

# **IVR Web Service Integration**

Tax Screening

Version 1.3

### Revision History

Date	Author	Version	Description
7/19/2018	Bob Chase	1.0	Initial Release
8/6/2018	Bob Chase	1.1	Changes based on feedback. <ol style="list-style-type: none"> <li>1. Full path file name replaced with just File Name on Recording Files.</li> <li>2. Change the Redirect URL from full URL to just the query string ID. The rest of URL will be hardcoded on the client side.</li> <li>3. Added the <a href="#">Re-Direct URLs</a> to hard-code.</li> </ol>
10/24/2018	Bob Chase	1.2	Added new logic to allow for entry of a company code if phone number is not linked to a company.
10/29/2018	Bob Chase	1.2.1	Added “default if 1 mapping” logic to previous update.
4/25/2019	Bob Chase	1.3	Made changes to GetCompanyByPhoneNumber and GetCompanyByCode
9/9/2019	Bob Chase	SAMPLE	Removed proprietary information

### Approvals

Date	Name	Organization	Signature

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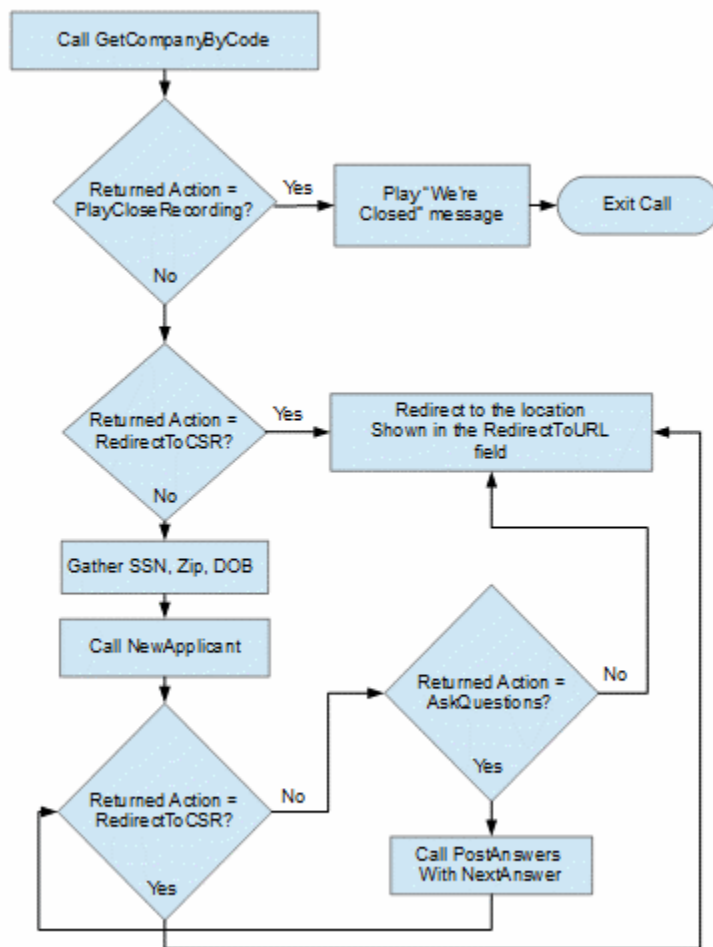
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## System Overview

The Web Service provides three endpoints. They accept and return the information needed for a client IVR system to take a caller through the Tax Screening process.

- When a Call is first started, the **GetCompanyByPhoneNumber** endpoint should be used. This will **initiate the Call** within the Tax system.
  - If a CoID is found linked to the Phone Number, Action returned will be AskOverrideCode.**  
A call should then be made to GetCompanyByCode. The return values are the same as GetCompanyByPhoneNumber, except for the exclusion of AskOverrideCode from possible Actions.  
**Updated in Version 1.3**
- If a good response is returned from GetCompanyByPhoneNumber or GetCompanyByCode, the next endpoint to use is **NewApplicant**. If successful, this will **initialize the Screening process and return the first question** to be asked.
- From there **PostAnswers** will be **called 1 – n times** until the Screening Questions for the call are complete.

The flow is illustrated below:



## Security

In order to contact the endpoints of the Web Services, the authentication information must exist in the request header of all three types. The JSON and XML versions are shown below. This information can also be found on the endpoint's documentation.

```
"authentication": {  
  "username": "string",  
  "password": "string"  
}
```

```
<Authentication xmlns="https://www.itaxgroup.com/services/jobcredits">  
  <username>someuser</username>  
  <password>somepwd</password>  
</Authentication>
```

All transmission to and from First Advantage's Web Services occur over an encrypted HTTPS channel.

- The Endpoint for the production environment is:
  - REDACTED
- The Endpoint for the test (UAT) environment is:
  - REDACTED

To see the built-in documentation, add the following to the endpoint: /swagger/index.html

Ex. Documentation in the test endpoint would be:

<https://test.jobcredits.com/services/WebAPIVR/swagger/index.html>

## Web API for IVR Interface

### GetCompanyByPhoneNumber – Endpoint to Initialize the Call

This is the always the first Endpoint to use for a new Call. It attempts to match the Phone Number to a Company ID. If successful, it communicates to the Job Credits system that a Call has started.

#### Request

Parameter	Pattern / Acceptable Entry
PhoneNumber	9999999999 - 10 digits. Used to match to a Company and Location
ExternalID	System is expecting a GUID. This same External ID needs to be used in subsequent calls. This could be thought of as the Call ID.
LanguageID	"en" (English) or "es" (Spanish). This will be the language used for all subsequent calls using the External ID

#### Response

Field	Values / Process Effect	Action / Note
CompanyID	0 if phone number could not be mapped, else CompanyID Value	
RecordingFile	The File Name to be played. Blank if there is not one.	Version 1.1 changed from full path to file name only.
RedirectURL	Destination to redirect to. Blank if Redirect action is not to be taken.	Version 1.1 changed from full URL to identifying ID only.
<b>Action</b>	<b>PlayCompanyRecording</b> - Indicates Company Found. RecordingFile will be the Welcome message.	<ol style="list-style-type: none"><li>1. Play message</li><li>2. Prompt for the values needed for NewApplicant call; SSN, Zip, BirthDate.</li><li>3. Make the call to NewApplicant using these prompted values.</li></ol>
	<b>PlayCloseRecording</b> - Indicates that the Company was not found and that the CSR is not available. RecordingFile will be the "We're Closed" message.	<ol style="list-style-type: none"><li>1. Play the message</li><li>2. Exit call.</li></ol>
	<b>RedirectToCSR</b> - Indicates that the Company was not found and that the CSR is available. RecordingFile will be blank.	<ol style="list-style-type: none"><li>1. Re-direct to the location shown in the RedirectURL field.</li></ol>
Updated 1.3	<b>AskOverRideCode</b> – Indicates that the Phone Number is not linked to a CoID.	GetCompanyByCode needs to be called.

#### Exception Response (Not Business errors such as Company Not Found)

Field	Description	Note
Code	HTTP Code	Standard HTTP Codes Used. See appendix or endpoint documentation for details.
Message	Error Report	This could be something long and or technical. These are often exceptions from a Try Catch.

## GetCompanyByCode – Alternate Endpoint to Initialize the Call

### New Endpoint in Version 1.2

If GetCompanyByPhoneNumber returns action AskOverrideCode, this endpoint is used to initialize the call.

#### Request

Parameter	Pattern / Acceptable Entry
PhoneNumber	9999999999 - 10 digits. Used to match to a Company and Location
OverrideCode	1-9 digit number Matches a code set up in the FADV configuration
ExternalID	System is expecting a GUID. This same External ID needs to be used in subsequent calls. This could be thought of as the Call ID.
LanguageID	"en" (English) or "es" (Spanish). This will be the language used for all subsequent calls using the External ID

#### Response

Field	Values / Process Effect	Action / Note
CompanyID	0 if phone number could not be mapped, else CompanyID Value	
RecordingFile	The File Name to be played. Blank if there is not one.	
RedirectURL	Destination to redirect to. Blank if Redirect action is not to be taken.	
<b>Action</b>	<b>PlayCompanyRecording</b> - Indicates Company Found. RecordingFile will be the Welcome message.	<ol style="list-style-type: none"><li>1. Play message</li><li>2. Prompt for the values needed for NewApplicant call; SSN, Zip, BirthDate.</li><li>3. Make the call to NewApplicant using these prompted values.</li></ol>
	<b>PlayCloseRecording</b> - Indicates that the Company was not found and that the CSR is not available. RecordingFile will be the "We're Closed" message.	<ol style="list-style-type: none"><li>1. Play the message</li><li>2. Exit call.</li></ol>
	<b>RedirectToCSR</b> - Indicates that the Company was not found and that the CSR is available. RecordingFile will be blank.	<ol style="list-style-type: none"><li>1. Re-direct to the location shown in the RedirectURL field.</li></ol>

#### Exception Response (Not Business errors such as Company Not Found)

Field	Description	Note
Code	HTTP Code	Standard HTTP Codes Used. See appendix or endpoint documentation for details.
Message	Error Report	This could be something long and or technical. These are often exceptions from a Try Catch.

## NewApplicant – Endpoint to Establish Applicant in the Call

Once the Company ID is matched up and the Call is established within Job Credits, this is used to initiate the Screening process for a particular Applicant.

### Request

Parameter	Pattern / Acceptable Entry
SSN	999999999 - 9 digits
Zip	99999 - 5 digits
Birth Date	mm/dd/yyyy - US Short Date format
Under 40 flag	1 for true, 0 for false
External ID	Same value as was passed into GetCompanyByPhoneNumber

### Response

Field	Values / Process Effect	Action
<i>ApplicantID</i>	FADV Internal Number for applicant.	
<i>RecordingFile</i>	Path to file to be played. Blank if there is not one.	Version 1.1 changed from full path to file name only.
<i>Redirect URL</i>	Destination to redirect to. Blank if Redirect action is not to be taken.	Version 1.1 changed from full URL to identifying ID only.
<i>Action</i>	<b>PlayThanksRecording</b> - All the questions have been asked, but there will not be a redirect to the CSR. The call is over. The Thank You message is referenced in Recording File.	1. Play <i>RecordingFile</i> 2. End call
	<b>PlayCloseRecording</b> - Indicates that all questions have been asked and the system should redirect to CSR. However, the CSR is not available. The recording to play will be shown in RecordingFile.	1. Play <i>RecordingFile</i> 2. End call.
	<b>RedirectToCSR</b> - Indicates that all questions have been asked and should redirect to CSR. The address will be in the RedirectURL field.	1. Redirect to CSR (found in <i>RedirectURL</i> ).
	<b>AskQuestions</b> - Indicates there are questions to be asked. The recording files will appear in the <i>Question</i> .	See details in next section

### Exception Response (Not Business errors such as the ones found in Question.ValidationRecording)

Field	Description	Note
Code	HTTP Code	Standard HTTP Codes Used. See appendix or endpoint documentation for details.
Message	Error Report	This could be something long and or technical. These are often exceptions from a Try Catch.



## NewApplicant – Endpoint to Establish Applicant in the Call (Response continued)

When a Question is passed back, it contains information needed for the next Answer call to PostAnswers.

If a **GetDigits** AnswerType, pass in the entered number as text to Answer.Value

If **GetRecording** AnswerType, pass in an empty string to Answer.Value

<i>Question</i>		
<b>Question Property</b>	<b>Description / Action</b>	<b>Notes</b>
Question ID	ID to pass back in the next PostAnswers call	
Answer Type	<b>GetDigits</b> or <b>GetRecording</b>	
Answer Size	The number of digits the IVR should collect	
Question Text	Text of question	Passed back as part of normal Screening flow, and to improve logging. The consuming client is <b>not required to use this field</b> for anything.
Question Recording	Reference to the recording containing the Question itself.	
Instruction Recording	Reference to the recording containing the Question Instructions (ex. "Please Enter 1 for Yes, 9 for No")	
Validation Recording	Reference to the recording if there was a Validation Error in the Value sent in with the request.	Will only populated if there is an entry error in the last Post Answers call.
Answer Recording File Name	The name of the recorded file to be sent.	Only applies to GetRecordingType. This is the file name to save the Recording to.
Answer Recording File Directory	The network address that the recorded file should be sent to.	Only applies to GetRecordingType. This is the network address to save the Recording to. <b>This property has been deprecated. The Cisco system will hard-code the file destination.</b>

## PostAnswers – Endpoint to send in Answer and get next Question

This is used multiple times to conduct the Screening. After posting an Answer, the next Question will be returned, until the Screening is complete, or as complete as it can be. See the Response object for details on what is returned, and how that affects call flow.

### Request

Parameter	Pattern / Acceptable Entry
External ID	Same value as was passed into Get Company By Phone Number
<b>Answers</b>	One <i>Answer</i> sent in at a time for IVR implementation.
	<b>Question ID</b> - Question Being Answered. Would have been sent in from the previous Post Answers or New Applicant response retrieval.
	<b>Value</b> - For GetDigits type question, will be the digits entered by the caller. For GetRecording types, send in an empty string.

### Response

The Response is identical to the [NewApplicant Response](#).

## Re-Direct URLs

If processing response from GetCompanyByPhoneNumber:

*CsrUrlBase* + "JobCredits/Questionnaire/csr/LocationSearch.aspx"

If processing response from the other two endpoints:

*CsrUrlBase*

+ "JobCredits/Questionnaire/csr/ApplicantInfoIVR.aspx?Src=IvrTransfer&arg="

+ {externalid}

{externalid} is what is sent back for the RedirectURL response field

CsrUrlBase will differ depending on the environment.  
Environment Addresses REDACTED

## Work Flow for IVR Web Service Integration

1. Create an object to communicate at the HTTP level.
2. Set the object up to match the endpoint.
3. Prepare the JSON (or XML) to send to the endpoint.
4. Use the object to call the endpoint using the JSON packet created in previous step.

### Sample Client Code (.NET)

The following code sample shows client code using C#. This is not the only way to call a web service with JSON, just the technique chosen for this code.

```
// Create Client object
HttpClient client = new HttpClient();
client.BaseAddress = new Uri("https://test.jobcredits.com/services/WebAPIIVR/");
client.DefaultRequestHeaders.Accept.Clear();
client.DefaultRequestHeaders.Accept.Add(
    new MediaTypeWithQualityHeaderValue("application/JSON"));

// Attempt to contact Endpoint
HttpResponseMessage response = new HttpResponseMessage();
Boolean postGood = true;
String passedBack = "";

try
{
    response = client.PostAsJsonAsync<GetCompanyByPhoneNumberCompactObject>
        ("api/IVR/1.0.0/GetCompanyByPhoneNumber", inputParms).Result;

    passedBack = response.Content.ReadAsStringAsync().Result;

    postGood = (response.IsSuccessStatusCode && response.StatusCode ==
        System.Net.HttpStatusCode.OK);
}
catch (Exception ex)
{
    postGood = false;
}
```

## Sample Client Code (.NET), one way to serialize JSON

In the code sample, inputParms was an instantiation of a class that matches the Request Class. The class needs to match the endpoint Request format. The sample classes are shown below.

```
[DataContract(Name = "GetCompanyByPhoneNumber")]
public class GetCompanyByPhoneNumberCompactObject
{
    [DataMember(Name = "authentication")]
    public authenticationObj authentication { get; set; }

    [DataMember(Name = "applicant")]
    public IVRInitAppApplicantObj applicant { get; set; }
}

[DataContract]
public class authenticationObj
{
    [DataMember(Name = "username")]
    public String username { get; set; }

    [DataMember(Name = "password")]
    public String password { get; set; }
}

[DataContract]
public class IVRInitAppApplicantObj
{
    [DataMember(Name = "phonenumber")]
    public String phonenumber { get; set; }

    [DataMember(Name = "languageid")]
    public String languageid { get; set; }

    [DataMember(Name = "externalid")]
    public String externalid { get; set; }
}
```

## Glossary of Returned HTTP Codes

200 – OK

400 – Bad Request

401 – Unauthorized

500 – Internal Server Error