

Extending and Customizing {brandname} 10.0

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Chapter 1. Extending {brandname}

{brandname} can be extended to provide the ability for an end user to add additional configurations, operations and components outside of the scope of the ones normally provided by {brandname}.

1.1. Custom Commands

{brandname} makes use of a [command/visitor pattern](#) to implement the various top-level methods you see on the public-facing API.

While the core commands - and their corresponding visitors - are hard-coded as a part of {brandname}'s core module, module authors can extend and enhance {brandname} by creating new custom commands.

As a module author (such as [infinispan-query](#), etc.) you can define your own commands.

You do so by:

1. Create a `META-INF/services/org.infinispan.commands.module.ModuleCommandExtensions` file and ensure this is packaged in your jar.
2. Implementing `ModuleCommandFactory`, `ModuleCommandInitializer` and `ModuleCommandExtensions`
3. Specifying the fully-qualified class name of the `ModuleCommandExtensions` implementation in `META-INF/services/org.infinispan.commands.module.ModuleCommandExtensions`.
4. Implement your custom commands and visitors for these commands

1.1.1. An Example

Here is an example of an `META-INF/services/org.infinispan.commands.module.ModuleCommandExtensions` file, configured accordingly:

org.infinispan.commands.module.ModuleCommandExtensions

```
org.infinispan.query.QueryModuleCommandExtensions
```

For a full, working example of a sample module that makes use of custom commands and visitors, check out [{brandname} Sample Module](#).

1.1.2. Preassigned Custom Command Id Ranges

This is the list of `Command` identifiers that are used by {brandname} based modules or frameworks. {brandname} users should avoid using ids within these ranges. (RANGES to be finalised yet!) Being this a single byte, ranges can't be too large.

| | |
|--------------------|-----------|
| {brandname} Query: | 100 - 119 |
| Hibernate Search: | 120 - 139 |

1.2. Extending the configuration builders and parsers

If your custom module requires configuration, it is possible to enhance {brandname}'s configuration builders and parsers. Look at the [custom module tests](#) for a detail example on how to implement this.

Chapter 2. Custom Interceptors

It is possible to add custom interceptors to {brandname}, both declaratively and programmatically. Custom interceptors are a way of extending {brandname} by being able to influence or respond to any modifications to cache. Example of such modifications are: elements are added/removed/updated or transactions are committed. For a detailed list refer to [CommandInterceptor](#) API.

2.1. Adding custom interceptors declaratively

Custom interceptors can be added on a per named cache basis. This is because each named cache have its own interceptor stack. Following xml snippet depicts the ways in which a custom interceptor can be added.

```
<local-cache name="cacheWithCustomInterceptors">
  <!--
    Define custom interceptors. All custom interceptors need to extend
    org.jboss.cache.interceptors.base.CommandInterceptor
  -->
  <custom-interceptors>
    <interceptor position="FIRST" class="com.mycompany.CustomInterceptor1">
      <property name="attributeOne">value1</property>
      <property name="attributeTwo">value2</property>
    </interceptor>
    <interceptor position="LAST" class="com.mycompany.CustomInterceptor2"/>
    <interceptor index="3" class="com.mycompany.CustomInterceptor1"/>
    <interceptor before="org.infinispanpan.interceptors.CallInterceptor" class=
"com.mycompany.CustomInterceptor2"/>
    <interceptor after="org.infinispanpan.interceptors.CallInterceptor" class=
"com.mycompany.CustomInterceptor1"/>
  </custom-interceptors>
</local-cache>
```

2.1.1. Adding custom interceptors programmatically

In order to do that one needs to obtain a reference to the [AdvancedCache](#) . This can be done as follows:

```
CacheManager cm = getCacheManager();//magic
Cache aCache = cm.getCache("aName");
AdvancedCache advCache = aCache.getAdvancedCache();
```

Then one of the *addInterceptor()* methods should be used to add the actual interceptor. For further documentation refer to [AdvancedCache](#) javadoc.

2.2. Custom interceptor design

When writing a custom interceptor, you need to abide by the following rules.

- + * Custom interceptors must extend [BaseCustomInterceptor](#)
- * Custom interceptors must declare a public, empty constructor to enable construction.
- * Custom interceptors will have setters for any property defined through property tags used in the XML configuration.