

# VMware AirWatch Memcached Integration Guide

Integrating Memcached functionality into your AirWatch deployment  
AirWatch v9.4

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# Chapter 1:

## Memcached Integration Overview

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## Memcached Integration Overview

Memcached is a third-party distributed data caching application available for use with Workspace ONE UEM™ environments which can be used to reduce the workload on the AirWatch database.

### Memcached Operation

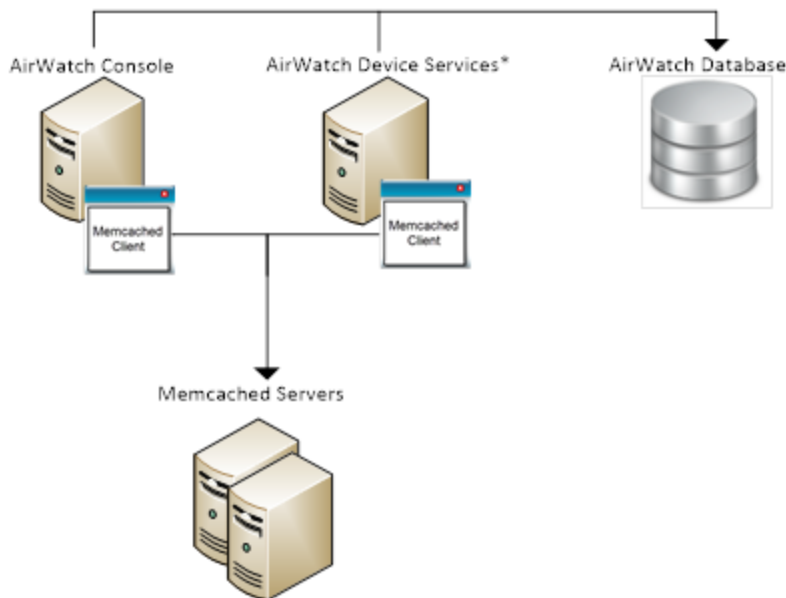
Memcached operates as a simple form of sharding: breaking data into manageable chunks and assigning a hash to the data to make retrieving the data easy. Memcached can have one or more active nodes, but it is not a form of backup or redundancy.

When a request for data is sent, AirWatch automatically checks for the results stored in memory by Memcached before it checks the database, reducing the database workload. If the memcache query returns no results, result data is then retrieved from the database and stored into the memcache for future queries. Currently, Memcached only stores System Code Overrides and the organization group tree information.

For more information about how to manage Memcached in your deployment, see [Manage Memcached on page 13](#).

### Memcached Topology

A Memcached implementation is primarily targeted for AirWatch installations with 5,000+ devices and is available for both SaaS and on-premises environments.



This diagram assumes that all auxiliary components – for example, API or SSP – are installed on the Device Services server. If you have dedicated servers for these or other components that have access to the AirWatch database, map those servers into your Memcached network topology.

For more information about the network requirements for Memcached, see [Memcached Sizing Requirements on page 6](#) and [Memcached Port Requirements on page 5](#).

## Memcached Port Requirements

Set up your configuration to communicate with Memcached.

By default, Memcached runs on port 11211. When you install Memcached into your configuration, it automatically selects this port. If your network is locked down and ports must be unlocked manually, unlock port 11211 before you proceed with the installation.

## Memcached Sizing Requirements

Hardware sizing requirements for a Memcached Integration depend on your particular AirWatch environment (how many Organization Groups have overriding system settings) and your memcache configuration.

In general, follow these sizing requirements:

Component	0-300k devices	300k+ devices
CPU Cores	2	2
RAM	8 GB	16 GB

# Chapter 2:

## Memcached Installation

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## Memcached Installation Overview

To install and configure the Memcached application, you must have sysadmin privileges at the Global Organization Group level. Consider using the latest version of Memcached available at the time of installation.

Memcached works best installed on a Linux server. Consider using CentOS/RHEL 7.x. Sample installation instructions for CentOS/RHEL 7.x are included in this documentation.

To install Memcached, you need root access to the server.

Some versions of AirWatch require a database script to enable Memcached deployments. For more information about which versions require scripts, see <https://support.air-watch.com/articles/115013702707>.

## Download the Memcached Installer

To begin the Memcached installation process, download the Memcached Installer.

Always download the most recent version of the Memcached installer for each installation.

1. The Memcached Installer file can be found at <https://resources.air-watch.com/view/f6v42x2d5mp2r8gskss4>.
2. Accept the EULA using the radio button and select **Accept**. The download begins automatically.  
If the file does not automatically download, select **Download**.
3. Copy the latest stable version installer to the /tmp folder in your Linux machine.  
You may want to use WinSCP or Filezilla Client for your ftp connection.

## Install Memcached

Install Memcached on your Linux server.

These instructions assume that the Linux machine is running the CentOS/RHEL 7.x operating system. You need root access to the server to install Memcached.

To install Memcached on CentOS/RHEL OS:

1. Log in to your server.

```
CentOS Linux 7 (Core)
Kernel 3.10.0-514.16.1.el7.x86_64 on an x86_64

centos7changeme login: admin
Password: _
```

2. Type `sudo -s` to enable root access.

```
[admin@centos7changeme ~]$ sudo -s
[root@centos7changeme admin]#
```

3. Navigate to `cd /tmp/memcached`.



4. In the folder, type `ls`. 'AirWatchMemcached.bin' is inside.

```
[root@centos7changeme admin]# cd /tmp/memcached
[root@centos7changeme memcached]# ls
AirWatchMemcached.bin
[root@centos7changeme memcached]#
```

5. To install, type `sh AirWatchMemcached.bin`.

```
[root@centos7changeme memcached]# sh AirWatchMemcached.bin
Preparing to install...
Extracting the JRE from the installer archive...
Unpacking the JRE...
Extracting the installation resources from the installer archive...
Configuring the installer for this system's environment...

Launching installer...

=====
AirWatch Memcached                      (created with InstallAnywhere)
=====

Preparing CONSOLE Mode Installation...

=====
Introduction
-----

InstallAnywhere will guide you through the installation of AirWatch Memcached.

It is strongly recommended that you quit all programs before continuing with
this installation.

Respond to each prompt to proceed to the next step in the installation.  If you
want to change something on a previous step, type 'back'.

You may cancel this installation at any time by typing 'quit'.

PRESS <ENTER> TO CONTINUE: _
```

6. Select **Enter**, and continue to press enter when prompted to read through the EULA.
7. After selecting **Enter** several times, you are prompted to accept the terms of the license agreement. Type **Y** and select **Enter**.

```
PRESS <ENTER> TO CONTINUE:

DO YOU ACCEPT THE TERMS OF THIS LICENSE AGREEMENT? (Y/N): Y_
```

8. A **Pre-Installation Summary** appears. Select **Enter** to continue.

```
=====
Pre-Installation Summary
=====

Please Review the Following Before Continuing:

Product Name:
  AirWatch Memcached

Install Folder:
  /opt/airwatch/memcached

Disk Space Information (for Installation Target):
  Required: 287.62 MegaBytes
  Available: 28,741.55 MegaBytes

PRESS <ENTER> TO CONTINUE: _
```

9. Select **Enter** once more to confirm the installation path.
10. Once the install is complete, a Congratulations message appears. Select **Enter** to exit.
11. To confirm that Memcached is running, type `service memcached status`. The following confirmation message appears:

```
[root@centos7changeme memcached]# service memcached status
Redirecting to /bin/systemctl status memcached.service
● memcached.service - Memcached
   Loaded: loaded (/usr/lib/systemd/system/memcached.service; enabled; vendor preset: disabled)
   Active: active (running) since Mon 2017-07-17 11:26:15 EDT; 3min 7s ago
     Main PID: 1357 (memcached)
    CGroup: /system.slice/memcached.service
            └─1357 /usr/bin/memcached -u memcached -p 11211 -m 3500 -c 32000 -o modern

Jul 17 11:26:15 centos7changeme systemd[1]: Started Memcached.
Jul 17 11:26:15 centos7changeme systemd[1]: Starting Memcached...
[root@centos7changeme memcached]#
```

12. Ensure the following:
  - Memcached is running as a "memcached" user.
  - Memcached is running by default on port 11211.
  - The maximum connection limit is set to 32000. If this value is less than 32000, make sure that you have added hard limits to **limit.conf**.

## Uninstall Memcached

These instructions assume that the Linux machine is running the CentOS/RHEL 7.x operating system. You need root access to the server to uninstall Memcached.

To uninstall Memcached on CentOS/RHEL OS:

1. Log in to your Memcached server.
2. Type `sudo -s` to enable root access for uninstall.

```
[root@centos7changeme memcached]# cd /opt/airwatch/memcached
[root@centos7changeme memcached]# ls
jre          memcached-1.4.36      memcached-monitor      memcached.service
memcached    _memcached_installation memcached-monitor-pid  memcached-top.pl
[root@centos7changeme memcached]# _
```

3. Navigate to the Uninstaller by typing `cd _memcached_installation`. Once in the folder, type `ls`.
4. To install, type `sh Uninstall_AirWatchMemcached.bin`.

```
[root@centos7changeme memcached]# cd _memcached_installation/
[root@centos7changeme _memcached_installation]# ls
InstallScript.iap.xml  Logs          Uninstall_AirWatchMemcached.lax
installvariables.properties  Uninstall_AirWatchMemcached  uninstaller.jar
[root@centos7changeme _memcached_installation]# sh Uninstall_AirWatchMemcached_
```

5. The Uninstaller opens. You are prompted to press **Enter** to continue. When you press enter, an Uninstall Complete message appears.

```
=====
Uninstall Complete
=====

Some items could not be removed.

[root@centos7changeme _memcached_installation]#
```

6. To confirm that Memcached is uninstalled, type `service memcached status`.

```
[root@centos7changeme _memcached_installation]# service memcached status
shell-init: error retrieving current directory: getcwd: cannot access parent directories: No such fi
le or directory
chdir: error retrieving current directory: getcwd: cannot access parent directories: No such file or
directory
Redirecting to /bin/systemctl status memcached.service
Unit memcached.service could not be found.
[root@centos7changeme _memcached_installation]#
```

# Chapter 3:

## Memcached Usage and Maintenance

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## Prerequisite for Legacy AirWatch Deployments

For deployments running AirWatch versions 8.1 to 9.1.3, you must enable Memcached for your AirWatch instance using a SQL script.

For a copy of the script, and instructions on how to run it, contact Workspace ONE Support.

For full compatibility requirements, see <https://support.air-watch.com/articles/115013702707>.

## Enable Memcached

Enable Memcached in the AirWatch Console.

1. In the AirWatch Console, navigate to **Groups & Settings > All Settings > Installation > Cache Settings**. Memcached settings can only be changed at the Global level.
2. Select **Add** and enter your CentOS7 server IP in the **Server Name** and **Host** fields. In the Port field, enter 11211.
3. Make sure that you have **Caching** set to **Enabled**.
4. Select **Save**.
5. Log in to your server and reset IIS.
6. Log back in to the AirWatch Console. Navigate back to the **Cache Settings** page and select the server name. The **Node Information** page appears, which indicates that Memcached is installed and operational.

## Manage Memcached

After Memcached is enabled, you can control Memcached by adding, editing, or removing server nodes through the AirWatch Admin Console.


**Important:** After changing any Memcached configuration settings, you must flush the cache and then restart the AirWatch application and all related services.

For more information, see [Flush the Memcached Cache on page 14](#).


### Add a Node

1. From the AirWatch Admin Console main menu, navigate to **Groups & Settings > All Settings > Installation > Cache Settings**.
2. Select **Add**.
3. Enter a name for the node, the IP address, and the applicable port number.  
By default, Memcached uses port 11211.
4. Select **Save**. The AirWatch Admin Console tests the connection to the Memcached server first before saving it to the database.

## Delete a Node

1. From the AirWatch Admin Console main menu, navigate to **Groups & Settings > All Settings > Installation > Cache Settings**.
2. Select the  icon to the right of the node you want to delete from Memcached.
3. Select **Save**.

## Edit a Node

1. From the AirWatch Admin Console main menu, navigate to **Groups & Settings > All Settings > Installation > Cache Settings**.
2. Select the  icon to the right of the node you want to edit.
3. Edit the node name, IP address, and port number, as needed.
4. Select **Save**. The AirWatch Admin Console tests the connection to the Memcached server first before saving it to the database.

## Flush the Memcached Cache

After changing any Memcached configuration settings, you must flush the cache and then restart the AirWatch application and all related services.

Data returned from Memcached does not reflect manual updates to the database; only replication. Therefore, any database updates entered manually are not reflected in query results returned by Memcached until after the cache as been flushed.

To flush the current cache:

1. From the AirWatch Admin Console main menu, navigate to **Groups & Settings > All Settings > Installation > Cache Settings**.
2. Select **Flush All**.

## Memcached Statistics

To view cache and memory statistics for a specific node, select the node name on the Cache Settings page in the AirWatch Admin Console.

The Cache Settings page opens a window that displays the following statistics:

- Slab
- Hits
- Used Memory
- Free Memory
- Chunk Size

For more information about the available statistics, see the Memcached website at <http://memcached.org/>.

## Memcached Monitor Service

The Memcached services installation includes a Memcached monitoring function called Memcached Monitor. Memcached Monitor periodically logs Memcached statistics and displays them in a useful representation.

An example is included for reference.

```
memcache-top v0.7      (default port: 11211, color: off, refresh: 3 seconds)
```

INSTANCE	USAGE	HIT %	CONN	TIME	ITEMS	EVICT/s	READ/s	WRITE/s
127.0.0.1:11211	0.0%	0.0%	10	0.6ms		0.0	2	444
AVERAGE:	0.0%	0.0%	10	0.6ms		0.0	2	444
TOTAL:	0B/	3.4GB	10	0.6ms		0.0	2	444

## Important Notes

- The default log folder is `/var/log/memcached-monitor/`.
- The default log format is `memcached-{mm-dd-yyyy}.log`.
- The default logging interval (period) is 60 seconds.
- This service is turned on by default with Memcached.
- You can interact with this service using: `service memcached-monitor start/stop/restart/status`.

For more information about the monitored statistics, see the Memcached website at <http://memcached.org/>.

## Troubleshooting Memcached

If any Memcached server nodes display as Down, rather than Active, on the Workspace ONE UEM console Cache Settings page, access the affected server and restart the Memcached service.

If you have additional questions or require further assistance, contact Workspace ONE Support ([support@airwatch.com](mailto:support@airwatch.com)).