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# Widget BUS Guide

Genesys Widgets Extensions

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## Contents

- 1 Genesys Widgets Extensions
  - 1.1 Defining Extensions
  - 1.2 Creating a new CXBus plugin
  - 1.3 Use Cases

# Genesys Widgets Extensions

Genesys Widgets allows 3rd parties to create their own plugins/widgets to extend the default package. Extensions are an easy way to define your own while utilizing the same resources as core Genesys Widgets.

## Defining Extensions

Extensions are defined at runtime before Genesys Widgets load. You can define them inline or include extensions in separate files, either grouped or separated.

### Important

Define/include your extensions **after** your Genesys Widgets configuration object but **before** you include the Genesys Widgets JavaScript package

```
<script>

if(!window._genesys.widgets.extensions){
    window._genesys.widgets.extensions = {};
}

window._genesys.widgets.extensions["TestExtension"] = function($, CXBus, Common){
    var oTestExtension = CXBus.registerPlugin("TestExtension");
    oTestExtension.subscribe("WebChat.opened", function(e){});
    oTestExtension.republish("ready"); // Publishes "TestExtension.ready"
    oTestExtension.command("WebChat.open").done(function(e){
        // Handle success return state
    }).fail(function(e){
        // Handle failure return state
    });
    oTestExtension.registerCommand("demo", function(e){
        // Command execution here
        e.deferred.resolve(); // or e.deferred.reject(); if the command cannot complete
    });
    oTestExtension.ready();
};
```

```
</script>
```

Make sure that the "extensions" object exists and always include this at the top of your extension definition.

```
if(!window._genesys.widgets.extensions){  
    window._genesys.widgets.extensions = {};  
}
```

Create a new named property inside the "extensions" object and define it as a function. When Genesys Widgets initializes it will step through each extension and invoke each function, initializing them. Genesys Widgets will share resources as arguments. These include: jQuery, **CXBus**, and **Common** (common UI utilities).

```
window._genesys.widgets.extensions["TestExtension"] = function($, CXBus, Common){
```

## Creating a new CXBus plugin

Inside the extension function is where you create a new CXBus plugin. You can use this CXBus plugin to interface with other Genesys Widgets. You can add your own UI controller logic in here or simply use the extension to connect an existing UI controller to the bus (for example, share its API over the bus and coordinate actions with events).

Registering a new plugin on the bus creates a new, unique namespace for all your events and commands. In this example, the namespace "cx.plugin.TestExtension" is created:

```
var oTestExtension = CXBus.registerPlugin("TestExtension");
```

### Important

When referring to other namespaces, like "cx.plugin.TestExtension", it is not necessary to include the "cx.plugin." prefix. It is optional and implied. You can subscribe to events or call commands using the full or truncated namespace.

## Use Cases

Extensions are like any other Genesys Widget. You can publish, subscribe, call commands, or register your own commands on the bus. You can interface with other widgets on the bus for more complex interactions. The following examples demonstrate how you can make extensions work for you.

### Example: subscribing to an event.

```
oTestExtension.subscribe("WebChat.opened", function(e){});
```

## Example: publishing the "ready" event.

Publishes the event "TestExtension.ready" on the bus. The "ready" event is a standard event for all widgets that is published after the widget has initialized and registered commands on the bus. This is an indicator to other widgets that your widget is ready to interact with others.

The use of `republish()` here allows for other widgets to load asynchronously and still be notified when others are ready. `Republish()` will automatically publish the event again **privately** to a new widget that subscribes to it. This allows a one-time event (a state that does not change from its initial state), like "ready" to propagate asynchronously.

Use `publish()` for all other events.

```
oTestExtension.republish("ready", {arbitrary data to include});
```

## Example: publishing a typical event.

You can publish any event at any time and include any data along with it.

Our recommended naming convention is to pair events with commands. e.g. the "open" command publishes "opened" when it is successful. The event should be a past-tense version of the command name.

For command pairs that toggle a state, such as "open" and "close", the names should use common antonyms. Widgets uses the Open/Close convention for showing and hiding widgets.

```
oTestExtension.publish("opened", {arbitrary data to include});
```

Some standard common events used by Widgets (as necessary):

- ready - online - offline - opened - closed - enabled - disabled

Other events are specific to each Widget's function, such as:

- WebChat.messageAdded - WebChat.minimized

## Example: calling a command.

Commands are deferred functions. You must handle their return states asynchronously.

```
oTestExtension.command("WebChat.open", {any options required}).done(function(e){  
    // Handle success return state  
    // "e", the event object, is a standard CXBus format  
    // Any return data will be available under e.data  
}).fail(function(e){  
    // Handle failure return state  
    // "e", the event object, may contain an error message, warning, or AJAX response object  
});
```

## Example: Registering a command.

Creates a new command under your namespace that you or other widgets can call.

"e", the event object, is a standard CXBus format

- e.data = options passed into command when being called.
- e.commander = the namespace of the widget that called this command. (can be used to restrict access)
- e.command = the name of the command being called.
- e.time = timestamp when the command was called.
- e.deferred = the deferred promise created for this command call. You MUST always resolve or reject this promise using e.deferred.resolve() or e.deferred.reject(). You may pass any arbitrary data into either resolution state.

```
oTestExtension.registerCommand("demo", function(e){  
    // Command execution here  
    e.deferred.resolve();  
});
```

## Example: Using the 'before()' method

Allows you to set up an interrupt that is executed before a command every time that command is called. With this feature you can link execution of a command with other logic, modify command options before they're used, or cancel execution of a command.

You can specify multiple "before" functions for a single command. They will be executed in order with the output of one providing the input to the next. If one of the functions does not return an object, execution will stop and the command will be cancelled.

```
oTestExtension.before("WebChat.open", function(oData){  
    // oData == the options passed into the command call  
    // e.g. if this command is called: oMyPlugin.command("WebChat.open", {form: {firstname:  
"Mike"}}});  
    // then oData will == {form: {firstname: "Mike"}}  
  
    // You must return oData back, or an empty object {} for execution to continue.  
    // If you return false|undefined|null, execution of the command will be stopped  
    return oData;  
});
```