



# Introduction to Morningstar Connect

(Formerly known as Custom Element for Account Setup, Version 2)

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ByAllAccounts

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## About this document

This document provides an overview of the Morningstar Connect component which provides access to the Morningstar® ByAllAccounts<sup>SM</sup> (BAA) aggregation service.

Use this document if you are using Morningstar ByAllAccounts DataConnect API for single sign on (SSO). If you are using Morningstar Authentication for single sign on (SSO), please refer to [Introduction to Morningstar Connect Component, with Morningstar Authentication Instructions](#).

## Changes in this version

This document is evolving along with the Morningstar Connect component (formerly known as Custom Element Version 2) which is currently at version 3.1. The changes in this release are described in [Appendix A - Cumulative changes to the Morningstar Connect component](#) along with important information about other recent changes.

## Morningstar Connect

The Morningstar Connect component provides access to the Morningstar® ByAllAccounts<sup>SM</sup> aggregation service. It is a W3C custom HTML element that implements the account setup functionality for aggregation within another application.

Morningstar Connect supports adding and maintaining accounts within the aggregation system. The aggregated account data, including balance, holding, and transaction information, are available via Morningstar ByAllAccounts APIs.

Morningstar Connect can be fully customized to integrate into your parent page, with customizations to terminology, styles, and features.

This document describes the Morningstar Connect component, steps for embedding it in a web application, methods of authentication, and ways to customize it.

To fully integrate Morningstar Connect, you will need to work with a ByAllAccounts Implementation Manager who will help with the internal Morningstar setups required including creating a Firm for you in our system, providing an administrator login and password to perform API calls, etc. For details refer to the [Morningstar Connect Evaluation Guide](#).

## See it in action

To see Morningstar Connect in action, click [here](#).

## Known limitations

There are currently no known limitations. The capabilities, interfaces, and behaviors of the Morningstar Connect component are subject to change as we make refinements based on customer feedback.

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## User types

The Morningstar Connect component can only be used with BAA Investor users and those users must:

- have full Read-Write permission to their own data
- be Single Sign On (SSO) users
- be in a BAA Firm that is licensed to use Morningstar Connect

## Browser support

- Chrome (including incognito mode), Firefox, Microsoft Edge, Safari, and Internet Explorer (IE) 11 are fully supported

## Authentication

Authentication is handled by the parent page before it invokes the Morningstar Connect component.

Authentication consists of invoking a DataConnect API method to authenticate the investor and obtain values for `jsessionId` and `csrfToken`. The `jsessionId` and `csrfToken` values must be passed to the component using the `auth-context` attribute.

For details you can refer to the Single Sign-on Operations section in the [DataConnect V4 Ultra User Guide](#).

## Permissions

The Morningstar Connect component uses a Content Security Policy (CSP) that controls which domains are allowed to frame it. The parent page domain(s) must be configured as allowed in this CSP to allow this framing. Your Morningstar Implementation Manager will assist you with this configuration.

## Supported workflows

Morningstar Connect provides the following workflows, initiated by setting the `route` attribute as shown:

- adding new accounts to the system using `route` with `/add-account`
- editing credentials that have already been entered using `route` with `/edit-credential`
- adding more accounts to an existing credential using `route` with `/discover-accounts`

If you do not provide a value for the `route` attribute then the default behavior is `/add-account`. The `route` attribute is shown in the code example in ["Example setting all attributes" on page 5](#) and explained in the table in ["Attributes" on page 6](#).

## Download and install the Morningstar Connect component

The `mstar-aggregation-consumer-accountsetup` component is built with Angular and can be used in frameworks such as React, and Vue, or in vanilla JS applications.

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These instructions are for acquiring, customizing, and incorporating Morningstar Connect. To fully implement it, work with your Morningstar Implementation Manager.

### Step 1

Download the packaged file for Morningstar Connect from <https://www.byallaccounts.net/WebPortfolio/mstar-aggregation-consumer-accountsetup.tgz>.

### Step 2

Install the package by running the following command in your development environment:

```
npm install mstar-aggregation-consumer-accountsetup.tgz
```

### Step 3

Confirm the *mstar-aggregation-consumer-accountsetup* folder is under the *node\_modules* directory. The folder contains:

- *mstar-aggregation-consumer-accountsetup.js*, which is the JavaScript bundle for the Morningstar Connect component.
- *assets* folder, which contains various configuration files and images for the component.
- *package.json* file that describes the npm package.

The build system should ensure that the *assets* folder and the main JavaScript file (*mstar-aggregation-consumer-accountsetup.js*) of the component are placed under the application's distribution (*/dist*) folder from where it is being served.

### Step 4

Customize the user interface. See the "[Customizations to the user interface](#)" on page 3.

### Step 5

Import the necessary JavaScript files into your HTML parent page and create an instance of the *mstar-aggregation-consumer-accountsetup* tag element.

### Step 6

Incorporate Morningstar Connect into your parent page. See "[Incorporate the Morningstar Connect component into your parent page](#)" on page 5.

## Customizations to the user interface

There are multiple types of customizations you can optionally provide for the Morningstar Connect component. You apply these customizations using the files provided in the *assets* folder.

- **Terminology** – the *i18n/en.json* translation file contains all the static text displayed on pages, dialogs, and buttons within the interface. Edit this file to customize text and terminology. Configure Morningstar Connect to use your custom terminology file by setting the *translate-file-path* attribute.

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- **Styles** – define an optional CSS file to override the default Morningstar Design System (MDS) styles and adjust fonts, colors, and backgrounds for elements in the display. Configure Morningstar Connect to use your custom CSS file by setting the *override-css-file* attribute. To use fonts other than the MDS Univers font, you can add a global entry like this to your CSS file:

```
* {
  font-family: YourFont, Verdana, sans-serif !important;
}
```

- **Fonts** – define an optional fonts file to override the default Morningstar Design System (MDS) fonts for elements in the display. Configure Morningstar Connect to use your custom fonts by setting the *custom-fonts* attribute. These new fonts are then available to be set using the CSS file specified using the *override-css-file* attribute.
- **Optional features** – the config/ui-config.json file contains options that enable you to turn on/off UI features in Morningstar Connect. Configure Morningstar Connect to use your custom configuration file by setting the *ui-config-file* attribute. Only a subset of the options currently applies to the component. These options are:
  - "fiLogosVisible" - controls whether a page of popular financial institution (FI) logos is shown in the FI selection step. If true, the logos are shown; if false, then only a search control and FI list are shown.
  - "includeURLinSearch" - controls whether the FI URLs are included in the search criteria when the user is searching for an institution.

For example:

```
"cui-fi-select": {
  "fiLogosVisible": false,
  "includeURLinSearch": false
}
```

## Applying the user interface customizations

Use these instructions to customize terminology, styles, fonts, and optional features.

1. Edit the files provided in the assets folder. These files and edits are described in "[Customizations to the user interface](#)" on page 3.
2. Modify your web server to allow our origin ([www.byallaccounts.net](http://www.byallaccounts.net)) to access those files. We suggest the following:
  - Header set Access-Control-Allow-Origin "[www.byallaccounts.net](http://www.byallaccounts.net)"
  - Header set Access-Control-Allow-Headers "Cache-Control,Content-Type,Accept,Referer,User-Agent,Sec-Fetch-Dest"
  - Header set Access-Control-Allow-Methods "GET,OPTIONS"

If this access is not allowed, then the Morningstar Connect component will not be able to access the customization files and will have to use its own version of those files.



- 
3. Set the appropriate attribute to identity each custom file. For attribute information see ["Attributes" on page 6](#).

## Incorporate the Morningstar Connect component into your parent page

This section provides examples for incorporating the Morningstar Connect component in your parent page. This code:

- Loads the Morningstar Connect component.
- Instantiates the component in the parent page.
- Sets attributes. Minimally sets *auth-context*, which is required.
- Makes Morningstar Connect visible in the parent page.

The following sections include:

- A simple code example showing the minimum requirements.
- A more detailed example showing all the attributes.

Additionally, consider how to handle the events described in ["Events" on page 10](#).

### Minimum example

This code example shows launching Morningstar Connect with minimum required attributes.

You must define the *auth-context* attribute for authentication, as shown here. For details about attributes, refer to ["Attributes" on page 6](#).

```
<!-- Load the main JavaScript bundle file of the component -->
<script src="./mstar-aggregation-consumer-accountsetup.js"></script>
<script>
  mstarWebComp = document.createElement("mstar-aggregation-consumer-accountsetup");
  mstarWebComp.setAttribute("auth-context", JSON.stringify(
    { sessionId: "212764322EB9DBEBED880425DE3216EB.sla",
      csrfToken: "DBC63BDE361C192B3CEF641B4C551DD8AC27B4A0276E91"
    }
  ));
  content.appendChild(mstarWebComp);
</script>
```

### Example setting all attributes

This section shows a code example for launching Morningstar Connect with all applicable attributes.

This sample integration code:

- Loads the Morningstar Connect component.
- Instantiates the component in the page.
- Sets all common attributes. See ["Attributes" on page 6](#) for detailed information about attributes.
- Makes Morningstar Connect visible in the page.

Attributes are available to:

- customize the user interface

attributes: *ui-config-file*, *translate-file-path*, *override-css-file*, *custom-fonts*

These attributes typically do not change during the lifetime of the parent page. We recommend setting these attributes first.

- provide authorization

attribute: *auth-context*

Authorization can change during the life of the parent page when authorization expires or a new user is authorized. If you reset the *auth-context* attribute, you must then reset the *route* attribute.

- initiate a workflow

attribute: *route*

The *route* attribute specifies which workflow Morningstar Connect should initiate. If *auth-context* is changed then the *route* attribute should be set again after that change.

In this example, *hostname* should be replaced with your host name for those files.

```
<!-- Load the main JavaScript bundle file of the component -->
<script src="./mstar-aggregation-consumer-accountsetup.js"></script>
<script>
  mstarWebComp = document.createElement("mstar-aggregation-consumer-accountsetup");
  mstarWebComp.setAttribute("ui-config-file", "https://hostname/customassets/config/ui-
config.json");
  mstarWebComp.setAttribute("translate-file-path", "https://hostname/customassets/il8n/");
  mstarWebComp.setAttribute("override-css-
file", "https://hostname/customassets/css/corporatestyle.css");
  mstarWebComp.setAttribute("custom-
fonts", "https://fonts.googleapis.com/css?family=Lobster");
  mstarWebComp.setAttribute("auth-context", JSON.stringify(      { sessionId:
"212764322EB9DBEBED880425DE3216EB.s1a",      csrfToken:
"DBC63BDE361C192B3CEF641B4C551DD8AC27B4A0276E91"      }));
  mstarWebComp.setAttribute("route", "/edit-credential;credentialId=21911");
  content.appendChild(mstarWebComp);
</script>
```

## Attributes

The following table describes the attributes for the Morningstar Connect component. The only required attribute is *auth-context*.

Any of these attributes can be set (and reset) at any time but *ui-config-file*, *translate-file-path*, and *override-css-file* typically do not change during the lifetime of a parent page. An example of when *auth-context* and *route* might be reset during the lifetime of a parent would be handling of an error event. For information about events, see "Events" on page 10.

Attribute	Req'd?	Parameters and Description
<i>auth-context</i>	Yes	Possible Parameters

Attribute	Req'd?	Parameters and Description
		<p>Must contain one of:</p> <ul style="list-style-type: none"> <li>■ <code>{ sessionId: &lt;sessionIdValue&gt;, csrfToken: &lt;csrfTokenValue&gt; }</code></li> <li>■ <code>{ }</code></li> </ul> <p><b>Description</b></p> <p>The <i>auth-context</i> attribute is used for user authentication. It is required and may be reset any number of times during the lifetime of the parent page. For example, it would need to be reset after a timeout.</p> <p>It must contain the parameter pair <code>sessionId/csrfToken</code> or an empty object.</p> <p>When the user is authenticated via SSO, the <code>sessionId</code> and <code>csrfToken</code> pair must be included, using the form:</p> <pre>{ sessionId: &lt;sessionIdValue&gt;, csrfToken: &lt;csrfTokenValue&gt; }</pre> <p>To prevent further use of the component by the user, use the empty value to clear the authentication data from the component:</p> <pre>{ }</pre>
<i>route</i>	No	<p><b>Possible Parameters</b></p> <ul style="list-style-type: none"> <li>■ <code>/add-account</code></li> <li>■ <code>/edit-credential;credentialId=&lt;credentialIdValue&gt;</code></li> <li>■ <code>/discover-accounts;credentialId=&lt;credentialIdValue&gt;</code></li> <li>■ <code>/edit-account;accountId=&lt;accountIdValue&gt;</code></li> </ul> <p>In each case, <code>&lt;credentialIdValue&gt;</code> is the unique internal identifier for the Account Credential.</p> <p>Note: Although existing implementations may still be using the <code>showProgressStep=false</code> parameter with any of the possible parameters listed above, <b>it is being deprecated</b>. See the description section for more information.</p> <p>The <code>/add-account</code> parameter can additionally have:</p> <ul style="list-style-type: none"> <li>■ <code>file=&lt;fileValue&gt;</code></li> <li>■ <code>file=&lt;fileValue&gt;;newCredential=true</code></li> <li>■ <code>allowMultipleAdds=false</code></li> </ul> <p>The <code>/edit-credential;credentialId=&lt;credentialIdValue&gt;</code> parameter can additionally have:</p> <ul style="list-style-type: none"> <li>■ <code>viewFirst=true</code></li> </ul> <p>The <code>/edit-account;accountId=&lt;accountIdValue&gt;</code> parameter can additionally have:</p> <ul style="list-style-type: none"> <li>■ <code>viewFirst=true</code></li> </ul>

Attribute	Req'd?	Parameters and Description
		<p><b>Description</b></p> <p>Note: If you set the <i>route</i> attribute, you must set it after the <i>auth-context</i> attribute because user authentication must be set before the component can attempt the operation. If you do not set the <i>auth-context</i> before the <i>route</i> attribute, a <i>badAuthentication</i> event will occur.</p> <p>The <i>route</i> attribute is set with a parameter to specify the workflow to initiate. A route may also have optional parameters to further control the behavior. When you specify multiple parameters for a route, the parameters can be listed in any order.</p> <p>The <i>route</i> attribute may be set any number of times during the life of the parent page. When you set the <i>route</i> attribute it initiates a new or different workflow in Morningstar Connect. For example, you would set a route to add an account, then another route to edit credentials. When a workflow completes, the component tells the parent page that it is done. If you want to bring it back and use it, set another route.</p> <p>Use the following parameters.</p> <ul style="list-style-type: none"> <li> <p>■ <i>/add-account</i> Sets the route to adding a new account. When no <i>route</i> is set, Morningstar Connect starts with the add accounts workflow by default. This workflow takes the user through the required steps for provisioning new accounts in the aggregation system.</p> </li> <li> <p>■ <i>/add-account;fild=&lt;FildValue&gt;</i> To launch directly into adding an account at a specific financial institution (FI), set <i>/add-account</i> with the <i>fild</i> parameter, where <i>FildValue</i> is the unique internal identifier for the FI you want Morningstar Connect to use when adding an account.</p> </li> <li> <p>■ <i>add-account;fild=&lt;FildValue&gt;;newCredential=true</i> Defaults to <i>false</i>. When set to <i>true</i>, launches directly into adding an account to a new credential on the specified Financial Institution without checking for existing credentials. If the <i>fild</i> parameter is not set, <i>newCredential</i> is ignored.</p> </li> <li> <p>■ <i>/edit-credential;credentialId=&lt;credentialIdValue&gt;</i> Sets the route to go directly to editing the Account Credential specified by <i>&lt;credentialIdValue&gt;</i>.</p> </li> <li> <p>■ <i>/edit-credential;credentialId=&lt;credentialIdValue&gt;;viewFirst=true</i> Defaults to <i>false</i>. When set to <i>true</i>, launches into a Pending Request view for the credential specified by <i>&lt;credentialIdValue&gt;</i>. From that view, users can choose to close, withdraw the request, or edit details.</p> </li> <li> <p>■ <i>/discover-accounts;credentialId=&lt;credentialIdValue&gt;</i> displays the account discovery step for the Account Credential specified by <i>&lt;credentialIdValue&gt;</i> so they can be added to the aggregation system.</p> </li> </ul>

Attribute	Req'd?	Parameters and Description
		<ul style="list-style-type: none"> <li>■ <code>/edit-account;accountId=&lt;accountIdValue&gt;;viewFirst=true</code> Defaults to false. When set to true, , launches into an Account Details view for the account specified by <code>&lt;accountIdValue&gt;</code>. From that view, users can chose to close, edit the account, or navigate to the remove account view.</li> </ul> <p>In each case, <i>credentialIdValue</i> is the unique internal identifier for the Account Credential.</p> <p>Optionally, to control whether multiple adds are allowed on an <code>/add-account</code> route, set <code>allowMultipleAdds=false</code> on the <code>/add-account</code> parameter. When not set, or set to true, Morningstar Connect will provide an option for the user to loop to the FI Select step to enable adding another credential. When set to false, only one credential and its accounts can be added. For example: <code>/add-account:allowMultipleAdds=false</code>.</p> <p>Note: Existing implementations using the optional <code>showProgressStep=false</code> parameter to suppress the final progress step in the workflow take note that <b>it is being deprecated</b> because there is no longer a progress step. When this parameter was previously used with <code>/add-account</code> and set to false it had an additional effect, which was to limit the Add to one credential and its accounts. It will still prevent looping back to the FI Selection step. Explicitly setting <code>allowMultipleAdds</code> to true or false will override this <code>showProgressStep</code> handling. Existing implementations should transition as soon as possible to using <code>allowMultipleAdds</code>.</p>
<i>translate-file-path</i>	No	<p><b>Possible Parameters</b></p> <p>The path to the custom en.json file.</p> <p><b>Description</b></p> <p>The <i>translate-file-path</i> attribute identifies the URL that is the path to the <i>en.json</i> file that you can create to provide custom terminology for certain text and labels displayed by the Morningstar Connect component. The path is relative to the base <i>href</i> of the deployed application.</p>
<i>ui-config-file</i>	No	<p><b>Possible Parameters</b></p> <p>Path and file name to your custom user interface (UI) configuration file.</p> <p><b>Description</b></p> <p>The <i>ui-config-file</i> attribute identifies the URL that is the path to and the name of the file that contains options for turning on/off UI sections in the Morningstar Connect component. The path is relative to the base <i>href</i> of the deployed application.</p>
<i>override-css-file</i>	No	<p><b>Possible Parameters</b></p> <p>The path and file name for your custom cascading style sheet (CSS) file.</p> <p><b>Description</b></p> <p>The <i>override-css-file</i> attribute identifies the URL that is the path to and file name of a</p>

Attribute	Req'd?	Parameters and Description
		custom CSS file containing overrides to the default Morningstar Design System (MDS) styles.
<i>custom-fonts</i>	No	<p><b>Possible Parameters</b></p> <p>The path and name for your font definitions.</p> <p><b>Description</b></p> <p>The <i>custom-fonts</i> attribute identifies the URL that is the path to and file name of your custom font definition file that will override to the default Morningstar Design System (MDS) fonts.</p>

## Events

The Morningstar Connect component (*mstar-aggregation-consumer-accountsetup*) communicates with the parent page using events caused by a trigger action.

How an event is resolved depends on the type of event:

- Critical events must be monitored for and managed by the parent page. These events signal that there is an error that the component cannot resolve or that the user has completed their work.
- Standard (informational) events provide information for the parent page. Informational events may be monitored, but are managed by Morningstar Connect. For example, the Morningstar Connect handles any problems that occur when the credentials entered for a financial institution cannot be used to successfully authenticate at that institution.

"[Monitoring for events](#)" on page 12 provides a code sample for monitoring for a specific event. "[Managing critical events in the workflow](#)" on page 12 describes ways in which the parent page may need to handle the critical events. "[Managing standard events in the workflow](#)" on page 13 describes managing the informational events.

Trigger	Name	Event Detail String	Description
<b>Critical events</b>			
A request to the server finds user's authentication context is not valid (resulted in a 401 Unauthorized)	badAuthentication	"Unauthorized access"	<p>User's authentication context is either not valid, the session timed out, or their authentication expired. The user will no longer be able to interact with Morningstar Connect after a <i>badAuthentication</i> (401) event until the component receives changes to the <i>auth-context</i> attribute that provide valid authentication data.</p> <p>The user's authentication could end at any time. Whenever the parent page receives a <i>badAuthentication</i> event it must re-</p>

Trigger	Name	Event Detail String	Description
			authenticate and invoke a <i>setAttributeAuth-context</i> with the refreshed header information before the user can proceed with the operation they had started.
Morningstar Connect is not licensed	badConfiguration	"User not licensed"	If the Morningstar Connect component is not licensed at initiation, there will be a blank area in the parent page where the component is expected. If the configuration changes while component is in use, the component will be in a blocked state and greyed out on the parent page.
A request to the server resulted in an error other than 401 or an internal code error occurred	internalError	One of: "Forbidden access" "Service unavailable" "Unknown server error" "Unknown error" "Resource not found"	An unexpected error occurred during user's interaction with the component. The parent page must remedy the problem and possibly display a message to the user. Some causes include: Forbidden access: User does not have the necessary permissions; user may have read only permissions. Service unavailable: Possibly an intermittent service interruption. Resource not found: Could be a misnamed path or file.
User completes action and/or exits the operation	userExit	"User exit"	User has done one of the following: completed the account add, completed the account edit, canceled out of the workflow, or declined the user agreement.
<b>Standard events</b>			
User makes a change to credential or account	dataChanged	"Data changed"	User made a change to a credential or account that may have resulted in synchronous changes to any or all of the following: authentication status, accounts linked to the credential, and/or financial data for those accounts.
User initiates an	dataChangedAsync	"Async Data	User initiates the service to run the

Trigger	Name	Event Detail String	Description
aggregation operation		change"	asynchronous process of composite "aggregate" which can be discover/add/aggregate, add/aggregate, or just aggregate.
User initiates an authenticate operation	dataChangedAsyncAuthenticate	"Async Authenticate Data change"	User initiates an authentication operation, which causes the service to run the asynchronous process of attempting to authenticate.
User declines user agreement	userDeclinedAgreement	"User declined user agreement"	User did not accept the terms of the latest user agreement when prompted.

## Monitoring for events

This code sample shows how to listen for a specific event.

```
mstarWebcomp.addEventListener('userExit', function (event) {
  console.log(' @@@@ userExit event is called. detail: ' + event.detail);
});
```

## Managing critical events in the workflow

This section describes managing the critical trigger events listed in ["Events" on page 10](#).

These critical events must be monitored and managed by the parent page.

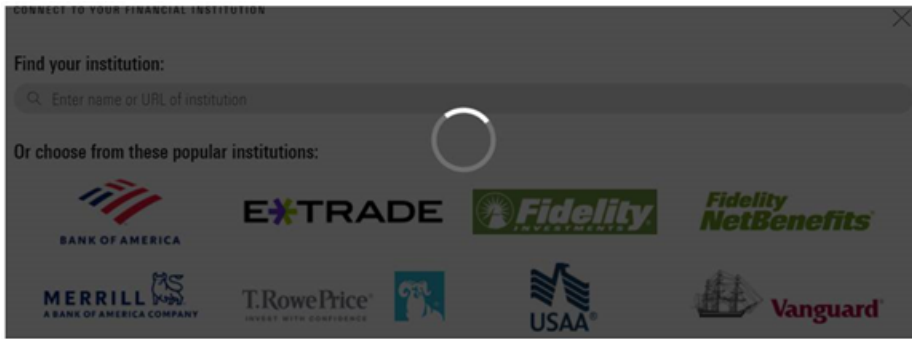
### badAuthentication

A badAuthentication event can be caused by:

- timeout: the user stops interacting with Morningstar Connect for a period of time and the session for the *auth-context* times out.
- authentication ended: the authorized connection ended.

For badAuthentication events, the parent page must reauthenticate the user and set a new *auth-context*. Until the reauthentication happens, the component is in a blocked state and is greyed out.





When the authentication is reestablished, the user may proceed from where they left off.

### **badConfiguration**

A badConfiguration event is caused by an unlicensed Morningstar Connect component.

If the component is not licensed at initiation, there will be a blank area in the parent page where the component is expected. If the configuration changes while the component is in use, the component will be in a blocked state and greyed out as it is for a badAuthentication event. The parent page needs to recognize that error and remedy the problem.

### **internalError**

The internalError event can happen for several reasons. For example, a "Resource not found" error would occur if the parent page provided an invalid credential identifier when requesting a *route* to */edit-credential*.

When an internalError event occurs, the user interface for the component remains static. The parent page needs to recognize that error and remedy the problem. The parent page can pass a message to the user, describing the type of error.

### **userExit**

Morningstar Connect sends the userExit event when the user exits it, such as by completing adding an account, completing editing an account, canceling out of the workflow, or declining the user agreement.

Upon an userExit event, the parent page could hide Morningstar Connect or activate it again. To activate it again, if the authorization context is still valid, the parent page can set the route attribute to reopen Morningstar Connect at a set point in the workflow.

## **Managing standard events in the workflow**

This section describes managing the standard (informational) trigger events listed in "[Events](#)" on page 10. These events that may be monitored by the parent page but are handled by the Morningstar Connect component.

### **dataChanged**

The dataChanged event lets the parent page know something has changed. The parent page should refresh any display of account, credential, position, and transaction data. The event is emitted each time one of these data

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changes occurs, so the parent page could receive this event multiple times during a single session of the Morningstar Connect component.

### **dataChangedAsync**

The dataChangedAsync event lets the parent page know the user submitted a composite "aggregate" that triggered the service to run the complex and long-running process asynchronously. The composite "aggregate" can be discover/add/aggregate or just aggregate. When the parent page receives this event it should poll for asynchronous activity completion and then query the API to obtain the changed data.

### **dataChangedAsyncAuthenticate**

The dataChangedAsyncAuthenticate event lets the parent page know that an authentication was initiated. The asynchronous process can be complex and long-running. When the parent page receives this event, it can poll for asynchronous activity completion and then query the API to obtain the authentication status.

### **userDeclinedAgreement**

A userDeclinedAgreement event occurs when a user does not accept the terms of a user agreement when it is presented.

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## Appendix A - Cumulative changes to the Morningstar Connect component

This appendix keeps a running list of released versions and a summary of the changes in each version starting with version 2.1.

**WARNING:** When a release is required, you *must* use the latest version of the Morningstar Connect. If you do not, any project you have that uses the component will fail because the new version has changes to the underlying API.

Date	Version	Required?	Summary of Changes
May 14, 2020	2.1	No	<p>This release introduces Custom Element Version 2 (CEV2) which replaces the original Custom Element. In addition to new underlying technology, changes include:</p> <ul style="list-style-type: none"><li>■ A new attribute for setting custom fonts.</li><li>■ No longer set the required font faces using a stylesheet reference.</li><li>■ Now provide the hostname (URL) for the customization files when setting the attributes that customize the user interface.</li><li>■ To enable authentication service calls to <a href="http://www.byallaccounts.net">www.byallaccounts.net</a>, the parent page's domain(s) must be configured in the component's CORS whitelist within the ByAllAccounts service.</li><li>■ The whitelist requirement now applies to non-SAML SSO in addition to SAML SSO.</li></ul>
June 5, 2020	2.2	No *	<p>As of this release, by default new users are presented with a user agreement. A new userDeclinedAgreement event occurs if the user does not accept the terms of the user agreement and the userExit event is triggered. The user agreement feature can be disabled at the Firm level. Disabling it at the Firm level disables it globally for all ByAllAccounts services including AccountView. * Although this release is not required, the userDeclinedAgreement event will not be available unless you pick up the new version.</p>
June 25, 2020	2.3	No	<p>The changes in this release are internal only and do not</p>

Date	Version	Required?	Summary of Changes
July 17, 2020	2.4	No	<p>affect the user experience.</p> <ul style="list-style-type: none"> <li>■ Safari, Microsoft Edge, and Internet Explorer (IE) 11 are now fully supported</li> <li>■ When searching for a Financial Institution, a “Cannot find institution...” message no longer appears before the results are displayed.</li> <li>■ The component is now built with Angular 9.</li> <li>■ UIM SSO authentication is now supported for Morningstar Authentication implementations.</li> <li>■ Changes to support Morningstar Authentication, including the rest-url and corece-base-url attributes.</li> </ul>
August 14, 2020	2.5	No	<p>An error has been fixed that occurred when the user selected a radio button item while validating their identity at an institution that requires In Session Activation Codes (ISAC) (BAPP-3073).</p>
October 29, 2020	2.6	No	<ul style="list-style-type: none"> <li>■ The browser web component registry is now checked prior to registering the component to avoid duplicate registration requests.</li> <li>■ The zone.js dependency has been removed for the BAA Web Component. It was no longer needed and in some cases was causing conflicts with parent pages.</li> <li>■ Web components polyfills were added to support legacy Edge browsers.</li> <li>■ More checks were added to the route attribute resolution logic and auth-context to protect against invalid values.</li> </ul>
November 19, 2020	2.7	No	<p>A new badConfiguration event was added. It indicates that the component license is not enabled for the firm.</p>
December 10, 2020	2.7	No	<p>Accessibility support changes were made, including placing focus on the first interactable element when the component launches or the page changes.</p>
January 14, 2021	2.7	No	<p>Customer notifications for known connectivity issues at financial institutions are now displayed.</p>
February 4, 2021	2.8	No	<ul style="list-style-type: none"> <li>■ Chrome Incognito mode is now supported.</li> <li>■ Institution logo buttons now have descriptive alt tags to support accessibility according to Web Content</li> </ul>

Date	Version	Required?	Summary of Changes
February 25, 2021	2.8	No	<p>Accessibility Guidelines (WCAG).</p> <ul style="list-style-type: none"> <li>■ A loading issue when embedded for Angular 10 was resolved.</li> <li>■ When creating an account, the account authorization window for some financial institutions would not open in a new tab due to the browser's pop up blocker. This issue has been fixed.</li> <li>■ Improvements have been made to handling of error cases for editing accounts, adding accounts, and editing credentials at institutions that use OAuth authorization.</li> <li>■ When connecting an account, the progress bar now provides audible indication of work in progress to assistive technology users according to Web Content Accessibility Guidelines (WCAG) standards.</li> <li>■ In some cases, new users adding an account would encounter an erroneous invalid input error. This issue has been fixed.</li> </ul>
March 18, 2021	2.8	No	<p>When a user clicks the Done button while in the progress page, the userExit event is now sent for the parent page to manage the workflow, rather than returning to the FI selection page.</p>
April 8, 2021	2.8	No	<p>Now when a user selects Cancel while in the process of logging into a Financial Institution, aggregating, etc. the progress page or main view will no longer continue to show the 'Connecting...' status.</p>
April 29, 2021	2.9	No	<p>New parameter field for the add-account route, enables a direct route to the financial institution (FI) login page, bypassing the FI selection page.</p>
June 10, 2021	2.9	No	<ul style="list-style-type: none"> <li>■ Users who do not have an email address now do not see the option to request an FI.</li> <li>■ The styling of the text when requesting a new financial institution (FI) is now consistent with the rest of the interface.</li> <li>■ Documentation change: a code sample for event listener was added.</li> </ul>

Date	Version	Required?	Summary of Changes
July 2, 2021	2.10	No	<ul style="list-style-type: none"> <li>■ SAML is no longer supported, so references to SAML SSO have been removed.</li> <li>■ The component is now built with Angular 12.</li> <li>■ There are several new error messages for OAuth authorization cases.</li> <li>■ The message type cannotConnectOauthAcctNotAuthorized, with the message "Cannot connect. Account is not authorized." appears when an account is missing data needed to identify it, such as AccountNumber2.</li> <li>■ The icon for Fidelity Investments seen when adding an account now directs to Fidelity.com – Quicken.</li> </ul>
July 22, 2021	2.10	No	<p>Two of the popular institution icons seen when adding an account have been swapped for other financial institutions. Chase and Wells Fargo have been removed and replaced by E*TRADE (Investment) and T. Rowe Price (Investment).</p>
September 23, 2021	2.10	No	<ul style="list-style-type: none"> <li>■ A new /discover-accounts;credentialId=&lt;credentialIdValue&gt; parameter was added to the route attribute. The description for the dataChangedAsync trigger was updated.</li> <li>■ When entering the financial institution password, the last typed character of the password is visible for a brief time, and there is a show/hide option for a newly entered password.</li> <li>■ In some cases, authentication during account setup was taking extra time. This condition has been improved.</li> </ul>
December 2, 2021	2.10	No	<p>Documentation update. Custom Element Version 2 (CEV2) is now referred to as Morningstar Connect.</p>
March 24, 2022	2.11	No	<p>This release is not required but is recommended if you are doing customizations. The change in this release removes the ability to add the sidebar feature from all pages, except for the financial institution selection page. Redeploying will provide refined configuration controls in the ui-config.json file and refined text in the en.json file.</p>

Date	Version	Required?	Summary of Changes
April 14, 2022	2.11	No	Documentation update to clarify some details.
June 2, 2022	2.11	No	The <i>showProgressStep</i> parameter is being deprecated and will be phased out over time. Existing implementations that use it with <i>/add-account</i> should transition to using use the new <i>allowMultipleAdds</i> parameter as soon as possible.
July 22, 2022	3.0.3	No	Where there are buttons on the page, they now stay in view at the bottom of the page as the page is sized. Morningstar Connect must be upgraded to Version 3.0.3 to enable this change.
August 4, 2022	3.1	No	<ul style="list-style-type: none"> <li>■ Internet Explorer (IE) 11 is no longer supported.</li> <li>■ The component is now built with Angular 14.</li> </ul>
August 25, 2022	3.1	No	Information about known long-term issues at financial institutions is now displayed.
October 6, 2022	3.1	No	The service cannot aggregate data for financial institutions that require the user to authenticate, such as by a text message code, every time they log in. For that allow users to disable that feature, Morningstar Connect will return the following message so the user can disable the feature and try again: "Cannot connect. The institution requires you to login on their website and turn off the setting that requires identity verification at every login."
October 27, 2022	3.1	No	An <i>add-account;fild=&lt;Fild&gt;;newCredential=true</i> parameter was added to the <i>route</i> attribute to enable accounts to be added to a new credential on a given financial institution without checking for existing credentials.
November 17, 2022	3.1	No	<ul style="list-style-type: none"> <li>■ The <i>/edit-credential;credentialId=&lt;credentialIdValue&gt;</i> parameter for the <i>route</i> attribute can now include <i>viewFirst=true</i> to display a Pending Request.</li> <li>■ M&amp;T Bank (Banking) can now be found using the search query.</li> <li>■ A number of changes have been implemented to be compliant with Web Content Accessibility Guidelines (WCAG 2.1).</li> </ul>

Date	Version	Required?	Summary of Changes
December 8, 2022	3.1	No	<ul style="list-style-type: none"> <li>■ An error when using Chrome or Edge with MetaMask enabled has been fixed.</li> <li>■ A number of changes have been implemented to be compliant with Web Content Accessibility Guidelines (WCAG 2.1).</li> </ul>
December 22, 2022	3.1	No	<p>Added the <code>/edit-account;accountId=&lt;accountIdValue&gt;</code> parameter for the <code>route</code> attribute, which can include <code>viewFirst=true</code> to display an Account Details view.</p>
January 26, 2023	3.1	No	<p>The margin settings for the component's iframe can now be adjusted. With this change, the component's iframe body margin value is 8px by default. Customers who want to have a 0 margin on the outer container can override the CSS class with this value.</p> <pre data-bbox="818 856 1078 919">.cui-wizard-body { margin: 0px; }</pre>