polygons are specified using RING and HOLE subelements.
CF_ARCIMS_POLYLINE	N	One	Defines polylines to be used as a spatial filter. Multiple lines can be specified using the PATH element inside CF_ARCIMS_POLYLINE. Each PATH element can have two or more POINT elements.
CF_ARCIMS_SQL	N	One	Contains the where clause of the SQL statement. Used instead of the WHERE attribute to select features.

Output variables

Variable Syntax	Always Generated	Variable Type	Usage
OUT_QUERYTABLE	N	CF Query	CF query containing records for all selected features. Query fields are specified by LAYERDISPLAYFIELDS or by the Service if #ALL# is used. This can be used as a standard C query in <cfoutput>, <cfloop>, and all other CF elements and functions that expect a CF query as an argument. If RETURNGEOMETRY is true, this table contains the ArcXML representation of the geometry of the features in the AXLGEOMETRY column. If RETURNENVELOPE is true, this table contains MINX, MINY, MAXX, and MAXY with the envelope of every returned feature. If there are no features selected, the query is not defined, so always check.
IN_REQUESTAXL	Y	String	ArcXML code of the request sent to the Spatial Server. Used primarily for debugging.

Variable Syntax	Always Generated	Variable Type	Usage
OUT_RESPONSEAXL	Y	String	ArcXML code of the response received from the Spatial Server. As the CF_ARCIMS element does the ArcXML parsing internally and places all relevant information in CF variables, this is used primarily for debugging.
OUT_ERROR	Y	String	Where the Spatial Server returns error messages.

Restrictions

- Buffer processing is somewhat limited compared to ArcIMS Spatial Server Capabilities. The buffer can be used to select features from another layer, but the buffer itself cannot be retrieved.

Notes

- This element is used to perform spatial, attribute, or combined queries on layers. The result is a ColdFusion query containing attributes and, if requested, the geometry of the selected features, but no image is generated. To highlight a selected feature on the map image, the QUERY request must be used together with a GENERATEIMAGE request.
- Queries can be made to either ArcIMS Image or Feature Services.
- There are two ways to use related tables in the query. Related tables and a join statement can be specified in the layer definition in the Service. In this case, columns from the related table can be used in the same way as columns from the original tables. Related tables and a join statement can be specified during the query in the JOINTABLES and WHERE attributes. JOINTABLES specifies which tables to join (base layer table is assumed and does not need to be specified), and WHERE specifies the join criteria using standard SQL syntax. Joins must be one-to-one or many-to-one. All tables used in the query must be in the same ArcIMS workspace. It is not possible to join, for example, ArcSDE layers from two different ArcSDE instances. When using joins, column names in LAYERDISPLAYFIELDS should be fully qualified (table_name.column_name). Using this element, it is only possible to use join tables if the layer data source is ArcSDE. To use join tables with layers with a shapefile data source, use the REQUEST element.
- GENERATEHTML="true" is used primarily for testing since it does not provide a method to format the output. Applications in a production environment would probably use CF functions and elements to loop through OUT_QUERYTABLE and format the result.
- If geometry is requested, it is returned in the AXLGEOMETRY field in ArcXML format. For map file geometry specifications, see the *ArcXML Programmer's Reference Guide*. If the source of the requested layer is ArcSDE, the ArcSDE spatial column must be specified in LAYERDISPLAYFIELDS to retrieve the geometry or envelope.

Examples

1. A simple attribute query:

```
<cf_arcims  action="query"
   ServiceName="SanFrancisco"
   ServerName="bear"
   ServerPort="5300"
   LayerID="2"
   layerdisplayfields="##ALL##"
   featurelimit="100"
   where="HWYNAME='MARKET ST'"
   generatehtml="true"/>
```

This query returns records for all segments of Market St with all attributes but no geometry or envelope. Since GENERATEHTML is true, an HTML <img> is automatically generated.

2. A similar query uses the CF_ARCIMS_SQL child element and contains some postprocessing of the output query table.

   Instead of generating an HTML table, this example loops through a result set, sums the length field, and displays the total sum.

```
<cf_arcims  action="query"
   ServiceName="SanFrancisco"
   ServerName="bear"
   ServerPort="5300"
   LayerID="2"
   layerdisplayfields="##ALL##"
   featurelimit="100"
   generatehtml="false">
   <CF_ARCIMS_SQL>
      HWYNAME='MARKET ST'
   </CF_ARCIMS_SQL>
</cf_arcims>
<cfset len=0>
<cfloop query="out_querytable">
   <cfset len=len + out_querytable.length>
</cfloop>
<cfoutput>
   Total length of the Market Street is #len# miles.
</cfoutput>
```

3. A combination of attribute and spatial query. The goal is to select census blocks in the northeast part of the town with a median age less than 35. Notice the escape characters < to create the less than sign (<).

```
<cf_arcims  action="query"
   ServiceName="Demog"
   ServerName="bear"
   ServerPort="5300"
   LayerID="3"
   layerdisplayfields="##ALL##"
   relation="area_intersection"
   generatehtml="true" >

   <CF_ARCIMS_SQL>
      MED_AGE &lt; 35
   </CF_ARCIMS_SQL>

   <CF_ARCIMS_POLYGON>
      <RING>
        <POINT x="-122.45" y="37.82" /> <POINT x="-122.44" y="37.76" />
        <POINT x="-122.37" y="37.77" /> <POINT x="-122.38" y="37.83" />
      </RING>
   </CF_ARCIMS_POLYGON>

</cf_arcims>
```

IDENTIFY

Purpose

Identifies the feature at a given point and retrieves the feature attributes.

Syntax

Basic syntax

```
<CF_ARCIMS ACTION="IDENTIFY"
   SERVICENAME="service name"
   SERVERNAME="server name"
   SERVERPORT="server port"
   ATTRIBUTES="attributes"
   LAYERID="id"
   ENVELOPE="minx,miny,maxx,maxy"
   IMAGESIZE="width,height"
   POSX="x"
   POSY="y"
   TOLERANCE="tolerance"
   GENERATEHTML="TRUE|FALSE">
```

Attributes

Attribute Name	Required	Value Type	Default Value	Possible Values	Usage
ATTRIBUTES	N	Strings	#ALL#	N/A	List of feature attributes to be retrieved from the Spatial Server. To retrieve all attributes use '#ALL#'.
ENVELOPE	Y	Doubles	N/A	N/A	Map extent of map image in map units the request refers to as a comma-separated list (minX, minY, maxX, maxY).
GENERATEHTML	N	Boolean	False	True, False	If true, HTML IMG table is generated in place of CF_ARCIMS element during the run time; if false, all variables are set, but no table is generated.
IMAGESIZE	Y	Numbers	N/A	N/A	Width and height of map image in pixels.
LAYERID	Y	String	N/A	N/A	ID of layer to query.
POSX	Y	Number	N/A	N/A	X coordinate in the image coordinate system (pixels) of the point used for identification.
POSY	Y	Number	N/A	N/A	Y coordinate in the image coordinate system (pixels) of the point used for identification.
SERVERNAME	Y	String	N/A	N/A	Name of the server running ArcIMS Application Server.
SERVERPORT	Y	Integer	N/A	N/A	Server port number.
SERVICENAME	Y	String	N/A	N/A	Name of the Service to be drawn.
TOLERANCE	N	Integer	2	N/A	Search distance around click location in pixels.

Output variables

Variable Syntax	Always Generated	Variable Type	Usage
OUT_QUERYTABLE	N	CF Query	CF query containing records for all selected features.
IN_REQUESTAXL	Y	String	ArcXML code of the request sent to the Spatial Server. Used primarily for debugging.
OUT_RESPONSEAXL	Y	String	ArcXML code of the response received from the Spatial Server. As the CF_ARCIMS element does the ArcXML parsing internally and places all relevant information in CF variables, this is used primarily for debugging.
OUT_ERROR	Y	String	Where the Spatial Server returns error messages.

Restrictions

- IDENTIFY identifies features from the specified layer, so it fits well into applications that use the "active layer" concept. To identify features from more than one layer, use several IDENTIFY elements in the loop that goes through layers.

Notes

- IDENTIFY always works in conjunction with the map image generated using GENERATEMAP. Standard procedure is to use GENERATEMAP to create an INPUT type image or an IMG HTML element, ask a user to click on the map, capture click coordinates, submit an IDENTIFY request with the click coordinates, and use the OUT_QUERYTABLE query to present the user with the result. The easiest way to capture click coordinates is to use an INPUT type image HTML table in the form and specify a CFM page with IDENTIFY as a form action. Coordinates of the mouse click are in the FORM.map_image.X and FORM.map_image.Y variables in the called page (map_image is the name of the image input field containing the map image in the calling page).
- Depending on the value of the TOLERANCE attribute, there will be 0, 1, or more than one feature in the result set. If there are no selected features, OUT_RESULTQUERY is not defined. Always check if a query is defined before trying to access the values.
- GENERATEHTML="true" is used primarily for testing since it does not provide a method of formatting the output. Applications in a production environment would probably use CF functions and elements to loop through OUT_QUERYTABLE and format the result.

Examples

1. This request returns information about a ZIP Code polygon (layer ID 1) in the center of the map image:

```
<CF_ARCIMS ACTION="IDENTIFY"
   SERVICENAME="SanFrancisco"
   SERVERNAME="bear"
   SERVERPORT="5300"
   ATTRIBUTES="##ALL##"
   LAYERID="1"
   ENVELOPE="-122.46,37.76,-122.42,37.79"
   IMAGESIZE="400,400"
   POSX="200"
   POSY="200"
   TOLERANCE="2"
   GENERATEHTML="true">
```

Since GENERATEHTML="true", the element generates an HTML table.

2. The following CFM page shows the map image inside the HTML form, then runs Identify as a form action. Identify results are shown in a formatted table.

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">

<html>
<head>
   <title>Identify Example</title>
</head>

<body>

<cfif isDefined("Form.map_image.x")>
   <!—
   This is executed when page is invoked second time, from the form.
   —>
   <CF_ARCIMS ACTION="IDENTIFY"
      SERVICENAME="SanFrancisco"
      SERVERNAME="bear"
      SERVERPORT="5300"
      ATTRIBUTES="##ALL##"
      LAYERID="5"
      ENVELOPE="#Form.Extent#"
      IMAGESIZE="400,400"
      POSX="#Form.Map_Image.X#"
      POSY="#Form.Map_Image.Y#"
      TOLERANCE="2"
      GENERATEHTML="false"/>

   <cfif isDefined("out_querytable")>
      <!— Result query exist, so user selected the theater —>
      <cfoutput query="OUT_QUERYTABLE">
        <table>      <tr>
               <td><b>Name:</b></td><td>#out_querytable.name#</td>
        </tr><tr>
               <td><b>Address:</b></td><td>#out_querytable.address#,
        #out_querytable.city#</td>
        </tr><tr>
               <td><b>Phone:</b></td>
               <td>#out_querytable.phone#</td>
        </tr> </table><br><br>
      </cfoutput>
   <cfelse>

      <!— Result query does not exist, user did not select the theater —> No theaters found.

      Theatres are small red triangles. Click 'Back' button and try again.
   </cfif>
<cfelse>
```

```
   <!—
   This is executed first time page is invoked.
   —>
   <CF_ARCIMS ACTION="GENERATEMAP"
      SERVERNAME="bear"
      SERVERPORT="5300"
      SERVICENAME="SanFrancisco"
      ENVELOPE="-122.46,37.76,-122.42,37.79"
      IMAGESIZE="400,400"
      GENERATEHTML="false"/>

   <b>Click on the map to identify the theater:</b><br>
   <cfoutput>
   <form action="id2.cfm" method="POST">
      <input type="Image" name="Map_Image" src="#OUT_IMAGEURL#" width="400"
   height="400">
      <input type="Hidden" name="Extent"
   value="#OUT_MINX#,#OUT_MINY#,#OUT_MAXX#,#OUT_MAXY#">
   </form>
   </cfoutput>

</cfif>

</body>
</html>
```

GETMAPSERVICES

Purpose

Gets a list of the Services defined on the Spatial Server and basic information about each Service.

Syntax

```
<CF_ARCIMS ACTION="GETMAPSERVICES"
SERVERNAME="server name"
SERVERPORT="server port"
GENERATEHTML="TRUE|FALSE" >
```

Attributes

Attribute Name	Required	Value Type	Default Value	Possible Values	Usage
SERVERNAME	Y	String	N/A	N/A	Name of the server running ArcIMS Application Server.
SERVERPORT	Y	Integer	N/A	N/A	Server port number.
GENERATEHTML	N	Boolean	False	True, False	If true, HTML IMG table is generated in place of CF_ARCIMS element during the run time; if false, all variables are set, but no table is generated.

Output variables

Variable Syntax	Always Generated	Variable Type	Usage
OUT_SERVICETABLE	Y	CF Query	CF query containing records for all Services currently running on the Spatial Server. The fields in the query are described in the notes below. This query can be used as a standard CF query in <cfoutput>, <cfloop>, and all other CF elements and functions that expect a CF Query as an argument.
IN_REQUESTAXL	Y	String	ArcXML code of the request sent to the Spatial Server. Used primarily for debugging.
OUT_RESPONSEAXL	Y	String	ArcXML code of the response received from the Spatial Server. As the CF_ARCIMS element does the ArcXML parsing internally and places all relevant information in CF variables, this is used primarily for debugging.
OUT_ERROR	Y	String	Where the Spatial Server returns error messages.

Restrictions

None

Notes

- This request is used to retrieve a list of the Services currently running on the specified Spatial Server and basic Service information. To get more detailed information about a Service, use a GETSERVICEINFO request.

- Fields in OUT_SERVICESTABLE are:

NAME	Name of the Service
SERVICEGROUP	Virtual server associated with the Service
ACCESS	Service type access (PUBLIC or PRIVATE)
TYPE	Service type (ImageServer, FeatureServer, GeocodeServer)
DESC	Description
GROUP	Security group (not used)
STATUS	Current Service status (ENABLED or DISABLED)
IMAGE_TYPE	Type of image generated by the Spatial Server (GIF, PNG, PNG8, JPEG)

Examples

1. The basic usage of the request:

```
<cf_arcims  action="getmapservices"
   ServerName="bear"
   ServerPort="5300"
   Generatehtml="True"/>
```

Since GENERATEHTML is set to true, an HTML table is created.

2. How to use GETMAPSERVICES to give the user a list of Services to select from:

```
<cf_arcims  action="getmapservices"
   ServerName="bear"
   ServerPort="5300"
   Generatehtml="false"/>

Please select the Service:<br><br>

<form action="" method="POST">
<select name="service">
<cfoutput query="out_servicestable">
   <option value="#out_servicestable.name#">#out_servicestable.name#</option>
</cfoutput>
</select>
</form>
```

Since GENERATEHTML is set to false, no table is automatically generated. The resulting out_servicestable query is used inside the <cfoutput> element to generate a set of <option> elements for the list in the form.

GETSERVICEINFO

Purpose

Gets detailed information about a Service.

Syntax

```
<CF_ARCIMS ACTION="GETSERVICEINFO"
   SERVICENAME="service name"
   SERVERNAME="server name"
   SERVERPORT="server port"
   GENERATEHTML="TRUE|FALSE" >
```

Attributes

Attribute Name	Required	Value Type	Default Value	Possible Values	Usage
GENERATE HTML	N	Boolean	False	True, False	If true, HTML tables are generated in place of the CF_ARCIMS element during run time; if false, all variables are set, but no table is generated.
SERVERNAME	Y	String	N/A	N/A	Name of the server running ArcIMS Application Server.
SERVERPORT	Y	Integer	N/A	N/A	Server port number.
SERVICENAME	Y	String	N/A	N/A	Name of the Service to be drawn.

Output variables

Variable Syntax	Always Generated	Variable Type	Usage
OUT_GEOCODE	N	CF Query	CF query generated only if Service type is STYLES 'Geocode'. It contains a list of the Service layers with geocoding extensions. The fields in the query are described in the notes below.
OUT_*LayerName*_ FIELDTABLE	Y	CF Query	Set of CF queries containing information about fields in each layer. The fields in the query are described in the notes below.
OUT_LAYERTABLE	Y	CF Query	CF query containing information about all layers defined in the Service. The fields in the query are described in the notes below. This query can be used as a standard CF query in <cfoutput>, a <cfloop>, and all other CF elements and functions that expect a CF query as an argument.
OUT_MAPENVELOPE TABLE	Y	CF Query	CF query containing default map extent of the Service. The fields in the query are described in the notes below. This query can be used as a standard CF query in <cfoutput>, <cfloop>, and all other CF elements and functions that expect a CF query as an argument.

Variable Syntax	Always Generated	Variable Type	Usage
OUT_*StyleName*_ INPUTS	N	CF Query	Set of CF queries containing a description of required inputs used for the style specified in the name of the query object. There is one query for every geocoding style used in the Service. The fields in the query are described in the notes below.
IN_REQUESTAXL	Y	String	ArcXML code of the request sent to the ArcIMS Spatial Server. Used primarily for debugging.
OUT_RESPONSEAXL	Y	String	ArcXML code of the response received from the Spatial Server. As the CF_ARCIMS element does the ArcXML parsing internally and places all relevant information in CF variables, this is used primarily for debugging.
OUT_ERROR	Y	String	Where the Spatial Server returns error messages.

Restrictions

None

Notes

- A GETSERVICEINFO request can be used to retrieve detailed information about a Service and layers in the Service up to field definition for each layer. Information is returned in a set of CF queries.
- OUT_MAPENVELOPETABLE has just one record and four fields representing the coordinates of the default Service's map extent. The extent is the default extent set in the map configuration file.

  Fields are:

MINX	X coordinate of the lower-right corner
MINY	Y coordinate of the lower-right corner
MAXX	X coordinate of the upper-right corner
MAXY	Y coordinate of the upper-right corner

- OUT_LAYERTABLE contains a record for every layer in the Service regardless of visibility.

  Fields are:

NAME	Layer name
LAYERTYPE	Type of the layer (featureclass or image)
FEATURETYPE	Feature type of the layer (point, line, or polygon) if layer is based on vector data (ArcSDE or shapefiles)
VISIBLE	Layer visibility (true or false)
MAXSCALE	Maximum scale at which layer displays
MINSCALE	Minimum scale at which layer displays
MINX	X coordinate of the lower-right corner
MINY	Y coordinate of the lower-right corner
MAXX	X coordinate of the upper-right corner

MAXY	Y coordinate of the upper-right corner
ID	Layer ID

- OUT_*LayerName*_FIELDTABLE contains field definitions for every layer. There is one OUT_*LayerName*_FIELDTABLE for every layer where *LayerName* is the name of the layer or ID of the layer if the name is not defined. If the name or ID contains dots ('.'), the dots are replaced with the string '_ESRIDOT_'. If the name or ID contains spaces, the spaces are replaced with underscores ('_'). OUT_*LayerName*_FIELDTABLE has one record for every field in the layer. OUT_*LayerName*_FIELDTABLE fields are:

NAME	Name of the field
TYPE	Field type
SIZE	Field size
PRECISION	Field precision

- An OUT_GEOCODE_STYLES query is created only if the Service has geocode properties set. It contains a record for every layer that is prepared for geocoding and the geocoding style associated with it.
  Fields are:

LAYERNAME	Layer name
LAYERID	Layer ID
STYLENAME	Name of the geocoding style associated with the layer

- OUT_*StyleName*_INPUTS contains definitions of the input data required for every style type. There is an OUT_*StyleName*_INPUTS defined for every geocoding style used in the Service. There will be one record for every required parameter for a particular style.
  Fields are:

ID	Parameter ID
LABEL	Parameter name
WIDTH	Parameter width
TYPE	Parameter type
DESCRIPTION	Parameter description

Examples

1. The basic usage of the element:

```
<cf_arcims  action="getserviceinfo"
   ServiceName="SanFrancisco"
   ServerName="bear"
   ServerPort="5300"
   generateHTML="true" />
```

GENERATEHTML is true, so HTML tables are created.

2. This example puts layer names in a table with a green background for visible layers and a red one for invisible layers. It demonstrates the use of OUT_LAYERTABLE:

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">

<html>
<head>
   <title>GETSERVICEINFO Example</title>
```

```
</head>

<body text="white">
<cf_arcims  action="getserviceinfo"
   ServiceName="SanFrancisco"
   ServerName="bear"
   ServerPort="5300"
   generateHTML="false" />

<table border=0 >
<tr bgcolor="Teal">
   <td><b>ID</b></td>
   <td><b>Name</b></td>
   <td><b>Layer Type</b></td>
   <td><b>Feature Type</b></td>
</tr>
<cfoutput query="out_layertable">
<cfif #out_layertable.visible# eq "true">
   <cfset bgcol="Green">
   <cfelse>
   <cfset bgcol="Maroon">
   </cfif>
<tr bgcolor="#bgcol#">
   <td>#out_layertable.ID#</td>
   <td>#out_layertable.NAME#</td>
   <td>#out_layertable.LAYERTYPE#</td>
   <td>#out_layertable.FEATURETYPE#</td>
</tr>
</cfoutput>
</table>

</body>
</html>
```

GEOCODE

Purpose

Performs address matching and geocoding.

Syntax

```
<CF_ARCIMS ACTION="GEOCODE"
   SERVICENAME="service name"
   SERVERNAME="server name"
   SERVERPORT="server port"
   STREET="street address OR cross street #1"
   LAYERID="1"
   CrossStreet="cross street #2"
   ZONE="zip code OR any other zoning value"
   KeyField="value"
   MAXCANDIDATES="int value"
   MINSCORE="min acceptable score"
   PINPOINT="TRUE|FALSE"
   GENERATEHTML="TRUE|FALSE"  >
```

Attributes

Attribute Name	Required	Value Type	Default Value	Possible Values	Usage
CROSSSTREET	N	String	N/A	N/A	If address is given as a street intersection, this field contains the name of the second intersection street.
GENERATEHTML	N	Boolean	False	True, False	If true, HTML IMG table is generated in place of CF_ARCIMS during run time. If false, all variables are set, but no table is generated.
KEYFIELD	N	String	N/A	True, False	Used for 'SingleField' geocoding style, contains the value for a specific field.
LAYERID	Y	String	N/A	N/A	ID of layer to query.
MAXCANDIDATES	N	Integer	5	N/A	Defines number of candidates returned to client when a specified address cannot be resolved with a matching score of 100.
MINSCORE	N	Integer	60	1–100	Minimum acceptable score of returned candidates.
PINPOINT	N	Boolean	True	True, False	If true, returns addresses' point locations.
SERVERNAME	Y	String	N/A	N/A	Name of the server.
SERVERPORT	Y	Integer	N/A	N/A	Server port number.
SERVICENAME	Y	String	N/A	N/A	Name of the server running ArcIMS Application Server.
STREET	N	String	N/A	N/A	Depending on geocoding style, this can contain an address or first intersection street.

Attribute Name	Required	Value Type	Default Value	Possible Values	Usage
ZONE	N	Boolean	N/A	True, False	If an address style with a zone is used, this can contain zone information. Zone is usually a ZIP Code.

Output variables

Variable Syntax	Always Generated	Variable Type	Usage
OUT_GEOCODE RESULTS	N	CF Query	CF Query containing geocoding results. It has one record for each returned candidate.
IN_REQUESTAXL	Y	String	ArcXML code of the request sent to the Spatial Server. Used primarily for debugging.
OUT_RESPONSEAXL	Y	String	ArcXML code of the response received from the Spatial Server. As the CF_ARCIMS element does the ArcXML parsing internally and places all relevant information in CF variables, this is used primarily for debugging.
OUT_ERROR	Y	String	Where the Spatial Server returns error messages.

Restrictions

- Before it can be used for geocoding, a layer must be prepared for a particular geocoding style.

Notes

- Address geocoding in ArcIMS is a process that creates points based on address data. During geocoding, ArcIMS reads these addresses and locates them on a street network layer. Resulting points can be displayed with other layers in an acetate layer using a GENERATEMAP request. ArcIMS returns a result set represented as a CF Query in ColdFusion with the address and the x,y coordinates of the successfully matched records.
- Events can be geocoded using standard addresses and also using street intersection, ZIP Code, or place name. Prior to geocoding, the Service must have a street network or ZIP Code layer with the data prepared for a particular geocoding style. For more information on setting up geocoding in your Service, see *ArcIMS Help*.

Typical geocoding procedure:

1. Set up your map configuration file in ArcIMS Author for geocoding. For more information on setting up geocoding in your map configuration file, see *ArcIMS Help*.
2. Create an ArcIMS Image Service from the map configuration file.
3. Send the geocoding request using the GEOCODE element.
4. Process the results. Results are returned in a CF Query and usually contain the coordinates of the matched locations. These locations can be drawn as points on the acetate layer in a GENERATEMAP request.

- The address description required for geocoding varies depending on the geocoding style. The geocoding style is determined when an ArcIMS layer is prepared for the geocoding. To find the geocoding style on a particular layer, use the GETSERVICEINFO request. If the layer in the request is enabled for geocoding, GETSERVICEINFO creates an OUT_GEOCODE_STYLES CF Query listing of the geocoding style of the layer.
- Geocoding styles and required attributes follow. For more information on Geocoding styles, see *ArcIMS Help*.

USAddress	Style 'US streets' requires STREET; optional CROSSSTREET. STREET contains the event address or just a street name if CROSSSTREET is specified.
USAddressZ	Style 'US streets with zone' requires STREET; optional CROSSSTREET and ZONE. STREET contains the event address or just a street name if CROSSSTREET is specified. ZONE is the ZIP Code or any other zone specifier.
SingleField	Style 'Single field' requires a KEYFIELD. This address style is used for geocoding based on the value of a single field in the layer's attribute table.
USSingleHouse	Style 'US single house' requires STREET; optional CROSSSTREET.
USSingleHouseZ	Style 'US single house with zone' requires STREET; optional CROSSSTREET and ZONE.
USSingleRange	Style 'US single range' requires STREET; optional CROSSSTREET. STREET contains the event address or just a street name if CROSSSTREET is specified.
USSingleRangeZ	Style 'US single range with zone' requires STREET; optional CROSSSTREET and ZONE. STREET contains the event address or just a street name if CROSSSTREET is specified.
Zip4	Style 'Zip+4' requires a value with four digits representing the ZIP Code.
Zip4Range	Style 'Zip+4 range' requires a value with four digits representing the ZIP Code. This request is similar to Zip4. The only difference is that more than one ZIP Code can be matched to one reference point (e.g., the point in the reference layer can represent more than one ZIP Code).
Zip5	Style 'Zip five-digit' requires a value with five digits representing the ZIP Code. The five-digit ZIP address style can be used for geocoding five-digit ZIP Code addresses.
Zip5Range	Style 'Zip 5-digit range' requires a value with five digits representing the ZIP Code. This request is similar to Zip5. The only difference is that more than one ZIP Code can match to one reference point (e.g., a point in the reference layer can represent more than one ZIP Code).

- OUT_GEOCODERESULTS CF Query contains address and (if PINPOINT is true) location of matched events. Fields in the query are:

Score	Matching score for a particular candidate (1–100)
AddressFound	Address for a candidate as found by ArcIMS
PointX	X coordinate of the point
PointY	Y coordinate of the point

Examples

1. Simple geocoding on a street network layer.

```
<cf_arcims  action="geocode"
   ServiceName="geocoding"
   ServerName="bear"
   ServerPort="5300"
   Street="150 N. Palm Av."
   LayerID="0"
   MaxCandidates="10"
   MinScore="80"
```

```
   PinPoint="true"
   Zone="0"
   GenerateHTML="true"/>
```

Because MinScore is 80, only candidates greater than or equal to that score are returned. If MinScore is set to a lower number, more candidates can be reviewed.

2. Geocoding a street intersection. Resulting point coordinates are then used to draw the point in the map image.

   In this example, the REQUEST action is used instead of GENERATEMAP to create a map image. Using GENERATEMAP, which only supports acetate objects in pixel coordinates, and GEOCODE, which returns the point in database coordinates, you are required to convert them to image coordinates. Converting a database to image coordinates is not a problem if the exact extent of the image generated is known. However, since the aspect ratio of image size and requested extent can differ, the extent of the map image generated by the Spatial Server can be different from the one requested. You must either ensure that the request extent always has the same aspect ratio as image or send two GENERATEMAP requests with the first one designed to get the extent of the database coordinates. As an alternative, you can use the REQUEST action. The REQUEST action supports an acetate layer point in database coordinates and is probably the simplest and most flexible.

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">

<html>
<head>
   <title>Geotest</title>
</head>

<body>
<cfset AXLInput='<ARCXML version="1.1"><REQUEST><GET_GEOCODE maxcandidates="25"
minscore="60">'>
<cfset AXLInput=#AXLInput#&'<LAYER id="0"/>'>
<cfset AXLInput=#AXLInput#&'<ADDRESS>'>
<cfset AXLInput=#AXLInput#&'<GCTAG id="STREET"value="3650 Baker St"/>'>
<cfset AXLInput=#AXLInput#&'<GCTAG id="Zone" value="94123"/>'>
<cfset AXLInput=#AXLInput#&'<GCTAG id="CrossStreet" value=""/>'>
<cfset AXLInput=#AXLInput#&'</ADDRESS>'>
<cfset AXLInput=#AXLInput#&'</GET_GEOCODE></REQUEST></ARCXML>'>

<CFX_ESRIMAP ACTION="REQUEST"
SERVICENAME="Geocode"
SERVERNAME="localhost"
SERVERPORT="5300"
CUSTOMSERVICE="geocode"
AXLTEXT="#AXLInput#"
PARSERESPONSEAXL="true"
GENERATEHTML="true"
>
<body>
<html>
```

EXTRACT

Purpose

Extracts map data from requested database ArcIMS Services.

Syntax

Layer visibility can be specified using either CF_ARCIMS element attributes or child elements.

Basic syntax

```
<CF_ARCIMS ACTION="EXTRACT"
   SERVICENAME="service name"
   SERVERNAME="server name"
   SERVERPORT="server port"
   ENVELOPE="minx,miny,maxx,maxy"
   LAYERLISTORDER="TRUE|FALSE"
   LAYERINVISIBLELIST="layer1, layer2, layer3"
   LAYERVISIBLELIST="layer4, layer5, layer6"
   OUTPUTURL="URL for where the zip file will be available"
   OUTPUTPATH="path for output of zip file"
   GENERATEHTML="TRUE|FALSE"  >
```

Extended syntax

To specify layer visibility using child elements instead of LAYERVISIBLELIST and LAYERINVISIBLELIST attributes, use one or more CF_ARCIMS_LAYER elements inside CF_ARCIMS.

```
<CF_ARCIMS_LAYER LayerID="Layer_ID" Visible=[true|false] >
```

Attributes

Attribute Name	Required	Value Type	Default Value	Possible Values	Usage
ENVELOPE	Y	Numbers	N/A	N/A	Extent of extract file to be generated in database units as a comma-separated list (MinX, MinY, MaxX, MaxY).
GENERATEHTML	N	Boolean	False	True, False	If true, HTML IMG element is generated in place of CF_ARCIMS element during the run time; if false, all variables are set, but no element is generated.
LAYERINVISIBLELIST	N	String	N/A	N/A	List of IDs of layers that are available to be turned on.
LAYERLISTORDER	N	Boolean	False	True, False	If true, layers are drawn in the order listed in LAYERVISIBLELIST, and only layers specified in LAYERVISIBLELIST are used. If false, layers are drawn in the order they appear in the map file, and all visible layers are used.
LAYERVISIBLELIST	N	String	N/A	N/A	List of IDs of layers that are available to be turned off.

Attribute Name	Required	Value Type	Default Value	Possible Values	Usage
OUTPUTPATH	N	String	From	N/A	Path of location where export files are Service generated as seen by the Spatial Server.
OUTPUTURL	N	String	From	N/A	URL of location where export files are Service generated as seen by the Spatial Server.
SERVERNAME	Y	String	N/A	N/A	Name of the server.
SERVERPORT	Y	Integer	N/A	N/A	Server port number.
SERVICENAME	Y	String	N/A	N/A	Name of the Service to be extracted.

Child element

Name	Required	Occurrences	Notes
CF_ARCIMS_LAYER	N	Many	Used to specify layers to be extracted. There should be one CF_ARCIMS_LAYER for every layer that needs to be turned on or off. If LAYERLISTORDER is false, only layers with visibility different from the default need to be specified. If LAYERLISTORDER is true, only layers specified with CF_ARCIMS_LAYER are extracted, so all layers that need to be extracted should be specified regardless of the default visibility. Replaces LAYERVISIBLELIST and LAYERINVISIBLELIST.

Output variables

Variable	Always Syntax	Variable Generated	Usage Type
OUT_FILEPATH	Y	String	Path of files generated by the Spatial Server as seen by the Spatial Server.
OUT_FILEURL	Y	String	URL of files generated by the Spatial Server.
OUT_MAXX	Y	Integer	Envelope (in map coordinates) of returned data.
OUT_MAXY	Y	Integer	Envelope (in map coordinates) of returned data.
OUT_MINX	Y	Integer	Envelope (in map coordinates) of returned data.
OUT_MINY	Y	Integer	Envelope (in map coordinates) of returned data.
IN_REQUESTAXL	Y	String	ArcXML code of the request sent to the Spatial Server. Used primarily for debugging.
OUT_RESPONSEAXL	Y	String	ArcXML code of the response received from the Spatial Server. As the CF_ARCIMS element does the ArcXML parsing internally and places all relevant information in CF variables, this is used primarily for debugging.
OUT_ERROR	Y	String	Where the Spatial Server returns error messages.

Restrictions

- EXTRACT request does not support extracting the data from join tables, attribute query, or any other type of spatial filter other than envelope. To use those criteria, use a REQUEST action with the GET_EXTRACT element.
- Extract virtual server must be manually set to PUBLIC access type. Default PRIVATE access type will not work. See notes below.

Notes

- EXTRACT request extracts the data from the ArcIMS data source (ArcSDE or shapefile) and creates a ZIP compressed archive file with the shapefiles containing requested features. The ZIP compressed archive file is placed in a directory specified by the OUTPUTPATH attribute, and OUTPUTURL plus the ZIP archive file name (generated by the Spatial Server) will be returned to the client. It is up to Webmaster to ensure that OUTPUTURL points to the OUTPUTPATH directory through an alias on the Web server. It is up to the application to retrieve the files for the client.
- By default, all currently visible layers are extracted. One set of files (.shp, .shx, and .dbf) is created for each visible layer. A layer can be turned off by including it in LAYERINVISIBLELIST. If LAYERINVISIBLELIST is not specified, all visible layers are extracted regardless of the layers specified in LAYERVISIBLELIST.
- The Service used for extraction must use an Extract virtual server. The Extract virtual server is initially defined with a PRIVATE access type. You are required to manually modify the access type to PUBLIC. To modify it, find the extract server configuration file at %AIMSHOME%\Server\etc\aimses.cfg on Windows or $AIMSHOME/etc/aimses.cfg on UNIX, modify the line "access='PRIVATE'" to "access='PUBLIC'", and restart ArcIMS. Now the Extract virtual server is PUBLIC, and it appears in the virtual server list in ArcIMS Administrator when a new Service is created.

Examples

1. Serve SanFrancisco.axl as an Extract Server map service; name it SanFranciscoExtract. This example extracts all active layers from the SanFranciscoExtract Service. The SanFranciscoExtract Service is based on the SanFrancisco.axl file from the samples directory. Note that although it is a separate Service type, an Extract Service can use the same map configuration file as an Image Service. However, in that case outputurl and outputpath must both be specified in the request.

```
<cf_arcims  action="extract"
   ServiceName="SanFranciscoExtract"
   ServerName="bear"
   ServerPort="5300"
   envelope="-122.54,37.65,-122.32,37.84"
   layerlistorder="false"
   outputpath="c:\ArcIMS\output"
   outputurl="http://bear/output" />

<cfoutput>
File: #OUT_FILEURL#
</cfoutput>
```

Variable OUT_FILEURL contains the URL of the .zip file, for example, "http://bear/output/bear3482264.zip".

2. In this example, only the County layer (ID 0) is extracted.

```
<cf_arcims  action="extract"
   ServiceName="SanFranciscoExtract"
   ServerName="bear"
   ServerPort="5300"
   envelope="-122.54,37.65,-122.32,37.84"
   layerlistorder="true"
   layervisiblelist="0"
   outputpath="c:\ArcIMS\output"
   outputurl="http://bear/output"
   generatehtml="true"/>
```

3. Using the CF_ARCIMS_LAYER child element to specify the layers to extract:

```
<cf_arcims  action="extract"
   ServiceName="SanFranciscoExtract"
   ServerName="bear"
   ServerPort="5300"
   envelope="-122.54,37.65,-122.32,37.84"
   layerlistorder="true"
   outputpath="c:\ArcIMS\output"
   outputurl="http://bear/output"
   generatehtml="true">

   <cf_arcims_layer LayerID="0" Visible="true" />

</cf_arcims>
```

4. How to retrieve an extract file using the CFFTP ColdFusion element:

```
<cf_arcims  action="extract"
   ServiceName="SanFranciscoExtract"
   ServerName="bear"
   ServerPort="5300"
   envelope="-122.54,37.65,-122.32,37.84"
   layerlistorder="false"
   outputpath="c:\ArcIMS\output"
   outputurl="http://bear/output"
   generatehtml="true" />

<cfoutput>
<cfftp action="GETFILE"
   server="bear"
   username="user_name"
   password="user_password"
   stoponerror="Yes"
   localfile="c:\temp\extract.zip"
   remotefile="#OUT_FILEPATH#"
   transfermode="BINARY"
   failifexists="Yes">

</cfoutput>
```

REQUEST

Purpose

Sends any ArcXML request from file or text input to ArcIMS Spatial Server.

Syntax

ArcXML request can be specified in AXLTEXT or AXLFILE attributes or by placing ArcXML elements inside the CF_ARCIMS element.

Basic syntax

```
<CF_ARCIMS ACTION="REQUEST"
   SERVICENAME="service name"
   SERVERNAME="server name"
   SERVERPORT="server port"
   CUSTOMSERVICE="Query/GeoCode"
   AXLFILE="ArcXML file"
   AXLTEXT="ArcXML text"
   ParseResponseAXL="true|false"
   GENERATEHTML="TRUE|FALSE" >
```

Extended syntax

Any ArcXML element or sequence of elements can be placed inside this request, and it will be sent to the Spatial Server.

Attributes

Attribute Name	Required	Value Type	Default Value	Possible Values	Usage
AXLFILE	N	String	N/A	N/A	Name of the file containing an ArcXML to send to the Spatial Server with full path.
AXLTEXT	N	String	N/A	N/A	ArcXML string to send to the Spatial Server.
CUSTOMSERVICE	Y	Specified Values	N/A	Query, Geocode, “”	If using a GET_FEATURES ArcXML request, use Query. If using a GET_GEOCODE ArcXML request, use Geocode. For all other requests, use an empty string (“”).
GENERATEHTML	N	Boolean	False	True, False	If true, the HTML table is generated in place of the CF_ARCIMS element during run time; if false, all variables are set, but no table is generated.
PARSERESPONSEAXL	N	Boolean	False	True, False	If true, connector tries to parse the Spatial Server response. If successfully parsed, the response is put into output variables and queries similar to those for higher-level requests. If request is, for example, GET_IMAGE, response is parsed as for a GENERATEIMAGE request with all output variables for that request.
SERVERNAME	Y	String	NA	N/A	Name of the server running ArcIMS Application Server.

Attribute Name	Required	Value Type	Default Value	Possible Values	Usage
SERVERPORT	Y	Integer	N/A	N/A	Server port number.
SERVICENAME	Y	String	N/A	N/A	Name of the Service to be drawn

Child elements

Any ArcXML code can be placed inside the CF_ARCIMS REQUEST action, and it will be sent to the Spatial Server. That ArcXML code replaces the AXLFILE or AXLTEXT attribute.

Output variables

Variable Syntax	Always Generated	Variable Type	Usage
IN_REQUESTAXL	Y	String	ArcXML request sent to the Spatial Server. Used primarily for debugging.
OUT_RESPONSEAXL	Y	String	ArcXML request of the response received from the Spatial Server. As the CF_ARCIMS element does the ArcXML parsing internally and places all relevant information in CF variables, this is used primarily for debugging.
OUT_ERROR	Y	String	Where the Spatial Server returns error messages.

- If PARSERESPONSEAXL="True", other output variables are generated depending on the request type.
- For an ArcXML GET_IMAGE request, variables are created as for a CF_ARCIMS GENERATEMAP action.
- For an ArcXML GET_FEATURES request, variables are created as for a CF_ARCIMS QUERY action.
- For an ArcXMLGET_SERVICE_INFO request, variables are created as for a CF_ARCIMS GETSERVICEINFO action.
- For an ArcXML GET_GEOCODE request, variables are created as for a CF_ARCIMS GEOCODE action.
- For an ArcXML GET_EXTRACT request, variables are created as for a CF_ARCIMS EXTRACT action.

Restrictions

All XML special characters (such as '<' and '>') must be replaced with the appropriate &; sequences if an ArcXML request is in the variables. For a list of special characters and their replacements, see the ColdFusion documentation.

Notes

- REQUEST is a general purpose, low-level request. It is used to send any kind of ArcXML request to the Spatial Server, and it is often used to implement ArcIMS functionality not exposed through other CF_ARCIMS actions such as the dynamic renderer definition for a GET_IMAGE request. The full ArcXML must be supplied by the client, and it is not checked before it is sent to the Spatial Server, so there is a higher possibility of error.
- The ArcXML request can be in the file specified by the AXLFILE attribute in the string specified with the AXLTEXT attribute. Only one of these methods should be used.

- AXLTEXT can be enclosed in single quotes if the ArcXML text itself contains double quotes. However, if the ArcXML text contains both single and double quotes—for example, if it contains a QUERY element with a SQL where statement—it cannot be specified directly in the AXLTEXT attribute. It either has to be composed as a variable or specified as a child element.
- ArcXML is case sensitive. Elements are upper case, and attributes are lower case.

Examples

1. Sending a simple GET_SERVICE_INFO request. It is similar to a GETSERVICEINFO CF_ARCIMS request:

```
<cfset axlRequest=
   '<ARCXML version="1.1"> <REQUEST> ' &
   '<GET_SERVICE_INFO fields="true" envelope="true" renderer="false" /> ' &
   '</REQUEST> </ARCXML>' />

<cf_arcims  action="request"
   ServiceName="SanFrancisco"
   ServerName="bear"
   ServerPort="5300"
   CustomService=""
   axltext="#axlRequest#"
   generateHTML="true"
   ParseResponseAXL="true" />
```

2. This example defines a temporary layer based on a census blockgroup layer with a query that selects areas with median age less than 35 and creates a renderer that highlights those areas in green. This kind of query cannot be made dynamically with other CF_ARCIMS elements. This example also demonstrates the use of ArcXML code inside a CF_ARCIMS element.

```
<cf_arcims  action="request"
   ServiceName="Demog"
   ServerName="bear"
   ServerPort="5300"
   CustomService=""
   generateHTML="true"
   ParseResponseAXL="true">

   <ARCXML version="1.1">
      <REQUEST>
        <GET_IMAGE>
          <PROPERTIES>
               <IMAGESIZE width="400" height="400"/>
               <ENVELOPE minx="-122.54" miny="37.65" maxx="-122.32" maxy="37.84"/>
               <LAYERLIST order="false" >
                     <LAYERDEF id="3" visible="true"/>
                     <LAYERDEF name="Temp_Layer" visible="true"/>
               </LAYERLIST>
          </PROPERTIES>
          <LAYER type="FeatureClass" name="Temp_Layer" visible="true">
               <DATASET fromlayer="Census Blockgroups"/>
               <QUERY where="MED_AGE &lt; 35"/>
               <SIMPLERENDERER>
                     <SIMPLEPOLYGONSYMBOL fillcolor="150,255,150" filltype="solid"
               boundarywidth="2" boundarycolor="0,255,0"S />
               </SIMPLERENDERER>
```

```
        </LAYER>
      </GET_IMAGE>
    </REQUEST>
  </ARCXML>

</CF_ARCIMS>
```

Application development and debugging tips

Developing mapping and GIS Web applications using ColdFusion and ArcIMS can be as basic as placing a map on the page or performing more advanced queries and presenting the results.

Using the REQUEST action in place of other actions

Some of the actions defined for the CF_ARCIMS element do not expose the full functionality of ArcIMS. Fortunately, you can use the REQUEST action in cases where higher-level actions do not expose particular functionality. The REQUEST action takes an ArcXML request as an argument and sends it to the ArcIMS Spatial Server. The use of REQUEST assumes knowledge of ArcXML syntax. See the *ArcXML Programmer's Reference Guide* for a complete reference to ArcXML.

REQUEST in place of GENERATEMAP

You can typically create maps using the GENERATEMAP action. That is true for maps that contain acetate layer objects of the same type and symbology or highlighted features with unique keys. However, if an acetate layer contains a number of differently symbolized objects or several sets of features that are highlighted differently, or those features do not have a unique key, the developer needs to use REQUEST instead of GENERATEMAP.

REQUEST in place of QUERY

You use the QUERY action to make a spatial, attribute, or combined query. However, it is not possible to use join tables with non-ArcSDE data sources. Also, if buffer is used, the features selected by the buffer are returned, but the buffer geometry itself cannot be returned. If you want to show the buffer on the map image, you must use the REQUEST action.

REQUEST in place of LEGEND

When your application uses layers set with scale factors for drawing, you might want to use the REQUEST action to generate the legend. The LEGEND action creates the legend with all layers in the Service, regardless if they are turned off due to scale factors. It makes sense to combine a GET_IMAGE and LEGEND request in one REQUEST element since it creates the map and the legend using only one ArcXML request.

REQUEST in place of EXTRACT

The EXTRACT action is used to give a user a quick and easy way to get the features currently on the map into a shapefile. EXTRACT is based on GET_IMAGE syntax and not on GET_FEATURES. However, some situations require features to be extracted based on an attribute query or spatial query more complicated than envelope search. In this case, the EXTRACT request can't be used because it doesn't allow for any kind of query or external table joins. This is only possible using an ArcXML request from the REQUEST action.

ColdFusion Connector elements and ArcXML requests

The ArcIMS ColdFusion Connector translates ColdFusion custom element requests into ArcXML, sends the ArcXML request to the Spatial Server, takes the response from the Spatial Server, parses it, and puts the result into ColdFusion variables. Every CF_ARCIMS action, except REQUEST, creates one ArcXML request type.

CF_ARCIMS Action	ArcXML Element
GENERATEMAP	<GET_MAP>
QUERY	<GET_FEATURES>
GEOCODE	<GET_GEOCODE>
EXTRACT	<GET_EXTRACT>
IDENTIFY	<GET_FEATURES>
GETMAPSERVICES	<GET_SERVICES>
GETSERVICEINFO	<GET_SERVICEINFO>

Request and response

It is often useful to review the ArcXML request sent to the Spatial Server by the connector and the ArcXML response returned by the Spatial Server. Those ArcXML strings are stored in IN_REQUESTAXL and OUT_RESPONSEAXL ColdFusion variables.

For example, the code below creates an ArcXML request.

```
<CF_ARCIMS ACTION="GENERATEMAP"
   SERVERNAME="bear"
   SERVERPORT="5300"
   SERVICENAME="SanFrancisco"
   ENVELOPE="-122.46,37.76,-122.42,37.79"
   IMAGESIZE="400,400"
   LAYERLISTORDER="true"
   GENERATEHTML="true">

   <CF_ARCIMS_LAYER  LayerID="2"   Visible="true" >
   <CF_ARCIMS_LAYER  LayerID="3"   Visible="true" >
   <CF_ARCIMS_LAYER  LayerID="5"   Visible="true" >

   </CF_ARCIMS>

<cfoutput>
<?xml version="1.0"?>
 <ARCXML version="1.1">
 <REQUEST>
 <GET_IMAGE>
<PROPERTIES>
<IMAGESIZE width="400" height="400"/>
<ENVELOPE minx="-122.46" miny="37.76" maxx="-122.42" maxy="37.79"/>
<LAYERLIST order="true" >
<LAYERDEF id="2" visible="true"/>
<LAYERDEF id="3" visible="true"/>
<LAYERDEF id="5" visible="true"/>
</LAYERLIST>
</PROPERTIES>
</GET_IMAGE>
 </REQUEST>
 </ARCXML>
```

This request is in the IN_REQUESTAXL variable. The Spatial Server returns a response.

```
<?xml version="1.0"?>
<ARCXML version="1.1">
<RESPONSE>
<IMAGE>
<ENVELOPE minx="-122.46000000" miny="37.75500000" maxx="-122.42000000" maxy="37.79500000" /
>
<OUTPUT file="C:\ArcIMS\output\SanFrancisco_BEAR3273501.png" url="http://bear/output/
SanFrancisco_BEAR3273501.png" />
</IMAGE>
</RESPONSE>
</ARCXML>
```

The ColdFusion Connector parses the response and puts ENVELOPE and OUTPUT element values in appropriate ColdFusion variables. Entire response is in OUT_RESPONSEAXL.

It is not recommended to try to show the content of IN_REQUESTAXL and OUT_RESPONSEAXL on the result page, even for debugging. The browser will probably try to interpret it as XML code and return an error. Instead, put the variable values inside an HTML comment, not the ColdFusion comment, so the browser will not try to interpret them.

The code that deals with IN_REQUESTAXL and OUT_RESPONSEAXL follows.

```
<cfoutput>
<!—
Request:
#IN_REQUESTAXL#

Response:
#OUT_RESPONSEAXL#
—>
</cfoutput>
```

Server log files

If the connector element returns an error, IN_REQUESTAXL and OUT_RESPONSEAXL will not be defined. To find the problem in that case, the developer should check the server log file. Server log files are placed at %AIMSHOME%\server\log for Windows and $AIMSHOME/log for UNIX. The filename is composed of VirtualServerType_HostName_Number.log, so the log file for an image server on host bear may be ImageServer_BEAR_327.log.

The log file contains the full code of the ArcXML request, processing information, errors (if any), and the full code of the ArcXML response sent to the client. Processing information depends on the Server type. For Image Server, for example, for every layer there is the time spent searching and retrieving layer name features for that layer and the number of features processed. That information can be useful for tuning.

For example, for the previous request, the log file has the following entry:

```
[Fri May 05 12:59:28 2000][327 350 INFO1] Begin Request
[Fri May 05 12:59:28 2000][327 350 INFO3] REQUEST:
<GET_IMAGE>
<PROPERTIES>
<ENVELOPE minx="-122.46" miny="37.76" maxx="-122.42" maxy="37.79" />
<IMAGESIZE width="400" height="400" />
<LAYERLIST order="true" >
<LAYERDEF id="2" visible="true"/>
<LAYERDEF id="3" visible="true"/>
<LAYERDEF id="5" visible="true"/>
</LAYERLIST>
</PROPERTIES>
</GET_IMAGE>

[Fri May 05 12:59:28 2000][327 350 INFO1] SERVICE: SanFrancisco
[Fri May 05 12:59:28 2000][327 350 INFO2] ArcXML Parse Time: 0.360000s
[Fri May 05 12:59:28 2000][327 350 INFO2] RENDERER SETUP: 0.030000s
[Fri May 05 12:59:28 2000][327 350 INFO2] FEATURE LAYER: Highways
[Fri May 05 12:59:28 2000][327 350 INFO2] DATA SEARCH TIME: 0.020000s
[Fri May 05 12:59:29 2000][327 350 INFO2] GR FEATURES PROCESSED: 213
[Fri May 05 12:59:29 2000][327 350 INFO2] DATA RETRIEVAL TIME: 0.240000s
[Fri May 05 12:59:29 2000][327 350 INFO2] FEATURE LAYER: Agencies
[Fri May 05 12:59:29 2000][327 350 INFO2] DATA SEARCH TIME: 0.000000s
```

```
[Fri May 05 12:59:29 2000][327 350 INFO2] GR FEATURES PROCESSED: 0
[Fri May 05 12:59:29 2000][327 350 INFO2] DATA RETRIEVAL TIME: 0.000000s
[Fri May 05 12:59:29 2000][327 350 INFO2] FEATURE LAYER: Theaters
[Fri May 05 12:59:29 2000][327 350 INFO2] DATA SEARCH TIME: 0.020000s
[Fri May 05 12:59:29 2000][327 350 INFO2] GR FEATURES PROCESSED: 10
[Fri May 05 12:59:29 2000][327 350 INFO2] DATA RETRIEVAL TIME: 0.000000s
[Fri May 05 12:59:29 2000][327 350 INFO2] TOTAL PROCESSING TIME: 0.410000s
[Fri May 05 12:59:29 2000][327 350 INFO2] OUTPUT TIME: 0.331000s
[Fri May 05 12:59:29 2000][327 350 INFO3] RESPONSE:
<?xml version="1.0"?>
<ARCXML version="1.1">
<RESPONSE>
<IMAGE>
<ENVELOPE minx="-122.46000000" miny="37.75500000" maxx="-122.42000000" maxy="37.79500000" /
>
<OUTPUT file="C:\ArcIMS\output\SanFrancisco_BEAR3273501.png" url="http://bear/output/
SanFrancisco_BEAR3273501.png" />
</IMAGE>
</RESPONSE>
</ARCXML>
[Fri May 05 12:59:29 2000][327 350 INFO2] Total Request Time: 1.152000s
[Fri May 05 12:59:29 2000][327 350 INFO1] End Request
```

The total processing time was 1.15 seconds, and there are 213 features processed from the Highways layer and 10 from the Theaters layer.

Comparison of CF_ARCIMS and CFX_ESRIMAP

There are two types of ArcIMS ColdFusion connector elements—CF_ARCIMS and CFX_ESRIMAP. CF_ARCIMS elements and the rest of the CF_* elements described in this document are wrapper custom elements written as .cfm files in the ColdFusion custom element directory. They wrap the functionality of the CFX_ESRIMAP element. CFX_ESRIMAP is a basic connector element written in C++ using the ColdFusion application program interface (API).

CFX_ESRIMAP is similar to CF_ARCIMS. It supports all of the same attributes and action types. The only difference is that CFX_ESRIMAP does not support any child elements. The child elements often handle the escaping of string attributes, so you may need to implement the escaping of the strings. All data for the query must be supplied by the attributes.

If you encounter a problem in an ArcXML request sent by the ColdFusion Connector, you can try to replace CF_ARCIMS with CFX_ESRIMAP and test the code again.

The examples below show the equivalent CF_ARCIMS and CF_ESRIMAP code for a query. The first uses the CF_ARCIMS_SQL child element, while the latter does not.

CF_ARCIMS

```
<cf_arcims  action="query"
ServiceName="SanFrancisco"
ServerName="bear"
ServerPort="5300"
LayerID="2"
layerdisplayfields="##ALL##"
featurelimit="100"
   generatehtml="false">
   <CF_ARCIMS_SQL>
```

```
    HWYNAME='MARKET ST'
  </CF_ARCIMS_SQL>
</cf_arcims>
```

CFX_ESRIMAP

```
<cfx_esrimap  action="query"
ServiceName="SanFrancisco"
ServerName="bear"
ServerPort="5300"
LayerID="2"
layerdisplayfields="##ALL##"
featurelimit="100"
generatehtml="false"
where="HWYNAME='MARKET ST'"/>
```