

# Memcached Integration

VMware Workspace ONE UEM 1909



vmware®

You can find the most up-to-date technical documentation on the VMware website at:

<https://docs.vmware.com/>

If you have comments about this documentation, submit your feedback to

[docfeedback@vmware.com](mailto:docfeedback@vmware.com)

**VMware, Inc.**  
3401 Hillview Ave.  
Palo Alto, CA 94304  
[www.vmware.com](http://www.vmware.com)

Copyright © 2019 VMware, Inc. All rights reserved. [Copyright and trademark information.](#)

# Contents

<b>1</b>	<b>Memcached Integration</b>	<b>4</b>
	Memcached Port Requirements	5
	Memcached Sizing Requirements	5
<b>2</b>	<b>Memcached Installation and Upgrades</b>	<b>6</b>
	Download the Memcached Installer	6
	Install or Upgrade Memcached on a Linux Server	7
	Uninstall Memcached on a Linux Server	9
<b>3</b>	<b>Deploy Memcached in Workspace ONE UEM</b>	<b>10</b>
	Enable Memcached	10
	Manage Memcached	11
	Add a Node	11
	Delete a Node	11
	Edit a Node	11
	Flush the Memcached Cache	12
	Memcached Statistics	12
	Memcached Monitor Service	12
	Troubleshooting Memcached	13

# Memcached Integration

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

## Memcached Operation

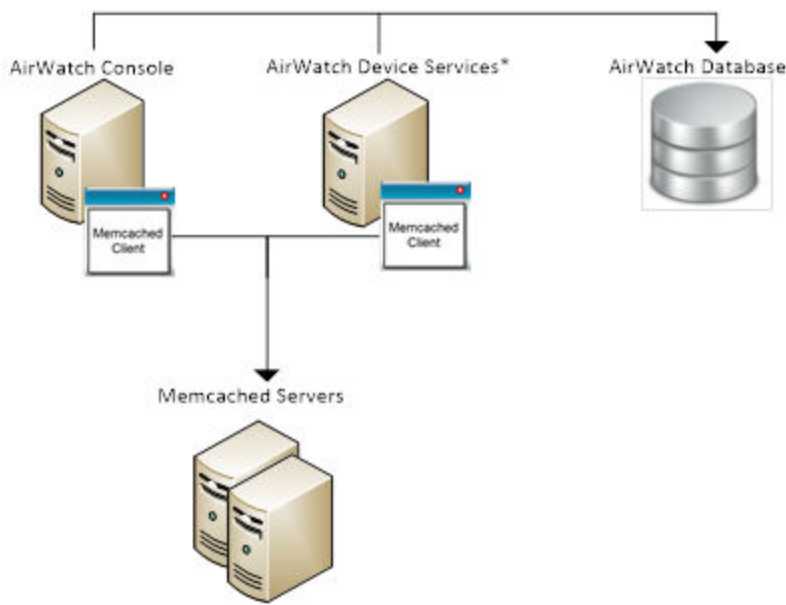
Memcached operates as a simple form of sharding: breaking data into manageable chunks and assigning a hash to the data to make retrieving the data easy. Memcached can have one or more active nodes, but it is not a form of backup or redundancy.

When a request for data is sent, Workspace ONE UEM 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.

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

## Memcached Topology

A Memcached implementation is primarily targeted for Workspace ONE UEM 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.

Memcached supports multiple nodes running simultaneously. For more information, see [Manage Memcached](#).

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

## Memcached Installation or Upgrade

To begin the Memcached installation and integration, see [Chapter 2 Memcached Installation and Upgrades](#).

This chapter includes the following topics:

- [Memcached Port Requirements](#)
- [Memcached Sizing Requirements](#)

## 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 Workspace ONE UEM 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

# Memcached Installation and Upgrades

## 2

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 should be installed on a Linux server running 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 Workspace ONE UEM require a database script to enable Memcached deployments. For more information about which versions require scripts, see <https://support.air-watch.com/articles/115013702707>.

This chapter includes the following topics:

- [Download the Memcached Installer](#)
- [Install or Upgrade Memcached on a Linux Server](#)
- [Uninstall Memcached on a Linux Server](#)

## 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.

### Prerequisites

### Procedure

- 1 Download the Memcached Installer file from <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 or Upgrade Memcached on a Linux Server

To begin integrating Memcached into your Workspace ONE UEM deployment, install Memcached on a CentOS/RHEL 7.x Linux machine.

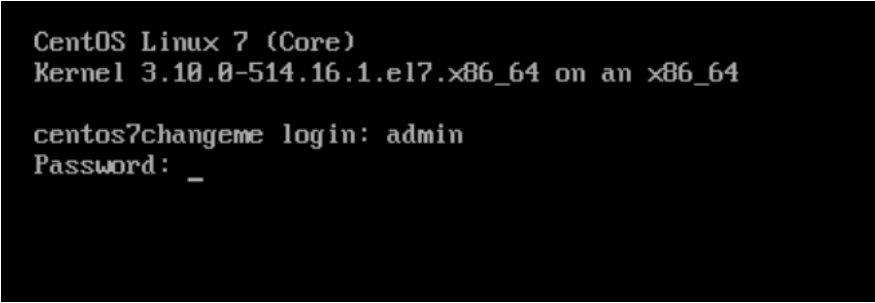
If you are upgrading an existing Memcached deployment, or installing Memcached for the first time, the steps below will guide your installation. Slight variations between installing and upgrading are noted in context.

## Prerequisites

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.

## Procedure

- 1 Log in to your server.

A terminal window with a black background and white text. The text shows the system booting into CentOS Linux 7 (Core) with kernel 3.10.0-514.16.1.el7.x86\_64 on an x86\_64 architecture. The login prompt is 'centos7changeme login: admin' and the password prompt is 'Password: \_' with a single underscore character entered.

```
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.
- 3 Navigate to `cd /tmp/memcached`.
- 4 In the folder, type `ls`. 'AirWatchMemcached.bin' is inside.

- 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 select enter when prompted to read through the EULA.
- a If you are upgrading an existing instance of Memcached, an alert will appear informing you that an instance of Memcached already exists. Select **Enter** to continue.
- 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.
- 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`. A 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:

- a Memcached is running as a "memcached" user.
- b Memcached is running by default on port 11211.
- c 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 on a Linux Server

To remove Memcached from your Workspace ONE UEM deployment, uninstall Memcached using a CentOS/RHEL 7.x Linux machine.

For troubleshooting purposes, you may wish to uninstall Memcached temporarily.

**Prerequisites**

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.

**Procedure**

- 1 Log in to your Memcached server.
- 2 Type `sudo -s` to enable root access for uninstall.
- 3 Navigate to the Uninstaller by typing `cd _memcached_installation`. Once in the folder, type `ls`.
- 4 To install, type `sh Uninstall_AirWatchMemcached.bin`.
- 5 The Uninstaller opens. You are prompted to press **Enter** to continue. When you press enter, an Uninstall Complete message appears.
- 6 To confirm that Memcached is uninstalled, type `service memcached status`.

# Deploy Memcached in Workspace ONE UEM

# 3

After you install Memcached on your servers, configure how your Workspace ONE UEM deployment interfaces with Memcached.

You can deploy and manage your Memcached configuration in key ways in order to maximize the value of your setup, including adding and deleting Memcached nodes, flushing the cache, and monitoring the performance of your Memcached components.

This chapter includes the following topics:

- [Enable Memcached](#)
- [Manage Memcached](#)
- [Flush the Memcached Cache](#)
- [Memcached Statistics](#)
- [Memcached Monitor Service](#)
- [Troubleshooting Memcached](#)

## Enable Memcached

Enable Memcached in the Workspace ONE UEM console.

### Procedure

- 1 In the Workspace ONE UEM 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.
  - a To enable multiple Memcached nodes, add additional Memcached server IPs.
- 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 Workspace ONE UEM 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 Workspace ONE UEM console.

---

**Important** After changing any Memcached configuration settings, you must flush the cache and then restart the Workspace ONE UEM application and all related services. For more information, see [Flush the Memcached Cache](#).

---

### Add a Node

#### Procedure

- 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

#### Procedure

- 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

#### Procedure

- 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 Workspace ONE UEM 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 has been flushed.

### Procedure

- 1 From the Workspace ONE UEM 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 Workspace ONE UEM 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@air-watch.com](mailto:support@air-watch.com)).