

# Android™ Quick Start Guide

## Contents

1	Overview.....	1
2	Hardware Requirements.....	1
3	Working with the i.MX 8MQuad EVK Board.....	1
4	Revision History.....	8

## 1 Overview

This document guides you through the processes of downloading and running this release package. It only explains how to download and run the default release image with default configuration. For details on using the release package, see the *Android™ User's Guide (AUG)* included in this release package.

## 2 Hardware Requirements

The hardware requirements for using this release package are as follows:

Supported system-on-chips (SoCs):

- i.MX 8MQuad

Supported boards:

- i.MX 8MQuad EVK Board and Platform

## 3 Working with the i.MX 8MQuad EVK Board



### 3.1 Board hardware

The figures below show the different components of the i.MX 8MQuad EVK board.

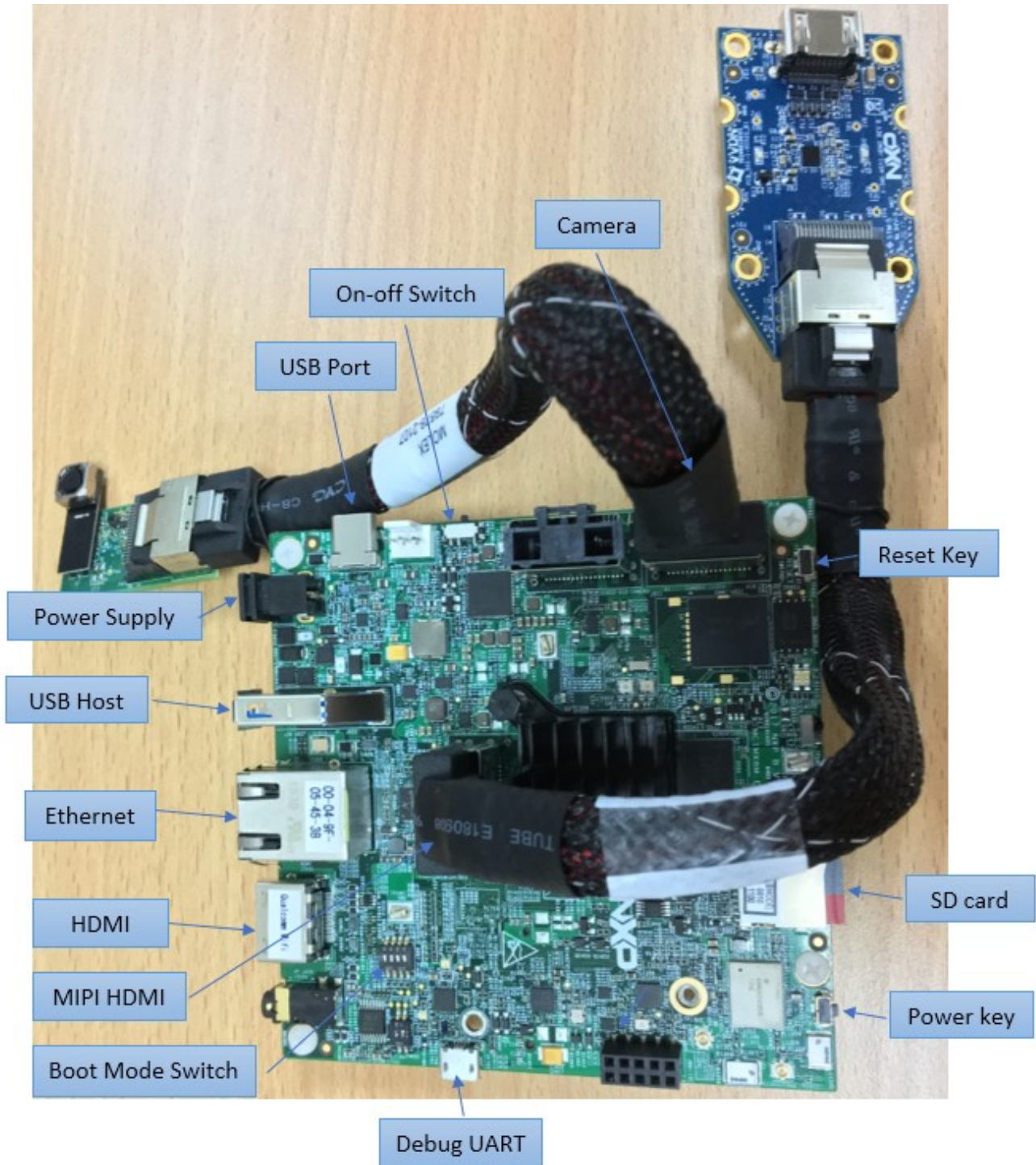
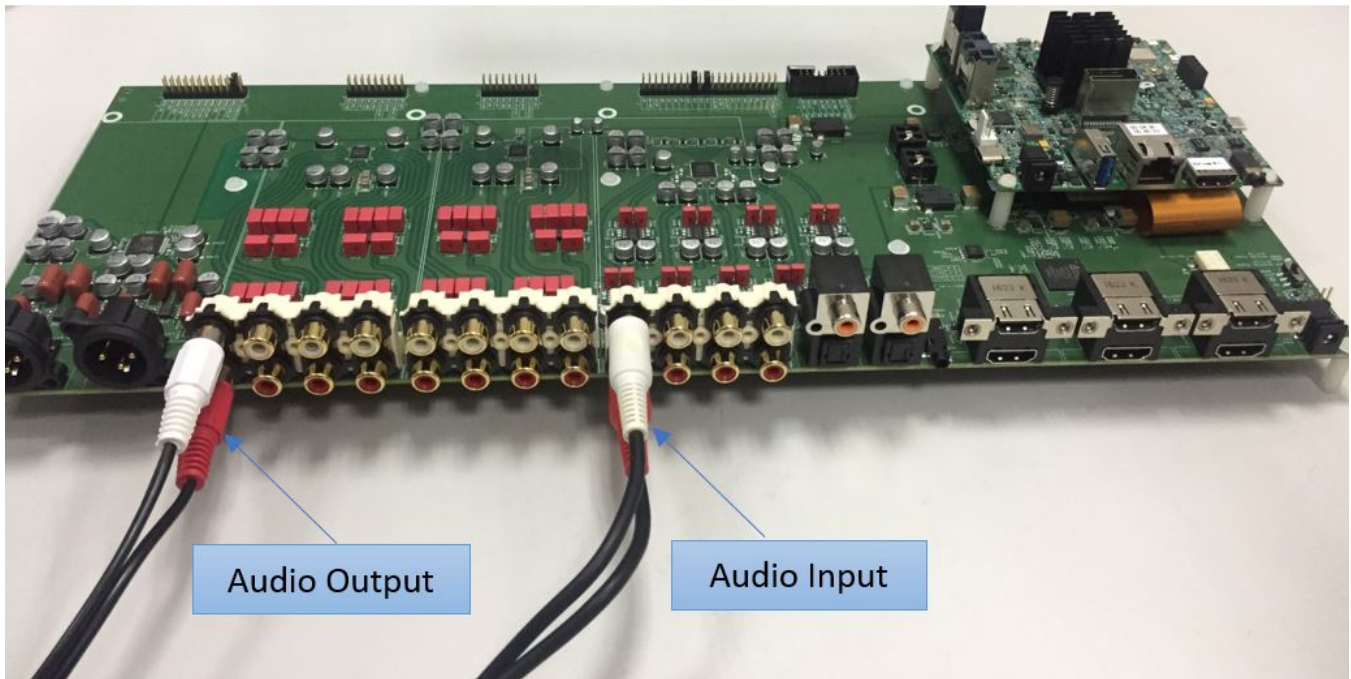


Figure 1. i.MX 8MQuad EVK board



**Figure 2. i.MX 8MQuad EVK with audio board**

## 3.2 Board images

The table below describes the location in the board partitions of the software images in `android_O8.1.0_1.3.0_8M_image_8mq.tar.gz`.

**Table 1. Board images**

Image name	Download target
<code>u-boot-imx8mq.imx</code>	33 KB offset of SD card.
<code>partition-table.img</code>	0 offset of MMC. If the actually size of the SD card is larger than 13 GB, use the default <code>partition-table.img</code>
<code>partition-table-7GB.img</code>	0 offset of MMC. If the actually size of the SD card is larger than 7 GB, use this image as <code>partition-table.img</code> .
<code>partition-table-28GB.img</code>	0 offset of MMC. If the actually size of the SD card is larger than 28 GB, use this image as <code>partition-table.img</code> .
<code>boot-imx8mq.img</code>	<code>boot_a</code> and <code>boot_b</code> partitions to support HDMI output.
<code>/boot-imx8mq-mipi.img</code>	<code>boot_a</code> and <code>boot_b</code> partitions to support MIPI-to-HDMI output
<code>/boot-imx8mq-dual.img</code>	<code>boot_a</code> and <code>boot_b</code> partitions to support HDMI and MIPI-to-HDMI dual output
<code>/boot-imx8mq-mipi-panel.img</code>	<code>boot_a</code> and <code>boot_b</code> partitions to support MIPI panel output
<code>vbmeta-imx8mq.img</code>	<code>vbmeta_a</code> and <code>vbmeta_b</code> partitions to support HDMI output.
<code>/vbmeta-imx8mq-mipi.img</code>	<code>vbmeta_a</code> and <code>vbmeta_b</code> partitions to support MIPI-to-HDMI output
<code>/vbmeta-imx8mq-dual.img</code>	<code>vbmeta_a</code> and <code>vbmeta_b</code> partitions to support HDMI and MIPI-to-HDMI dual output

*Table continues on the next page...*

**Table 1. Board images (continued)**

/vbmeta-imx8mq-mipi-panel.img	vbmeta_a and vbmeta_b partitions to support MIPI panel output
system.img	system_a and system_b partitions.
vendor.img	vendor_a and vendor_b partitions.

### 3.3 Flashing board images

The board images can be flashed to the target board by using the MFGTool. The release package includes MFGTool for i.MX 8MQuad EVK in android\_O8.1.0\_1.3.0\_8M\_tools.tar.gz. The MFGTool is mfgtools.zip.

#### NOTE

The MFGTool only works in Windows OS environment.

Perform the following steps to flash the board images:

1. Unzip the mfgtools.zip file to a selected location. The directory is named MFGTool-Dir in this example.
2. Copy following files from release\_package/android\_O8.1.0\_1.3.0\_8M\_image\_8mq.tar.gz to your MFGTool-Dir/Profiles/Linux/OS Firmware/files/android/evk directory.
  - /u-boot-imx8mq.img
  - /partition-table.img
  - /boot-imx8mq.img
  - /vbmeta-imx8mq.img
  - /system.img
  - /vendor.img

#### NOTE

- Do not replace any other files in the files directory and the OS Firmware directory.
- If the SD card is 8 GB, copy partition-table-7GB.img and rename it to partition-table.img.
- If the SD card is 16 GB, use the default partition-table.img.
- If the SD card is 32 GB, copy partition-table-28GB.img and rename it to partition-table.img.
- To test HDMI output, copy boot-imx8mq.img and vbmeta-imx8mq.img.
- To test MIPI-to-HDMI output, copy boot-imx8mq-mipi.img and vbmeta-imx8mq-mipi.img, and rename them to boot-imx8mq.img and vbmeta-imx8mq.img.
- To test HDMI and MIPI-to-HDMI dual output, copy boot-imx8mq-dual.img and vbmeta-imx8mq-dual.img, and rename them to boot-imx8mq.img and vbmeta-imx8mq.img.
- To test MIPI panel output, copy boot-imx8mq-mipi-panel.img and vbmeta-imx8mq-mipi-panel.img, and rename them to boot-imx8mq.img and vbmeta-imx8mq.img.
- To use onboard eMMC as the boot device, use the default partition-table.img.

3. Change the board's SW802 (boot mode) to 01 (from 1 bit to 2 bit) to enter serial download mode.
4. Power on the board. Use USB cable on the board USB3.0 port, and connect a computer running Windows OS with the board.

#### NOTE

There are two USB ports in i.MX 8MQuad EVK board: USB to UART, USB 3.0. The USB to UART can be referenced as debug UART, and the USB 3.0 can be

referenced as USB in the hardware image above. The debug UART can be used to watch the log of the hardware boot processing.

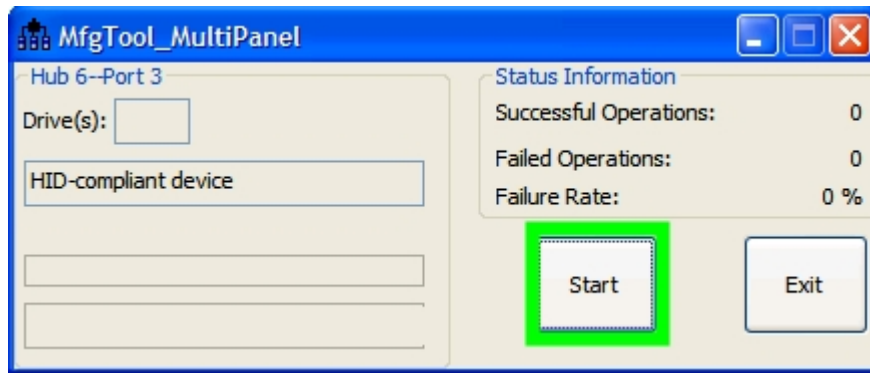
SD Card must be plugged in after the board is powered on.

- Double-click the \*.vbs file according to the target device as shown in the following table.

**Table 2. MFGTool VBS file**

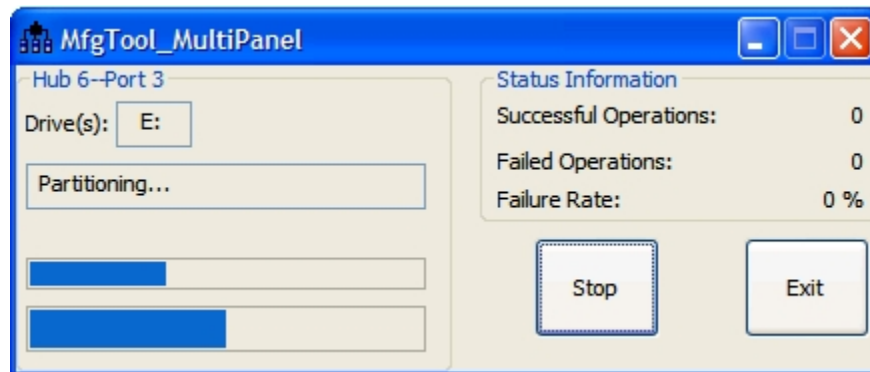
Target device and boot storage	VBS file
i.MX 8MQuad EVK SD	mfgtool2-android-mx8mq-evk-sd.vbs
i.MX 8MQuad EVK eMMC	mfgtool2-android-mx8mq-evk-emmc.vbs

- Click Start to start flashing images.



**Figure 3. Starting flash**

The figure below shows flashing in progress, and the status bar shows the flash status. The flash may take one to two minutes depending on the host machine.



**Figure 4. Download status**

The figure below shows the tool when the flash is complete.



**Figure 5. Download complete**

7. Click Stop and disconnect the USB cable.
8. Change SW802 (boot mode) to 10 (from 1 bit to 2 bit). Change SW801 to switch the board back to 1100 (SD boot mode). Change SW801 to switch the board back to 0010 (eMMC boot mode).

## 3.4 Booting

After downloading the images, boot the board by connecting it to the power supply.

### 3.4.1 Booting with single display: HDMI display

#### 3.4.1.1 4K HDMI TV

In the U-Boot prompt, set the U-Boot environment variables as follows:

```
U-Boot > setenv bootargs console=ttymxc0,115200 earlycon=imxuart,0x30860000,115200 init=/
init androidboot.gui_resolution=1080p androidboot.displaymode=4k androidboot.console=ttymxc0
consoleblank=0 androidboot.hardware=freescale androidboot.fbTileSupport=enable cma=1536M
androidboot.primary_display=imx-drm firmware_class.path=/vendor/firmware
U-Boot > saveenv
```

With above settings, the Android platform does not start the shell console. To disable selinux, append "androidboot.selinux=permissive" to the U-Boot's bootargs. Boot environment variables are as follows:

```
U-Boot > setenv append_bootargs androidboot.selinux=permissive
U-Boot > saveenv
```

#### 3.4.1.2 1080P HDMI TV

In the U-Boot prompt, set the U-Boot environment variables as follows:

```
U-Boot > setenv bootargs console=ttymxc0,115200 earlycon=imxuart,0x30860000,115200 init=/
init video=HDMI-A-1:1920x1080-32@60 androidboot.console=ttymxc0 consoleblank=0
androidboot.hardware=freescale androidboot.fbTileSupport=enable cma=1536M
androidboot.primary_display=imx-drm firmware_class.path=/vendor/firmware
U-Boot > saveenv
```

With above settings, the Android platform does not start the shell console. To disable selinux, append "androidboot.selinux=permissive" to the U-Boot's bootargs. Boot environment variables are as follows:

```
U-Boot > setenv append_bootargs androidboot.selinux=permissive
U-Boot > saveenv
```

## 3.4.2 Booting with single display: MIPI-to-HDMI display

In the U-Boot prompt, set the U-Boot environment variables as follows:

```
U-Boot > setenv bootargs console=ttymxc0,115200 earlycon=imxuart,0x30860000,115200 init=/
init androidboot.lcd_density=160 androidboot.console=ttymxc0 consoleblank=0
androidboot.hardware=freescale cma=1536M androidboot.primary_display=mxsfb-drm
firmware_class.path=/vendor/firmware
U-Boot > saveenv
```

With the settings above, the Android platform does not start the shell console. To disable selinux, append "androidboot.selinux=permissive" to the U-Boot's bootargs. Boot environment variables are as follows:

```
U-Boot > setenv append_bootargs androidboot.selinux=permissive
U-Boot > saveenv
```

## 3.4.3 Booting with dual displays: HDMI and MIPI-to-HDMI displays

### 3.4.3.1 4K HDMI TV and MIPI-to-HDMI display

In the U-Boot prompt, set the U-Boot environment variables as follows:

```
U-Boot > setenv bootargs console=ttymxc0,115200 earlycon=imxuart,0x30860000,115200 init=/
init androidboot.gui_resolution=1080p androidboot.displaymode=4k androidboot.console=ttymxc0
consoleblank=0 androidboot.hardware=freescale cma=1536M androidboot.primary_display=imx-drm
firmware_class.path=/vendor/firmware
U-Boot > saveenv
```

With above settings, the Android platform does not start the shell console. To disable selinux, append "androidboot.selinux=permissive" to the U-Boot's bootargs. Boot environment variables are as follows:

```
U-Boot > setenv append_bootargs androidboot.selinux=permissive
U-Boot > saveenv
```

### 3.4.3.2 1080P HDMI TV and MIPI-to-HDMI display

In the U-Boot prompt, set the U-Boot environment variables as follows:

```
U-Boot > setenv bootargs console=ttymxc0,115200 earlycon=imxuart,0x30860000,115200 init=/
init video=HDMI-A-1:1920x1080-32@60 androidboot.console=ttymxc0 consoleblank=0
androidboot.hardware=freescale cma=1536M androidboot.primary_display=imx-drm
firmware_class.path=/vendor/firmware
U-Boot > saveenv
```

With above settings, the Android platform does not start the shell console. To disable selinux, append "androidboot.selinux=permissive" to the U-Boot's bootargs. Boot environment variables are as follows:

```
U-Boot > setenv append_bootargs androidboot.selinux=permissive
U-Boot > saveenv
```

## 3.4.4 Booting with single display: MIPI panel

In the U-Boot prompt, set the U-Boot environment variables as follows:

## Revision History

```
U-Boot > setenv bootargs console=ttyMxc0,115200 earlycon=imxuart,0x30860000,115200 init=/
init androidboot.console=ttyMxc0 consoleblank=0 androidboot.hardware=freescale cma=1536M
androidboot.primary_display=imx-drm firmware_class.path=/vendor/firmware
U-Boot > saveenv
```

With the settings above, the Android platform does not start the shell console. To disable selinux, append "androidboot.selinux=permissive" to the U-Boot's bootargs. Boot environment variables are as follows:

```
U-Boot > setenv append_bootargs androidboot.selinux=permissive
U-Boot > saveenv
```

## 3.5 Board reboot

After you have completed download and setup, reboot the board and wait for the Android platform to boot up.

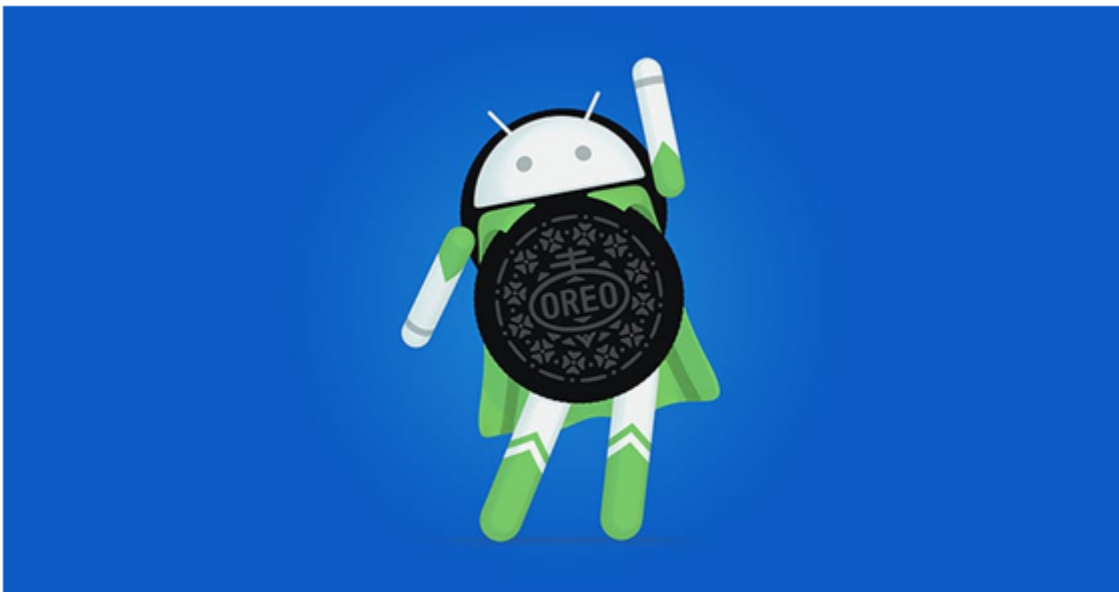


Figure 6. Android Oreo image

## 4 Revision History

Table 3. Revision history

Revision number	Date	Substantive changes
N7.1.2_2.1.0_8MQ-EAR	09/2017	Initial release
O8.0.0_1.3.0_8M-PRC	01/2018	i.MX 8MQuad PRC (Beta) release
O8.1.0_1.3.0_8M	04/2018	i.MX 8MQuad RFP (GA) release



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