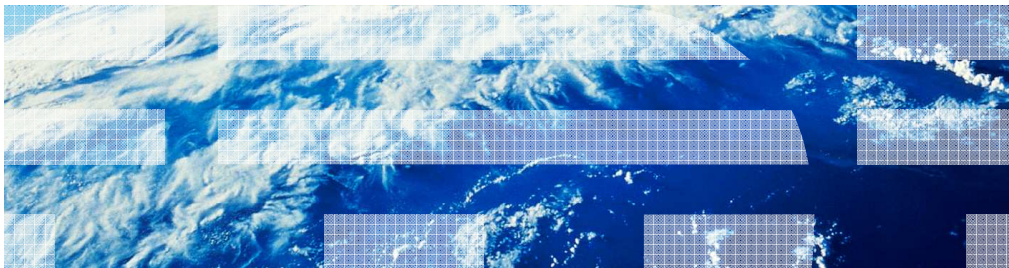


# IBM WebSphere Application Server V8.0.0.2

## Clearing the Virtual Member Manager (VMM) adapter cache



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This presentation describes support for virtual member manager features included in IBM WebSphere Application Server V8.0.0.2

## Clear the adapter cache

- Clear adapter cache

This presentation describes support for ability to clear VMM adapter cache without performing repository operation feature included in IBM WebSphere Application Server V8.0.0.2

## ***Overview***

This section will discuss an overview for the **“Ability to clear VMM adapter cache.”**

## Clear the adapter cache

- VMM connects to different repositories using adapters.
- These adapters might cache the repository data for improving performance.
- If changes are made to the data in the repository from outside VMM, the cached data is incorrect.
- This new feature allows customers to clear the adapter's cached data forcing them to fetch the new data from the repository.
- A new control named "CacheControl" has been added. This control can be used with the get and search API calls to flush the cache before running the required operation.
- A new parameter named "clearCache" has been added to the existing get and search command.
- Two new commands - "clearIdMgrUserFromCache" and "clearIdMgrRepositoryCache" have been added.
- At installation, only LdapAdapter supports caching of repository data and hence supports clearing of cache.

VMM allows one to connect to various repositories and access data from them transparently. VMM connects to the repositories using adapters. These adapters might be part of the initial installation or custom implementations. For better performance, adapters may cache the repository data with an assumption that the data is accessed - read and written - only through VMM API. This, however, may not be the case always. Under some situations, the repository data might be modified directly without using VMM API. When such a modification happens the data cached by the adapter is no longer correct.

There was a need to have a mechanism in place by which customers can force the adapter to fetch the new data from the repository. This mechanism is provided as part of this feature.

A new control namely "CacheControl" has been added. This control can be used with the existing Get and Search API to signal the adapters to flush the existing data from the cache and fetch the new data from the repository. The user can specify two modes in the control namely "CACHE\_MODE\_CLEAR\_ENTITY" and "CACHE\_MODE\_CLEARALL". As the names suggest, the mode CACHE\_MODE\_CLEAR\_ENTITY means that a single entity will be removed by the adapter from its cache and new data for that entity will be fetched from the repository. The mode CACHE\_MODE\_CLEARALL will signal the adapter to flush its entire cached data and fetch the new data from the repository.

Similarly a new parameter "clearCache" has been added to the existing Get and Search commands.

Also two new commands "clearIdMgrUserFromCache" and "clearIdMgrRepositoryCache" have been added which can be used to flush data from the adapter's cache without fetching any new data immediately. Any subsequent request for data will then trigger a get from the repository.

When you first install WebSphere Application Server, only LdapAdapter supports caching of repository data and hence supports clearing of cache.

## ***Usage scenarios***

Clear cache is used in these scenarios.

## Clear the adapter cache – get and search commands

- A new parameter named “clearCache” is added to these commands:
  - getUser, getGroup, getMembershipOfGroup, getMembershipOfUser, getMembersOfGroup, searchUsers, and searchGroups
- Parameter details for get
  - clearCache - The mode of clearing cache before the operation. Valid values are 'clearEntity' and 'clearAll'. If any value other than 'clearEntity' or 'clearAll' is passed, an Invalid Parameter Value exception is thrown.
- Command example
  - \$AdminTask **getUser** { -uniqueName uid=johndoe,dc=yourco,dc=com -clearCache clearEntity }
- Parameter details
  - clearCache - The mode of clearing cache before the operation. Valid values is 'clearAll'. If any value, other than 'clearAll' is passed, an Invalid Parameter Value exception is thrown.
- Command example
  - \$AdminTask **searchUsers** { -uid john\* -clearCache clearAll }

The example command provided here shows the use of the new parameter “clearCache” in the get and search commands.

The new parameter is an optional parameter which controls the behavior of flushing the cache.

For the Get command, you can specify two possible values for the parameter namely “clearEntity” and “clearAll”. If the parameter value is clearEntity then a single entity is removed by the adapter from its cache and new data for that entity will be fetched from the repository. The parameter value clearAll will signal the adapter to flush its entire cached data and fetch the new data from the repository.

For the search command, you can only specify one value for the parameter namely “clearAll”. If you specify any other value for this parameter, the InvalidParameterValue Exception is thrown.

## Clear the adapter cache – get and search API

- A new control named “CacheControl” is added which can be used with the Get and Search API.

- Example:

```
DataObject cacheCtrl = SDOHelper.createControlDataObject(root, null,
    SchemaConstants.DO_CACHE_CONTROL);

cacheCtrl.setString(SchemaConstants.CACHE_MODE, SchemaConstants.CACHE_MODE_
    CLEAR_ENTITY);
```

This code snippet shows the use of the new control. When you want to use this control, you need to create an instance of the control's data object. The constant named `DO_CACHE_CONTROL` is added for it in the `SchemaConstants`. You would then set the appropriate cache mode on the control. As previously explained there are two modes namely “`CACHE_MODE_CLEAR_ENTITY`” and “`CACHE_MODE_CLEARALL`”.

## Clear the adapter cache – clearIdMgrUserFromCache

- Removes a specified user from the cache.
- Parameters
  - principalName - The principal name of a PersonAccount.
  - securityDomainName - Name used to uniquely identify the security domain.
- Example
- `$AdminTask clearIdMgrUserFromCache { -principalName johndoe }`

This example shows the use of the new clearIdMgrUserFromCache command.

This command is used to remove the data for the specified user from the adapter's cache. This command takes principleName - that is, the user ID - as a mandatory parameter. You can optionally provide the security domain name.



## Clear the adapter cache – clearIdMgrRepositoryCache

- Clears the cache of the specified repository or of all repositories.
- Parameters
  - id - The unique identifier of the repository.
  - securityDomainName - Name used to uniquely identify the security domain.
- Example

```
$AdminTask clearIdMgrUserFromCache { -id LDAP1 }  
or alternatively  
$AdminTask clearIdMgrUserFromCache
```

The example provided here shows the use of the new command “clearIdMgrRepositoryCache”.

This command is used to flush the cache for the specified repository adapter. The command takes the repository Id as an optional parameter. If a repository Id is specified, the cache for only that repository is flushed. If no repository Id is specified, the cache for all repositories is flushed.

You can also optionally supply the security domain name.

Section

## ***Summary***

This section will discuss a summary.

## Summary

- The Clear Adapter Cache feature is needed to ensure that VMM always returns correct data.
- Changes made to the existing Get and Search commands.
- New control added to be used with the existing Get and Search API.
- Two new commands added for handling the cache of the adapters.
- Caveats
  - When the cache is cleared the subsequent operation is required to fetch the details from the repository and update the cache with this newly fetched data. Hence the performance of the operation is degraded.
  - This degradation is more pronounced if one does a “clearAll” and will invalidate the entire cache and several subsequent operation will take longer to complete.
  - The use of “clearAll” is logged in the System out logs.
  - It is not advisable to clear caches frequently due to this performance degradation.

The Clear Adapter Cache feature is needed to ensure that VMM always returns correct data.

Changes have been made to the existing Get and Search command.

A new Control has been added to be used with the existing Get and Search API.

Two new commands added for clearing the adapter cache however without performing any operation on the repository.

Caveats to be considered before using the feature include:

When the cache is cleared the subsequent operation is required to fetch the details from the repository and update the cache with this newly fetched data. Hence the performance of the operation is degraded.

This degradation is more pronounced if you do a “clearAll” and will invalidate the entire cache and several subsequent operations will take longer to complete.

The use of “clearAll” is logged in the System out log.

And, it is not advisable to clear caches frequently due to this performance degradation.



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