IBM Cúram Social Program Management Version 7.0.3

IBM Social Program Management Design System



Note

Before using this information and the product it supports, read the information in $\frac{\text{"Notices" on page}}{14}$

Edition

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Chapter 1. IBM Social Program Management Design System

7.0.3.0

The design system provides the foundational packages for building accessible and responsive web applications. It consists of a React UI component library, front-end development resources, and a style guide for creating web applications. You can use the design system to develop, secure, and deploy front-end applications for IBM Cúram Social Program Management.

The design system builds on the U.S. Web Design Standards and extends them to support additional CSS, utility classes, and a layout framework to enable teams to quickly build Section 508 compliant, responsive and production ready web applications.

Installing the IBM Social Program Management Design System

7.0.3.0

Install the required software to set up a development environment that you can use to develop applications with the IBM Social Program Management Design System.

Planning the installation

7.0.3.0

Complete seven steps to install the IBM Social Program Management Design System.

The installation steps

When you complete the following installation steps, you are ready to start developing your application on IBM Social Program Management Design System:

- Review the Design System development and deployment prerequisites to identify the supported software versions.
- Download the software that you need from IBM Passport Advantage[®] or from another software vendor websites as appropriate.
- Install your Interactive Development Environment (IDE).
- Install and configure NodeJS.
- Install the IBM Social Program Management Design System.
- Review the IBM Social Program Management Design System release notes.
- To develop and test IBM Cúram Social Program Management APIs, you can install the IBM Cúram Social Program Management development environment.

Related tasks

Installing the IBM Social Program Management Design System

Install the packages into a React application. The packages cannot be installed on their own. You can use any React app. Facebook's create-react-app is used as an example in this procedure. Install create-react-app and the Design System packages. You then import minified JavaScript files and styles.

Related reference

Development and deployment software prerequisites

Specific software is required to develop and deploy front-end applications developed with the IBM Social Program Management Design System.

Development and deployment software prerequisites

7.0.3.0

Specific software is required to develop and deploy front-end applications developed with the IBM Social Program Management Design System.

Interactive Development Environment (IDE)

Choose an Interactive Development Environment (IDE) to develop your React application.

There are many IDEs that you can use, for example Visual Studio Code, Atom, and Sublime. The design system does not depend on any specific IDE, so you can choose your own environment. However, IBM uses VSCode, it supports many plug ins that make development faster and easier, for example:

- Linting tools (ESLint)
- Code formatters (Prettier)
- Debugging tools (Debugger for Chrome)
- Documentation tools (JSDoc)

IBM does not own, develop, or support these tools.

Node.js

Node.js is required for development.

Table 1: Node.js						
Supported Software	Version	Prerequisite minimum version	Universal Access minimum release	Components	Operating system restrictions	Notes [®] and details
Node.js	8 and future fix packs	8	1.0.0		No	

- Linting tools (ESLint)
- Code formatters (Prettier)
- Debugging tools (Debugger for Chrome)
- Documentation tools (JSDoc)

IBM does not own, develop, or support these tools.

IBM Cúram Social Program Management

IBM Cúram Social Program Management version 7.0.3 is required to deploy your application. You can install the IBM Cúram Social Program Management development environment to develop and test the APIs in your application.

HTTP servers

A web server is required to deploy the application. Choose a version that is compatible with your application server.

Table 2: HTTP servers						
Supported Software	Version	Prerequisite minimum version	Universal Access minimum release	Components	Operating system restrictions	Notes and details
IBM HTTP Server	9.0	9.0.0.5	1.0.0		No	
	8.5.5	8.5.5.9	1.0.0		No	
Oracle HTTP Server	(12.1.3)	(12.1.3)	1.0.0		No	

Web browsers

IBM Cúram Universal Access is developed for public-facing applications. Every effort is made to ensure that the pages that are specified for the application uses standard web technologies and formats, which should be compatible with all browsers that are listed. However, the browsers in the Table 3 are the only ones officially supported.

New versions of Chrome, Firefox, Edge, and Safari are released more frequently than Internet Explorer, and updates are installed automatically by default for these browsers. Universal Access releases are generally tested on the latest versions of these browsers available at the start of IBM's development cycle.

Note: For Chrome, Stable releases only.

If a browser is tested and no issues are found, IBM certifies that version. The prerequisites advise the version that is certified at each new product release. If IBM cannot certify a version, you might need to revert to a previous, fully certified version. While IBM supports customers on newer versions of these browsers than the last certified version, customers should know that those browsers are not fully tested.

The browsers listed in Table 3 are supported.

Table 3: Web browsers						
Supported Software	Version	Prerequisite minimum version	Universal Access minimum release	Components	Operating system restrictions	Notes and details
Apple Safari	11 and future fix packs	11	1.0.0		No	
Google Chrome	64 and future fix packs	64	1.0.0		No	
Microsoft Edge	41 and future fix packs	41	1.0.0		No	
Microsoft Internet Explorer	11 and future fix packs	11	1.0.0		No	
Mozilla Firefox	58 and future fix packs	58	1.0.0		No	

Installing the IBM Social Program Management Design System

```
7.0.3.0
```

Install the packages into a React application. The packages cannot be installed on their own. You can use any React app. Facebook's create-react-app is used as an example in this procedure. Install create-react-app and the Design System packages. You then import minified JavaScript files and styles.

About this task

The Design System contains the following node packages:

- @spm/core
- · @spm/intelligent-evidence-gathering
- @govhhs/govhhs-wds
- · @govhhs/govhhs-wds-react

Procedure

Install create-react-app.

- 1. Follow the instructions at https://github.com/facebook/create-react-app#create-react-app-
- 2. Enter the following command: npx create-react-app my-app
- 3. Validate the installation, enter the following commands:

cd my-app npm start

4. Browse to <u>http://localhost:3000/</u> to see your app.

Install the Design System packages.

- 5. Go to your my-app directory.
- 6. Enter the following commands, ignore any warnings you might see. <path> and <version> refer to the download path and package version.

```
npm install <path>/govhhs-govhhs-wds-<version>.tgz
npm install <path>/govhhs-govhhs-wds-react-<version>.tgz
npm install <path>/spm-core-<version>.tgz
npm install <path>/spm-intelligent-evidence-gathering-<version>.tgz
```

Import the minified JavaScript file.

- 7. Open the my-app project folder in your code editor.
- 8. Open src\App.js and at the top of the file add the following line:

import '@govhhs/govhhs-wds/dist/js/@govhhs/govhhs-wds.min';

This line imports the minified JavaScript that is needed to use the web design system components. Import the styles

9. Add the following import at the top of src\App.js for the minified version of the CSS:

import '@govhhs/govhhs-wds/dist/css/govhhs-wds.min.css';

This line imports the styling for the design system components.

Developing applications using the IBM Social Program Management Design System

7.0.3.0

Build your web application using the development resources supplied.

Development resources

7.0.3.0

To develop and test your application, use the design system packages govhhs/govhhs-wds and govhhs/govhhs-wds-react, the *core* package, and the *intelligent-evidence-gathering* package.

Design system packages

There are two packages that form the design system portion of the product:

- govhhs/govhhs-wds. The GovHHS Web Design System (WDS) contains a style guide, a library of user interface components, and front-end development resources that you can use to create Section 508-compliant, responsive, consistent websites. The design system provides CSS, utility classes, and a grid framework so that you can quickly build accessible, responsive, production-ready websites.
- govhhs/govhhs-wds-react. The React component library to build websites and user interfaces. It provides a collection of components that are implemented using React. All of the components align with the latest user interface provided by the Gov-HHS Web Design System.

For more information, see govhhs/govhhs-wds-react/doc for design guidelines, utility classes and available React components that you can use to create your user interface and website.

Core package

The *core* package provides JavaScript utilities to help you develop your website. For example, use the *RESTService* utility to connect to a back end IBM Cúram Social Program Management REST API. Use *IntlUtils* to format numbers and dates for to support globalization.

For more information, see spm/core/doc for the JSDoc API documentation describing the core package utilities.

Intelligent-evidence-gathering package

The *intelligent-evidence-gathering* package provides a set of APIs and React components that expose the React IEG Player.

For more information, see spm/intelligent-evidence-gathering/doc for the API documentation for the *intelligent-evidence-gathering* package.

Note: The *intelligent-evidence-gathering* package is not currently supported without IBM Cúram Universal Access.

Composing a page by using the Web Design System packages

7.0.3.0

Refer to the Web Design System (WDS) documentation, which is located in govhhs/govhhs-wdsreact/doc for details on how to design and use WDS components within your pages. Use the sample code to place components onto pages, for example the organization **Home** page.

Example of an organization home page

```
<Grid>
       <Column width="1/2">
        <CardBodv>
            Start your application now.
          </CardBody>
         </Card>
       </Column>
      <Column width="1/2" breakRow>
<Card role="button" fixedHeight callout href="#/account" className="wds-u-mb--base">
          <CardHeader title="View your account" highlight />
          <CardBody>
            See your next payment and much more.
          </CardBody>
        </Card>
       </Column>
     </Grid>
   </Section>
 </React.Fragment>
);
export default OrganizationComponent;
```

Connecting to APIs

7.0.3.0

You can connect your web application to REST APIs, such as the IBM Cúram Social Program Management APIs.

Before you begin

You must be experienced in REST APIs, and have exposed a REST API that you want to consume within your web application. For more information on developing REST APIs using IBM Cúram Social Program Management, see *Developing Cúram REST APIs*. You also need a basic web application that is enabled and running either using create-react-app or another tool that builds React applications.

RESTService API

The core packages provide a RESTService API that you can use to connect your web app to a REST API. RESTService API supports the HTTP methods GET, POST, and DELETE. Pass a URL, a callback, and some data to the API. The RESTService hides details of calls, such as passing credentials, language, and errors. The callback passed to the GET, POST, or DELETE methods is started after the API calls return. API calls are asynchronous, so write your code to expect and handle delay in receiving a response.

Table 1 outlines the process environment variables that the API consumes, use these variables to configure the service.

Table 4: Process environment variables					
Variable	Setting	Default	Description		
REACT_APP_RE SPONSE_TIMEO UT	Milliseconds	10 seconds	Sets the maximum time to wait for the first byte to arrive from the server, but does not limit how long the entire download can take. Set the response timeout to be a few seconds longer than the actual time it takes the server to respond. The lengthened response allows for time to make DNS lookups, TCP/IP, and TLS connections.		
REACT_APP_RE SPONSE_DEAD LINE	Milliseconds	60 seconds	Sets a deadline for the entire request, including all redirects, to complete. If the response is not fully downloaded within REACT_APP_RESPONSE_DEADLINE, the request is aborted.		

Table 4: Process environment variables (continued)					
Variable	Setting	Default	Description		
REACT_APP_DE LAY_REST_API	Milliseconds		Use only for development testing to simulate a delay in the response from the API.		

You can use alternatives to the process environment variables, for example JavaScript Fetch. For more information, see Fetch API. Superagent and axios are other alternatives for fetching resources.

Connecting to APIs with Tomcat and Eclipse

You can connect to APIs with Tomcat and Eclipse if you have built and deployed RESTAPIs to Tomcat as described in *Building a Cúram REST API*. Use the API for Tomcat in the URL for your call to the RESTService API. See this example RESTService call.

```
RESTService.get('http://localhost:9080/Rest/v1/myAPI', (success, response) => {
    if (success) {
        // deal with response containing the json body
    } else {
        // deal with error contained in response
    }
});
```

Related information Developing Cúram REST APIs

Securing the IBM Social Program Management Design System

7.0.3.0

Secure the Design System by authenticating against IBM Cúram Social Program Management with the REST API Security feature. If you are using Tomcat or Eclipse, you can bypass authentication during development.

Related information

Cúram REST API security

REST API security

You can authenticate against REST APIs using the REST API security feature. For more information, see *Cúram REST API security*.

Authenticating against RESTService API

Start the authentication URL *j_security_check* by using the POST function on the RESTService API.

An example log in invocation is as follows:

```
const callbackAfterLogin = (success, response) => {
    if (success) {
        // Login succeeded
    } else {
        // Login failed
    }
};
const loginUrl = 'http://localhost:9080/Rest/j_security_check';
const loginData = {
        j_username: username,
        j_password: password,
        user_type: 'EXTERNAL',
};
RESTService.post(loginUrl, loginData, callbackAfterLogin, 'form');
```

Related information

Cúram REST API security

Bypassing authentication in development

A JAAS authentication mechanism is not exposed by the Tomcat and Eclipse environment, so you cannot authenticate your web application through the RESTService API.

Using the Eclipse RMILoginClient to authenticate

To authenticate against the REST API in a Tomcat and Eclipse environment, use the Eclipse RMILoginClient class. For more information, see *Starting the clients*.

When you authenticate, log in using your external user name and password to authenticate against the server. Subsequent calls to your REST API simulate this user.

Related information

Starting the clients

Deploying your application

7.0.3.0

You can deploy your application into a production-like environment as part of your development process.

Before you begin

The following application server and DBMS combinations are supported:

- IBM WebSphere[®] Application Server, IBM HTTP Server, and IBM DB2[®]
- IBM WebSphere Application Server, IBM HTTP Server, and Oracle Database
- Oracle WebLogic Server, Oracle HTTP Server, and Oracle Database

Install and configure IBM HTTP Server with WebSphere Application Server

7.0.3.0

Use IBM Installation Manager to install and configure IBM HTTP Server, the WebSphere Customization Toolbox, and the IBM HTTP Server for WebSphere Application Server plug-in. Install and configure IBM HTTP Server either on the same server as WebSphere Application Server or on a remote server.

Before you begin

WebSphere Application Server 8.5.5 must be installed and configured. For more information, see Installing WebSphere Application Server, Version 8.5

About this task

The IBM HTTP Server for WebSphere Application Server plug-in is a part of the web server plug-in component of WebSphere Application Server along with IBM HTTP Server. The plug-in enables IBM HTTP Server to communicate with WebSphere Application Server. WebSphere Customization Toolbox installs and configures the plug-in.

Installing IBM HTTP Server and its components

7.0.3.0

Install and configure IBM HTTP Server, WebSphere Customization Toolbox, and the web server plug-ins for IBM HTTP Server. Ensure that you install the version of IBM HTTP Server that is appropriate for your version of WebSphere Application Server.

Before you begin

You must install IBM Installation Manager 1.8.7 or later. Download IBM Installation Manager from Installation Manager and Packaging Utility download documents.

About this task

Use IBM Installation Manager to install and configure IBM HTTP Server, WebSphere Customization Toolbox, and the web server plug-ins for IBM HTTP Server.

Procedure

- 1. Install IBM HTTP Server for WebSphere Application Server. For more information, see Installing IBM HTTP Server.
- 2. Install the WebServer plug-ins for IBM HTTP Server and WebSphere Customization Toolbox.

If the curam.rest.allowedOrigins property is set for a REST application that is deployed on the application server, the following substeps are needed only for deployment topologies where IBM HTTP Server and WebSphere Application Server are not installed on the same computer. For more information about setting the curam.rest.allowedOrigins property, see <u>Cúram REST configuration</u> properties.

a) Install the web server plug-ins for WebSphere Application Server.

For more information, see Installing and configuring web server plug-ins.

b) Install the WebSphere Customization Toolbox.

For more information, see Installing and using the WebSphere Customization Toolbox.

- 3. Start IBM HTTP Server. For more information, see <u>Starting and stopping the IBM HTTP Server</u> administration server.
- 4. In the configuration for IBM HTTP Server for WebSphere Application Server, set the default HTTP port to 80 and retain the default values for the other options.
- 5. To secure IBM HTTP Server, follow the procedure that is at Securing IBM HTTP Server.

Generating an IBM HTTP Server plug-in configuration

7.0.3.0

Use WebSphere Customization Toolbox to generate an IBM HTTP Server plug-in configuration.

Before you begin

Start WebSphere Application Server. For more information, see <u>Starting a WebSphere Application Server</u> traditional server.

Procedure

To generate the IBM HTTP Server plug-in configuration, complete the steps at the WebSphere Application Server Network Deployment plug-ins configuration topic.

Configuring the IBM HTTP Server plug-in

7.0.3.0

If a web server such as IBM HTTP Server is configured in the topology, you must configure a web server plug-in in WebSphere Application Server.

About this task

To configure an IBM HTTP Server plug-in in WebSphere Application Server, you must complete the following tasks:

- Add the web server virtual hosts to the client hosts configuration in WebSphere Application Server.
- Propagate the plug-in key ring for the web server.
- Map the modules of any deployed applications to the web server.

To complete the previous tasks, you can run the configurewebserverplugin target.

Procedure

1. Start IBM HTTP Server.

For more information, see Starting and stopping the IBM HTTP Server administration server.

2. On the remote WebSphere Application Server, run the following command.

The configurewebserverplugin target requires a mandatory server.name argument that specifies the name of the server when the target is invoked.

build configurewebserverplugin -Dserver.name=server_name

For more information about the configurewebserverplugin target, see <u>Configuring a web server</u> plug-in in WebSphere Application Server.

- 3. Consider adding extra aliases to the *client_host*, as shown in the following examples:
 - For WebSphere Application Server, add port number 9044.
 - For the default HTTP port, add port number 80.
 - For HTTPS ports, add port number 433.

For more information about client host setup, see step 19 in the <u>WebSphere Application Server port</u> access setup topic.

4. To avoid port mapping issues from web clients, restart WebSphere Application Server and IBM HTTP Server.

For more information, see Starting and stopping the IBM HTTP Server administration server.

Related information

Set up the Port Access Start a WebSphere Server Restart a WebLogic Server

Install and configure Oracle HTTP Server with Oracle WebLogic Server

7.0.3.0

Install and configure Oracle HTTP Server on either the same server as Oracle WebLogic Server or on a remote server.

Before you begin

Oracle WebLogic Server must be installed and configured. For more information, see <u>Installing and</u> Configuring Oracle WebLogic Server and Coherence.

Installing Oracle HTTP Server and its components

7.0.3.0

Install and configure Oracle HTTP Server in either a stand-alone domain, or in an Oracle WebLogic Server domain. If Oracle HTTP Server and Oracle WebLogic Server are on different computers, you must install and configure an Oracle web server plug-in for proxying requests.

About this task

The Oracle web server plugin allows requests to be proxied from Oracle HTTP Server to Oracle WebLogic Server. If you install and configure the Oracle web server plug-in, requests that are delegated to Oracle WebLogic Server still appear to originate from the Oracle HTTP Server, even if Oracle HTTP Server and Oracle WebLogic Server are hosted on two different servers.

Because of the web browser same-origin policy, cross-origin resource sharing (CORS) is restricted in many browsers by default. The web server plug-into enables CORS where Oracle HTTP Server and Oracle WebLogic Server are installed on different computers.

CORS enables an instance of your web application that is deployed on Oracle HTTP Server in one domain to request the REST services that are deployed on Oracle WebLogic Server in another domain.

Procedure

- 1. Install Oracle HTTP Server for Oracle WebLogic Server. For more information, see <u>Installing and</u> Configuring Oracle HTTP Server.
- 2. To configure Oracle HTTP Server, choose one of the following options:
 - To configure Oracle HTTP Server in a stand-alone domain, follow the instructions at <u>Configuring</u> Oracle HTTP Server in a Standalone Domain.
 - To configure Oracle HTTP Server in an Oracle WebLogic Server domain, follow the instructions at Configuring Oracle HTTP Server in a WebLogic Server Domain.
- 3. If Oracle HTTP Server and Oracle WebLogic Server are installed in different domains, to enable CORS, install a web server plug-in.

For information about configuring an Oracle WebLogic Server proxy plug-in, see <u>Configuring the Plug-</u> In for Oracle HTTP Server.

4. To secure Oracle HTTP Server, follow the procedure at Managing Application Security.

Results

The Oracle HTTP Server instance is now ready to for you to deploy the application. The default location for deploying the application is OHS_INSTANCE/config/fmwconfig/components/\$ {COMPONENT_TYPE}/instances/\${COMPONENT_NAME}/htdocs. However, you can configure the default location value to a different location.

What to do next

Start Oracle HTTP Server. For more information, see Starting the Servers.

Configuring the Oracle HTTP Server plug-in

7.0.3.0

If a web server such as Oracle HTTP Server is configured in the topology, you must configure a web server plug-in in Oracle WebLogic Server. The web server plug-in enables Oracle WebLogic Server to communicate with Oracle HTTP Server.

About this task

To enable an Oracle HTTP Server web server plug-in in Oracle WebLogic Server, you can run the configurewebserverplugin target.

Procedure

1. Start Oracle HTTP Server.

For more information, see Starting the Servers.

2. On the remote Oracle WebLogic Server, run the following command.

The configurewebserverplugin target requires a mandatory server.name argument that specifies the name of the server when the target is invoked.

build configurewebserverplugin -Dserver.name=server_name

For more information about the configurewebserverplugin target, see <u>Configuring a web server</u> plug-in in Oracle WebLogic Server.

Deploying a built application

7.0.3.0

To test your application against an existing IBM Cúram Social Program Management application deployed on an enterprise application server, you can deploy it on a IBM[®] HTTP Server or Oracle HTTP Server.

About this task

For information about the build for deployment process for the create-react-app, see the related link. npm run build section in the GitHub documentation.

Both IBM HTTP Server and Oracle HTTP Server are based on the Apache HTTP Server, therefore the configuration and deployment of each is similar.

The built deliverable comes with a preconfigured .htaccess configuration file for the Content-Security-Policy (CSP) header. When configured in the web server, this file is detected and executed by the web server to alter the web server configuration by enabling or disabling additional functionality. For more information about CSP, see the *Content Security Policy Quick Reference Guide* related link <u>https://content-security-policy.com</u>.

Procedure

1. To create a build directory that you can use to deploy create-react-app, from the application root, run the following command:

npm run build

A build directory is created that the HTTP server of your target system can use.

2. To deploy the build deliverable on either IBM HTTP Server or Oracle HTTP Server, copy and paste the build directory to a directory that your HTTP server will use to display the content.

For more information about the <directory> directive, see the related links.

3. Configure the web server to call the .htaccess file.

For more information on how to configure .htaccess files in a web server, see the *Apache HTTP* Server Tutorial: .htaccess files related link http://httpd.apache.org/docs/current/howto/htaccess.html

Related information

GitHub documentation: npm run build Apache core features V2.0: <Directory> Directive Apache core features V2.4: <Directory> Directive

Troubleshooting and support

7.0.3.0

Use the troubleshooting reference information to solve specific problems that you might encounter during or after you install IBM Social Program Management Design System.

Problems are characterized by their symptoms, which can be traced to one or more causes by using specific troubleshooting tools and techniques.

The following applications are installed, developed, and deployed separately from the rest of the IBM Cúram Social Program Management suite:

- IBM Social Program Management Design System
- IBM Cúram Universal Access

So, view this troubleshooting information with the troubleshooting guidance in the IBM Cúram Social Program Management product. For more information, see the *Troubleshooting and support* related link.

Related information

Troubleshooting and support

Troubleshooting a problem

7.0.3.0

Troubleshooting is a systematic approach to solving a problem. The goal of troubleshooting is to determine why something does not work as expected and how to resolve the problem.

Examining the browser console logs

As a JavaScript application, the IBM Social Program Management Design System is downloaded and run within the browser on the device. So, it is typical to examine the console logs for errors that might be relevant to investigating the problem. The browser that you are using determines the steps that you need to follow to collect messages from the console logs. So, consult your browser's documentation about how to locate the console logs within the browser.

Note: When you are developing the IBM Social Program Management Design System, console logging might also display within the console that runs the start process for the application.

Examining the HTTP Server log files

When you deploy a built application on an HTTP Server, the built application introduces a new point with which logging is captured in your system topology. The IBM HTTP Server and the Oracle HTTP Server include comprehensive logging system and related information.

For more information about troubleshooting the IBM HTTP Server, see Troubleshooting IBM HTTP Server.

For more information about troubleshooting the Oracle HTTP Server, see <u>Managing Oracle HTTP Server</u> Logs.

Known limitations

7.0.3.0

A list of known limitations for the IBM Social Program Management Design System and IBM Cúram Universal Access, and, where available, workaround information.

Note: The IBM Social Program Management Design System and IBM Cúram Universal Access are only provided in US English.

Symptom

Translation packs are not provided with the IBM Social Program Management Design System and IBM Cúram Universal Access products that offer translations for the languages that are supported by the matching IBM Cúram Social Program Management or IBM Universal Access products.

Resolution

Support for regionalizing or localizing your user interface (UI) is not affected. Translation packs will be provided in a future system release of the IBM Social Program Management Design System and IBM Cúram Universal Access.

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