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About This Document

This document describes how to interact with devices in Keynote’s Mobile Application Monitoring for creating and executing automated monitor scripts on smart devices.

You use our client software, DeviceAnywhere Studio, to control devices remotely over the Internet/network to work with them.

Device interaction in Mobile Application Monitoring is based on Keynote’s core Direct-to-Device technology; it enables remote (network) access to real, smart devices on live carrier networks.

Keynote enables testers to test mobile/smart devices and applications from the convenience of their desktops. They have remote access to all device features, including the keyboard, touchscreen, ringer, speaker, battery, power, data cable, and of course, applications.

Additional features in DeviceAnywhere Studio enable you to send SMS interrupts to the device, upload applications, access debugging tools and log files, and collaborate with team members by sharing the device screen or device interaction snapshots and video.

Document Outline

This document covers the following aspects of interacting with devices in Mobile Application Monitoring:

- Conducting a device session
- Working with a device to optimize screen space and enter data/touchscreen events/key presses
- Device control commands available in the device menu
- Functionality available in the device console
- Viewing and exporting device video and other collaboration features
- Viewing device information
- Reporting an issue

Typographical Conventions

The table below describes the typographical conventions used this document.

<table>
<thead>
<tr>
<th>Style</th>
<th>Element</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>Links and email addresses</td>
<td><a href="http://www.keynote.com">http://www.keynote.com</a> The Document Outline section describes the structure of this manual.</td>
</tr>
<tr>
<td>Bold</td>
<td>User interface elements such as menu items</td>
<td>Click My Devices in DeviceAnywhere Studio.</td>
</tr>
<tr>
<td>Monospace</td>
<td>Commands, code output, filenames, directories</td>
<td>Right-click the project’s test cases directory.</td>
</tr>
<tr>
<td>Monospace bold</td>
<td>User input</td>
<td>In a command window, type adb devices.</td>
</tr>
</tbody>
</table>
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1 Device Session

The Test Center view enables you to interact with devices in real-time. This section describes the commands and procedures involved in conducting a device session.

1.1 Selecting a Device

You can search for a device by using filter controls.

1.1.1 Filtering Devices

You can pare down the displayed devices by using the free-form text Filter. With every keystroke entered into the text filter, the device list is dynamically adjusted. The filter finds matching text in the make, model, or MCD number of devices.

NOTE The MCD is a unique identifier for each device assigned by Keynote (see Device Information).

Clicking the filter icon enables you to search by multiple, more granular search criteria.

1 Select a device feature by which you want to search for devices, e.g., the ability to send SMS interrupts to the device (shown in the image below).

![Advanced Device Filter](image)

2 Select an Operator and a delimiting Value. For several device features, these options are not applicable. For example, you can simply opt to search for devices with SMS capability.
When searching by **Operating System**, you can search for devices with OS versions equal to, greater than or equal to, or less than or equal to the selected **Value**, e.g., “Android 1.x” below.

3 Add or remove search criteria (Add Row, Remove Last Row) as desired. Devices matching all the search criteria will be listed in results.

4 Click **Apply Filter**. To clear filter results, delete all search criteria and click **Apply Filter** in the Advanced Device Filter dialog box.
1.1.2 Viewing Project Devices

You can also view devices associated with projects view. These projects are created to contain manual test assets.

1. Select the **Project** radio button.

2. Select a project from the drop-down list. If the project is not already open, you will see the following message.

![Figure 1-1 Project Device List](image)

You can use projects to create custom device groupings for display in the Test Center view.

## 1.2 Device Availability and Status

Device availability is indicated by status icons that appear next to each device in the device list. The table below lists and describes each status icon.

### Table 1-1 Device Status Icons

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Samsung Nexus S" /></td>
<td>Device is online and available to be acquired.</td>
</tr>
</tbody>
</table>
### Icon Description

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Motorola DROID Pro icon" /></td>
<td>Device is offline and cannot be acquired.</td>
</tr>
<tr>
<td><img src="image" alt="Apple iPad 2 icon" /></td>
<td>Device is locked by another user and cannot be acquired.</td>
</tr>
<tr>
<td><img src="image" alt="Apple iPad icon" /></td>
<td>Device is acquired by you and is inaccessible to other users until you release it.</td>
</tr>
<tr>
<td><img src="image" alt="BlackBerry 9300 (Curve 3G) icon" /></td>
<td>Device session has just ended, and device is temporarily unavailable as it is being “cleaned up” before being made available. This icon appears after you release the device.</td>
</tr>
<tr>
<td><img src="image" alt="HTC EVO 3D icon" /></td>
<td>You are waiting for the device to be released by another user.</td>
</tr>
</tbody>
</table>

**NOTE** The green power button (device available) is displayed for a device make/model group as long as there is at least one available copy.

---

### 1.3 Acquiring a Device

Only one user can use a device at a time in DeviceAnywhere Studio. In order to interact with a device in DeviceAnywhere Studio, you must acquire (lock) it so that you have exclusive use of it for the duration of your session. When you have located the device you want in the device list:

1. Ensure that the device is available to be acquired (green power icon).
2. Right-click the device and select **Acquire Device**.
To select another copy, click the make/model icon and select **Acquire Another Device**. You can also **expand the device group** and acquire the specific device you want.

As soon as you acquire a device, it appears in a tab in the workspace along with its device console. Now the device is ready to register key presses, touchscreen taps, or other activity.

You can work with any number of devices in the Test Center view. Each device you acquire appears in a separate tab in the workspace.

Click the tab of the desired device to view the device and access its controls in the workspace. You can also toggle between docked tabs by using the drop-down menu located at the top right of the workspace (see image below).

**Figure 1-2 Multiple Acquired Devices**

1.3.1 **Waking a Device Up**

The device screen is grayed out after short periods of inactivity to save power. Click on the link that appears to wake the device up. You can also right-click the device and select **Wake Device Up**.
1.3.2 Restarting a Device

You can restart an acquired device that has been powered off by:

- Right-clicking the device and selecting Restart Device
- Clicking on the link that appears in the onscreen notification:

  ```
  Device is powered off
  Power On
  ```

  The device displays the following notification as it is being powered on.

  ```
  Device is being powered on...
  ```

1.3.3 Waiting for a Device

If a device is acquired by another user, you can choose to wait for the device. Once the other user releases the device, it is made available to the first person in the queue.

To wait for the device:

1. Right-click the device and select Wait for Device (clock icon).

2. In the dialog box that appears, the option to automatically acquire the device as soon as it is available is selected by default. If you uncheck the option, you will have three minutes within which to acquire
it yourself before it is made available to other users. You can also opt to receive email notification when the device is available.

![Wait for Device](image)

The device is listed in the device list with a clock icon to indicate that you are waiting for it. The device is also displayed in a workspace tab with a notification that you are waiting for it.

![Waiting for device...](image)

### 1.4 Latency Indicator

When you acquire a device, latency indicator icons to the right visually indicate any delay in displaying screen updates.

*Figure 1-4 Latency Indicator Icons*
Green dots (5, 4, or 3) indicate acceptable levels of latency. As latency increases, you might see 2 yellow or a single red dot. If you consistently see a red dot, check the quality and speed of your Internet connection to ensure the best device interaction experience.

1.5 Reserving a Device

You can reserve any device up to 2 days in advance. When you right-click a device in DeviceAnywhere Studio and select Reserve Device, you are directed to the Reservations tab in the Portal. Reservations start times begin every 15 minutes on the quarter of the hour. The maximum reservation time is 4 hours.

1.6 Sharing a Device

You can invite other users in your account to view a device that you currently have acquired. While you retain control of the device, sharing enables another user you invite to view your interaction with the device. The other user must be logged in to DeviceAnywhere Studio in order to view the shared device. Sharing is enabled in the device console and is discussed in detail below.

1.7 Releasing a Device

After a device has been released, it becomes available to other users. There are several ways to release an acquired device:

- Right-click the device in the workspace > Release Device
- Right-click on the device in the device list > Release Device
- Close the device tab in the workspace— the device is automatically released.

As the device is being released, the screen displays the following message.

*Figure 1-5 Device Release*

![Device is being released...](image)

When a device is released, cleanup scripts delete session-specific information before it is made available to other users.

1.7.1 Inactivity Timeout

Devices are automatically released after 30 minutes of inactivity. If an acquired device is inactive for 28 minutes, a pop-up alert warns that it will automatically be released. Click Keep Using to continue using the device and reset the timer or click Release to release the device immediately.

*Figure 1-6 Inactivity Alert*

![Release Device](image)
If you close the window, the timer is not reset. With continued inactivity, the window reappears at 1-minute intervals. If no option is selected, the device is automatically released after 30 minutes of inactivity.

1.7.2 Release Devices Alert

If you exit DeviceAnywhere Studio with a device still acquired, you are alerted before the program shuts down completely. You can choose to release or retain the device if you plan to log back in shortly.

Figure 1-7 Release Devices Alert

If you retain the device, it remains acquired for 5 minutes, after which it is automatically released.
2 Working with a Device

In DeviceAnywhere Studio, you can control a device remotely by using your mouse and keyboard to click the device screen and enter data to perform all the functions you could if it were in your hand. Each key and button of an acquired device that you see in DeviceAnywhere Studio is fully functional, as are touchscreens. With each interaction, the device screen is updated to reflect any changes.

This section discusses how to:

- **Optimize screen space** in your application window for device interaction.
- Use your mouse and keyboard to **navigate a device and enter data**. (You can also use the text entry utility for data entry—see Device Console below.)

Later sections also discuss performing hardware operations such as flipping a device open/close (see Device Console below).

2.1 Optimizing Screen Space

You can do the following things to adjust the screen space available for working with your device:

- Maximize/minimize the DeviceAnywhere Studio window.
- Minimize the sidebar to display icons only (**View > Minimize Sidebar**).
- Adjust panes by dragging the sizing handle that appears when you hover over the edge of a pane or use the sizing arrows between panes.
- Adjust device zoom settings—as devices are rendered pixel for pixel, some tablet devices can appear larger than life if their screen resolution exceeds that of your monitor. Right-click the device and select **Zoom** to adjust device size. Choose a zoom percentage (see Figure 2-1 below).

iPhone devices have zoom buttons to the side which allow you to zoom in and out to view content in browser windows.

- Change device orientation (if supported by the device) or flip state (if supported by the device)—right-click the device and select **Orientation** or **Flip State** (see Figure 2-2 below):
  - **Vertical**
  - **Left** (turn left to display horizontally)
  - **Right** (turn right to display horizontally)
  - **Flip Open** (only on devices with a pull-out keyboard; orientation is automatically changed to match the flip state)
  - **Flip Closed** (only available when flipped open)
- View the device and console in a separate window by clicking **Pop Out** at the top-right corner of the workspace; click **Pop In** to anchor the device tab to the workspace again (see Figure 2-3 below).
Figure 2-1 Zoom Settings

Figure 2-2 Change Orientation
2.2 Device Input

Device input consists of operating a device’s touchscreen and/or keyboard for navigation as well as data entry. Several methods of device input are supported in DeviceAnywhere Studio:

- Clicking device keys/touchscreen with a mouse
- Using a computer keyboard to enter data
- Typing/pasting text into **Text entry** field in device console (covered below)

2.2.1 Touchscreen Swipes and Free-Hand Gestures

You can swipe or perform a free-hand gesture on a touchscreen using your mouse. Use one of these two methods:

- Hold down the Shift key and drag your mouse in a free-hand motion across the device screen. This performs the gesture in real time.
- Hold down the Ctrl key and drag your mouse across the device screen in a straight line to swipe. As you drag the mouse, a green arrow highlights the length and direction of your swipe. The swipe is performed after the mouse button is released.
NOTE The device screen displays the message below if you attempt to perform a touchscreen gesture on a non-touchscreen device.

**Touchscreen not supported.**

2.2.2 Long Key Presses

Certain device interactions such as powering off a device require a key to be pressed for a few seconds. This is accomplished by holding down your keyboard Shift key and then pressing the device key.
3  Device Menu

The device menu in the Test Center view offers several commands for initiating/terminating a device session, hardware functions, viewing video history for team collaboration, viewing device information, and reporting an issue to Keynote Support. Most of these options are discussed in detail in the sections of this chapter. They are also listed and briefly described in Table 3-1 below. (Also see the powerful device control and interaction options available in the Device Console.)

To access the menu of an acquired device, right-click the device in the device list or the workspace. You can also click Device in the menu bar of DeviceAnywhere Studio—this displays the device menu for the active device.

The figure below shows the options in the device menu of an acquired device.

Figure 3-1 Device Menu of Acquired Device

The full device menu only appears for an acquired device; an abridged menu appears when you right-click a device that you do not have acquired.

The figure below shows the device menu for a device that is not currently acquired by you.

Figure 3-2 Device Menu of a Device Not Acquired by You

<table>
<thead>
<tr>
<th>Device Acquired by Another User</th>
<th>Available Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wait for Device</td>
<td>Acquire Device</td>
</tr>
<tr>
<td>Reserve Device...</td>
<td></td>
</tr>
<tr>
<td>Report an Issue...</td>
<td></td>
</tr>
<tr>
<td>Device Info...</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Device Acquired by Another User</th>
<th>Available Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wait for Device</td>
<td>Acquire Device</td>
</tr>
<tr>
<td>Reserve Device...</td>
<td></td>
</tr>
<tr>
<td>Report an Issue...</td>
<td></td>
</tr>
<tr>
<td>Device Info...</td>
<td></td>
</tr>
</tbody>
</table>

The table below describes device menu options.
### Table 3-1 Device Menu Options

<table>
<thead>
<tr>
<th>Menu Option</th>
<th>Sub-Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquire Device</td>
<td></td>
<td>Acquires device. See <a href="#">Device Session</a> for more information.</td>
</tr>
<tr>
<td>Release Device</td>
<td></td>
<td>Releases device back to device pool. See <a href="#">Device Session</a> for more information.</td>
</tr>
<tr>
<td>Wait for Device</td>
<td></td>
<td>Waits to acquire a device after it is released by another user. Instead of automatically acquiring the device, you can also opt to receive an email notification of its availability. See <a href="#">Device Session</a> for more information.</td>
</tr>
<tr>
<td>Zoom</td>
<td>Choose a zoom percentage.</td>
<td>Changes size of device in workspace. See <a href="#">Optimizing Screen Space</a> for more information.</td>
</tr>
<tr>
<td>Orientation</td>
<td>Flip Open</td>
<td>Turns device to change orientation or flips it open.</td>
</tr>
<tr>
<td></td>
<td>Vertical</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Right</td>
<td></td>
</tr>
<tr>
<td>Flip State</td>
<td>Flip Open</td>
<td>Flips device open/closed. See <a href="#">Optimizing Screen Space</a> for more information.</td>
</tr>
<tr>
<td></td>
<td>Flip Closed</td>
<td></td>
</tr>
<tr>
<td>Export Frames</td>
<td>Current frame frames from history video from history upload frames</td>
<td>Exports screenshots or video of device interaction, which can be saved to the file system or the web portal. See <a href="#">Exporting Video History</a> for more information.</td>
</tr>
<tr>
<td>Show Video History</td>
<td></td>
<td>Displays a slider below the device enabling you to view frames from the history of the device session. See <a href="#">Viewing Video History</a> for more information.</td>
</tr>
<tr>
<td>Enter Text from Clipboard</td>
<td></td>
<td>Allows you to paste data (alpha, numeric, or URL) from the clipboard into a selected field on the device. The device log in the device console is updated after you paste data. See <a href="#">Device Console</a> for more information.</td>
</tr>
<tr>
<td>Wake Device Up</td>
<td></td>
<td>Wakes device up when screen goes dark after short periods of inactivity. See <a href="#">Device Session</a> for more information.</td>
</tr>
<tr>
<td>Restart Device</td>
<td></td>
<td>Restarts a device. See <a href="#">Device Session</a> for more information.</td>
</tr>
<tr>
<td>Stop Monitoring</td>
<td></td>
<td>Closes the tab of a shared device that you have been viewing. See <a href="#">Sharing Tab</a> for more information.</td>
</tr>
<tr>
<td>Reserve Device</td>
<td></td>
<td>Enables you to reserve a device for up to four hours at a time and two days in advance. See <a href="#">Device Session</a> for more information.</td>
</tr>
<tr>
<td>Report an Issue</td>
<td></td>
<td>Opens the Keynote Support portal in a browser window. Log in to submit a ticket. See <a href="#">Reporting an Issue</a> for details.</td>
</tr>
<tr>
<td>Device Info</td>
<td></td>
<td>Opens the <a href="#">Device Information</a> window.</td>
</tr>
</tbody>
</table>
4 Device Console

A console is automatically displayed in the workspace of the Test Center view when you acquire a device. The console enables you to interact with the device, adjust settings, and check its status. The console consists of a display area with control icons on the left and tabs at the top. Click a control icon to access the tabs associated with it.

Table 4-1 Device Console Icons and Tabs

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
<th>Tabs</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Icon" /></td>
<td>Click to view usage tips.</td>
<td>Usage Tips</td>
<td>Displays tips and tricks for working with the device.</td>
</tr>
<tr>
<td><img src="image2" alt="Icon" /></td>
<td>Click to interact with device and adjust settings</td>
<td>Keyboard</td>
<td>Send key presses and data to device.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hardware</td>
<td>Perform hardware operations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Audio &amp; Video</td>
<td>Adjust audio and video settings</td>
</tr>
<tr>
<td><img src="image3" alt="Icon" /></td>
<td>Click to access additional device tools.</td>
<td>Send SMS</td>
<td>Send SMS interrupts to device.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Applications</td>
<td>Upload applications to DeviceAnywhere repository and device</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sharing</td>
<td>Share device screen with another user.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cleanup</td>
<td>Run cleanup scripts on the device.</td>
</tr>
<tr>
<td><img src="image4" alt="Icon" /></td>
<td>Communicate with device.</td>
<td>Device Log</td>
<td>View device log.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Network</td>
<td>Check Wi-Fi connectivity on the device.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Device FTP</td>
<td>Open an FTP tunnel to the device file system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADB Tunnel</td>
<td>Open an ADB tunnel to the device (Android only).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>iPhone</td>
<td>Remove all applications (iPhone only).</td>
</tr>
</tbody>
</table>

Hover over console icons to see tooltips.

Figure 4-1 Console Icon Tooltips

By default, the console opens on the Keyboard tab. If you re-acquire a device during the same session, the console opens on the tab last used.
Console tabs are discussed in the sections below.

### 4.1 Usage Tips Tab

Clicking the blue exclamation icon in the device console displays the **Usage Tips** tab. This tab displays device-specific tips and useful information. If you acquire a device for the first time, the console opens on this tab by default.

**Figure 4-3 Usage Tips**
4.2 Keyboard Tab

The **Keyboard** tab is accessible by clicking the “control device” icon and enables you to send key presses and data to the device.

4.2.1 Text Entry Method

Enter a keyboard or touchscreen sequence in the **Text entry** field and press **Send**. You can type or paste text into this field.

*Figure 4-4 Entering Text Using the Console*

You can also directly paste a string from your clipboard:

1. Copy the required text to the clipboard.
2. Select the device field into which data is to be entered.
3. Select the appropriate **input mode** from the console **Keyboard** tab.
4. Right-click the device and select **Enter Text from Clipboard**.

The **Log** section beneath the **Text entry** field displays all interaction with the device, whether by directly clicking on the device or by using the console. Touch events are displayed with touch coordinates.

4.2.2 Input Mode

You must specify an appropriate **Input Mode** for all text entry into a device, depending on the type of field the text is being entered into—select **Alpha** (default) for an alphanumeric field such as the body of a note, **Numeric** for a numeric field such as a phone number, **Web** for the URL field of a browser, or **Messaging** for the address field of a text message.
NOTE Alphanumeric fields support both letters (a, b, c…) and numerals (1, 2, 3…). Even if entering only numeric data into an alphanumeric field (such as a zip code into the body of a text message), you must set the key mode to Alpha.

4.3 Hardware Tab

In the Hardware tab (“control device” icon), you can perform hardware operations such as disconnecting/reconnecting the battery, turning the camera light on/off, or changing device orientation and flip state (if supported on the device).

Depending on the device, hardware controls include the following:

- Disconnect/Connect battery
- Turn on(turn off) camera light
- Turn Left/Right/Vertical or Flip Open/Closed to change orientation/flip state

The controls available depend on the features supported by a device.

Figure 4-5 Hardware Controls for Device with Pull-Out Keyboard and Accelerometer

4.4 Audio & Video Tab

Controls for audio and video quality are located in the Audio & Video tab (“control device” icon). Audio and video settings in the device console allow you to choose between quality and efficiency. Offshore teams accessing devices from remote locations can reduce audio/video quality if faced with network latency while still being able to perform functional tests safely.
4.4.1 Video Settings

The following video settings are available (see adjusted video settings in Figure 4-6 below):

- The **Video quality** slider allows you to choose between resolution/clarity and efficiency. The **Best quality** end of the slider engages optimum video on the device. Moving the slider closer to **Best performance** increasingly compresses video data, reducing the amount of data being transferred, thus reducing latency.

- The **Speed Interaction for Fast Motion** check box for some smart devices reduces screen resolution and image quality when the device screen is changing rapidly. This effectively increases frame rate and reduces response time from key press to screen update. The image quality of the device screen is not affected when it is stable for more than one second.

  This feature is enabled by default. However, if you disable it for a device, DeviceAnywhere Studio remembers your setting for subsequent sessions.

- The **Color depth** drop-down list allows you to choose between **High (16 bit)**, **Medium (12 bit)**, or **Low (7 bit)** color depth.

  **NOTE** Color depth is the number of bits used to represent the color of a single pixel in a bitmapped image or frame buffer—higher color depth gives a broader range of distinct colors.

4.4.2 Audio Settings

Audio settings consist of quality sliders and mute/unmute options for the **Speaker** and **Microphone**. Both the speaker and microphone are muted by default. Click **Unmute** for either control to adjust its slider. Volume bars indicate the volume level of the speaker and microphone.

See [View and Export Video for Collaboration](#) for more on video functions in DeviceAnywhere Studio.
4.5 Send SMS Tab

The Send SMS tab of the device console is accessible by clicking the “tools” icon and allows you to send SMS messages to the acquired device for interrupt testing. This feature can also be used to send a URL to the device. This is an optional feature and requires an SMS modem in standalone systems (contact your Keynote Solutions Consultant for assistance).

To send an SMS to the device:

1. Select the tools icon and then the Send SMS tab.
2. Type or copy and paste the desired message into the Send SMS field.
3. Click Send.

A log of each SMS sent to the device is kept under SMS History.
4.6 Applications Tab

The Applications tab, accessible by clicking the tools icon of the device console, allows you to:

- **Upload applications** from a web location or from the file system to the application repository. Applications uploaded can each be up to 100 MB in size.

  The application repository is a web-based location for application storage that all users from your organization can access from DeviceAnywhere Studio.

- **Deliver an application** to the device using data cable or by sending a link to it via SMS message.

**NOTE** Optional preparation of iOS applications for uploading to the repository is covered in [Uploading iOS Applications](#).

4.6.1 Storing Applications in the Repository

To upload an application to the repository:

1. Navigate to the Applications tab in the device console of an acquired device.
2. Add an application to the repository:
   - Application from the file system
     
     a. Click **Add Application**.

---

Figure 4-7 Sending an SMS Interrupt

![Image of SMS interrupt](image-url)
b In the dialog box that appears, enter a Name for the application to be uploaded. This name will be displayed in DeviceAnywhere Studio. Be sure to name applications descriptively so they can easily be differentiated. This is especially helpful when you upload multiple versions of the same application to the repository.

c Select an application Type from the drop-down list—only applications of this type will be listed for selection.

NOTE BREW MP and Brew are not interchangeable application types.

d Enter the application Version.

e For Brew MP applications, enter the Class ID assigned to the application by the Brew MP ClassID Generator (available at http://developer.brewmp.com/tools/class-id-generator; requires an account). See https://developer.brewmp.com/resources/primers/brew-mp-application-development-primer/classids-and-commercialization for information on CIDs.

f Click Add file and select the application file from your file system. If the application consists of multiple files, repeat this step as required. The selected file(s) is displayed in the Application files pane. (To remove a file, select it in the pane and click Remove.)

g Optionally, check Remove app from server when finished—the application will automatically be removed from the repository at the end of your device session.

h Click Add Application to complete uploading it to the repository.

• Application that resides online

a Click Download from existing URL.

b Enter the application URL in the dialog box that appears.
c Click Download.

Your application is listed in the console. Click its name to view application details.

NOTES
To remove an application from the repository, select it from the list and click Remove.

You can install Brew MP applications onto the latest Brew MP devices (version 1.0.2 or higher). In standalone environments or for customers with access to local devices, this feature requires that the Brew MP SDK (version 7.11.6 or higher) be installed on the Ensemble Server hosting the Brew MP device. The SDK is available at https://developer.brewmp.com/tools/brew-mp-sdk. Several other configuration steps must be performed in standalone systems to enable this feature—contact your Keynote Solutions Consultant for details.

4.6.2 Uploading iOS Applications

For iOS applications, you can either upload the .ipa file or a ZIP file of the .app folder to the repository. To generate the required ZIP file, e.g., MobileGame.app.zip:
1 Unzip your iOS application’s .ipa file.
2 Navigate to the Payload/.app directory.
3 Zip and name the .app directory for upload to the repository.

4.6.3 Deleting Applications from the Repository

Uploaded applications can be deleted from the repository in two ways:
- To manually delete an application, select it in the Applications tab and then click Remove.
- You can automatically delete an application from the repository at the end of your device session—when adding an application from the file system, check Remove app from server when finished in the New Application dialog box.

4.6.4 Delivering an Application to a Device

Once the application has been uploaded to the repository, you can deliver it to the device. The console lists all applications uploaded to the repository by users in your organization.

Applications can be delivered via:
- Data cable—This delivery method automatically installs the application on the device.
- SMS—An SMS message containing a link to the application in the repository is sent to the device. This link is session specific and cannot be reused.

Supported delivery methods by smart device platform are:
- Android: Data cable, SMS, or both, depending on the method(s) available to the device
- iPhone: Data cable (requires DeviceAnywhere Agent)
- BlackBerry: SMS, Data cable (requires JavaLoader on device server)
- Brew MP: Data cable
- Windows Phone 7: Data cable (device must be registered to a Windows Phone 7 developer account; requires Visual Studio for Windows Phone 7, Windows Phone 7 SDK, and Zune on device server)

To deliver an application to the device:
1 Navigate to the Applications tab in the device console of an acquired device.
2 Highlight the application in the console—be sure to select the correct application type for your device.
3 Click the SMS or Data Cable button next to Deliver application via.
4 If you send a link to the application via SMS message, click the link on the device to complete application installation.

**NOTE** This link is session specific and cannot be reused.
5 Restart the device if necessary (e.g., when loading applications by data cable onto an iPhone) to complete application installation.

The figure below shows an SMS message containing an application link sent to a device.
The figure below shows an application that has been delivered via data cable to a device. The highlighted icon on the device screen represents the newly installed application.

The image below shows the Applications tab after an application has been delivered to an iPhone device.
4.7 Sharing Tab

The **Sharing** tab, accessible by clicking the tools icon of the device console, provides two ways of sharing a device:

- You can generate a share code and email it to invite a user to share your device.
- You can directly share a device with concurrently logged in users from your customer account.

Sharing enables other users to view the screen of shared device(s) that are currently acquired by you. You retain control of the shared device while others view your interaction with it.

The **Sharing** tab also enables you to chat with logged in users you have shared your device with.

### 4.7.1 Sharing a Device

To share an acquired device with other users:

1. Select **Share Device** in the **Sharing** tab.
2 In the dialog box that appears, generate a share code or select a concurrently logged in user to share your device.
   - To share by generating a share code:
     i  Click **Generate Code**. A numerical code that you can email to other users is generated.
     ii Enter the email address of the user you wish to share your device with. You can enter multiple email addresses separated by semicolons.

Click **Send Email**. This sends an email with the share code to the user. The email generated also provides instructions on how to view the device. See **Viewing a Shared Device**.
To share by inviting a logged in user:

i. The bottom pane displays the names of concurrently logged in users—check the box next to the user you wish to invite. You can select multiple users.

ii. Click **Invite users**.

Users invited in this manner see a message in DeviceAnywhere Studio asking if they would like to view your shared device. See [Viewing a Shared Device](#).

When your invitation is accepted, users you are sharing your device with are listed in the **Sharing** tab.

*Figure 4-11 Console of Shared Device*
To stop sharing a device with other users:

1. Click **Stop Sharing**.
2. Click **Yes** to confirm that you would like to stop sharing.

![Stop Sharing Dialogue Box](image)

### 4.7.2 Viewing a Shared Device

There are two ways to accept the invitation to view a shared device.

- If the device was shared using a share code:
  
  a. You receive an email message containing the code and instructions on viewing the device.

  ![Email Invitation](image)

  b. In DeviceAnywhere Studio, select the **Tools** menu, then **View Shared Device**.

  c. In the dialog box that appears, enter the share code and click **Send**.

- If the invitation was sent directly from DeviceAnywhere Studio, a dialog box pops up to inform you that you can view a shared device. Click **Yes** to accept the invitation.

![Dialog Box for Direct Invitation](image)
When you enter a share code or accept an invitation, you can observe (monitor) a shared device. The shared device appears in a tab in the workspace.

**Figure 4-12 Viewing a Shared Device**

You can stop monitoring a shared device at any point:

- Right-click the device and select **Stop Monitoring**.
- Click **Stop Monitoring** in the **Sharing** tab of the device console.

**Figure 4-13 Monitoring a Shared Device**

Click **Yes** in the dialog box that appears to confirm that you wish to stop monitoring the device. The device tab is automatically closed in DeviceAnywhere Studio.
4.7.3 Sending Messages

Users viewing or sharing a device can exchange chat messages. When a share invitation is accepted, a list of viewers and a message window appears in the Sharing tab of the device console. To send a chat message, simply enter text in the message field and click Send. The chat pane displays a log of messages exchanged.

Figure 4-14 Device Sharing with Chat

4.8 Cleanup Tab

The Cleanup tab contains scripts that can be Run to clear history of your device interaction in the device browser, messaging application, or camera.

Figure 4-15 Cleanup Tab
4.9 Device Log Tab

The **Device Log** tab, accessible by clicking the “connect device” (smartphone) icon in the device console, provides a control for viewing the device log for software-integrated smart devices. Click **Connect** to view the device log in a separate window (click **Terminate** to end the log viewing session).

**Figure 4-16 Device Log**

You can **Pause** scrolling in the log window—log information continues to be appended to the bottom of the file, however. You can enter a string to **Filter** log output. You can **Refresh** the display or **Clear** the log window (the log file on the device retains its contents). The contents of the log file on the device are deleted when a device is released.

4.10 Network Tab

If your application uses Wi-Fi, you can use this tab to check Wi-Fi connectivity every few seconds by pinging a device—click **Connect** to begin monitoring Wi-Fi (Wi-Fi should be enabled on your device and it should be connected to a network). This functionality is available on iOS and Android devices and requires the DeviceAnywhere Agent.
Colored status indicators display the strength of the Wi-Fi connection and the most recent downtime.

If the Wi-Fi monitoring feature is unavailable on the device, you see an appropriate message. Click **Terminate** to stop monitoring Wi-Fi connectivity.
4.11 Device FTP Tab

The **Device FTP** tab enables you to view Android, BlackBerry, and iOS file systems with an FTP client, allowing read or write access to the file system (where permitted), as well as access to the device SD card. Select the “connect device” (smartphone) icon in the device console and then select the **Device FTP** tab.

Click **Connect** to open an FTP tunnel to your acquired device (click **Terminate** to terminate the session).
Specific details by mobile platform are listed below:

- Only read access to the file system is available on iOS devices.
- On Android devices, write access to the /sdcard directory and read access to the rest of the file system is available.
- On BlackBerry devices, there is no access to any private information or the /system directory. There is read and write access to unprotected areas of the file system, e.g., the SD card. However, you cannot create/remove directories or rename files/directories.

**NOTE** Contact your Keynote Solutions Consultant to ensure that you have the latest DeviceAnywhere Agent and to have this feature configured for your BlackBerry device.

### 4.12 ADB Tunnel Tab

The **ADB Tunnel** tab, accessible by clicking the “connect device” icon in the device console, enables you to open an ADB tunnel to an Android device.

Users with the ADB tool (Android Debug Bridge) on their local machines can execute ADB commands on devices that they have acquired in DeviceAnywhere Studio. Users can access log files, perform file management, check performance, and utilize other ADB commands on an acquired device as if it were locally connected to their own computer.

You can test latency to view device performance or follow the instructions to open an ADB tunnel to the device.

#### 4.12.1 Testing Latency

We recommend checking latency before opening an ADB tunnel to a device; ADB tunneling will not work reliably when there is too much delay in the communication between DeviceAnywhere Studio and the device.

Click **Test Latency**. Once the latency test is complete, the result is displayed in the tab. A measurement of the latency in seconds is displayed next to the result.
Figure 4-22 Latency Test Results

Virtual Connection

Virtual Connection is a latency sensitive feature. It is recommended that you test the latency of this device before proceeding.

Test Latency: Good (0.46 seconds)

Please perform the following operation:

- Click Start menu, select ‘Run’ and type adb
- kill-server
- Then click the ‘Connect’ button

Possible latency test outcomes are:

- Good (green icon): Latency of less than 1 second
- Acceptable (yellow icon): Latency from 1 second to less than 5 seconds
- Poor (orange icon): Latency of 5 seconds or more

4.12.2 ADB Tunnel

To open an ADB Tunnel to an Android device:

1. Test latency (recommended).
2. Open a command window (Start > Run in Windows).
3. Navigate to the adb.exe directory.
4. In the command window, type adb kill-server.
5. In DeviceAnywhere Studio, click Connect in the ADB Tunnel tab.

The figure below shows an ADB tunnel to a device.
NOTES All commands must be run from the `adb.exe` directory.

You can only open an ADB tunnel to one device at a time.

### 4.13 iPhone Tab

The **iPhone** tab, accessible by clicking the “connect device” icon in the device console, enables you to delete all applications installed on the device from DeviceAnywhere Studio. This tab is only available for iOS devices.

To delete applications:

1. Click **Remove All**. This deletes all applications loaded onto the device from DeviceAnywhere Studio. The application to be deleted is highlighted on the device screen below.
2 **Restart the device** for application removal to be completed.

The application icon is no longer on the home screen when the device is restarted. In the image below, the U-verse application icon has been removed from the home screen.
5  View and Export Video for Collaboration

DeviceAnywhere Studio supports a frame buffer that captures the device screenshots and video during a live session. From the time a device is acquired, frames are continuously uploaded to the device server. The frame buffer contains information from the last five minutes of activity.

While interacting with a device, you can pause the live video feed to view screens from the buffer. Keynote also allows you to save and export one or more frames as well as device video. You can export frames to the file system or upload them to the Portal.

Exported/uploaded frames are a useful tool for team collaboration, enabling you to share device sessions, known issues, and upload images to a bug database.

NOTE Another collaboration tool is device sharing (with chat).

5.1  Viewing Video History

The Show Video History command in the device menu allows you to view screens from the history of your interaction with the device on the device screen. Right-click an acquired device and select Show Video History. This displays a slider below the device enabling you to view frames from the history of your device session.

*Figure 5-1 Device History Slider*

Click on the slider or click Back and Forward to scroll through video history.
Click **Resume** to resume live video feed. Click **Pause** to pause the live video feed and look at history.

**NOTE** You cannot interact with the device when the live video feed is paused. You will see the following message if you click the touchscreen or keyboard while viewing video history.

---

### 5.2 Exporting Video History

The **Export Frames** command in the device menu gives you four export options, described in the procedures below:

- **Current frame** — Export the current frame to your file system.
- **Frames from history** — Export and save multiple frames to your file system.
- **Video from history** — Generate a video from the frames captured and save it to your file system.
- **Upload frames** — Upload frames to the Portal.

**Figure 5-2 Export Frames Options**

#### 5.2.1 Current Frame

You can export the current device frame in JPEG (.jpg) or PNG (.png) format:

1. On the device, navigate to the frame you want to export.
2. Right-click the device and select **Export Frames > Current frame**.
3. In the Save dialog box that appears, specify a name, location, and file type for the exported frame.
4. Click **Save**.

#### 5.2.2 Multiple Frames from History

You can select multiple frames from the frame buffer and save them to your file system:

1. Right-click the device and select **Export Frames > Frames from history**.

   DeviceAnywhere Studio loads frame history—this can take a few moments.
2 In window that appears, frames are grouped in intervals of one minute each. Select the interval for which you would like to view frames.

3 Select the frames you wish to export and click **Export**. (Use Ctrl-click to select multiple frames; use Shift-click to select a frame range.)

4 In the dialog box that appears, specify a location to export the frames to. PNG files are saved to your file system.
5.2.3 Video from History

To generate an MPEG video file from selected frames:

1. Right-click the device and select Export Frames > Video from history.

   DeviceAnywhere Studio loads frame history—this can take a few moments.

2. In window that appears, frames are displayed for time intervals. Optionally, double-click a frame for a time interval to load more frames.

3. Click to select the first frame and then the last frame you want to appear in the video. (To deselect a frame, click the selected frame before it.)
4 Click **Settings** to specify audio settings for export.

You can opt to **Include audio** in the generated video file. (**Do not include audio** is selected by default.) Click **OK** to verify your settings.

**NOTE** **Video type** and **Frame rate** are set for MPEG export and cannot be edited.

5 Click **Export** in the video history window.

6 In the dialog box that appears, enter a name for the file and select a location to export the video to. DeviceAnywhere Studio indicates that it is generating the file.

**NOTE** You may generate as many clips as you wish but limit each clip to a minute. If your video file is too large, you will be prompted to select fewer frames or lower the frame rate.

### 5.2.4 Uploading Frames to the Portal

You can select multiple frames from the frame buffer and upload them to your account on Portal:
1 Right-click the device and select **Export Frames > Upload frames**. DeviceAnywhere Studio loads frame history—this can take a few moments.

2 In window that appears, select the interval from which you would like to upload frames.

5 Click to select the frames you wish to export. (Use Ctrl-click to select multiple frames; use Shift-click to select a frame range.)
You can double-click a frame to enter a comment.

3 Click **Advanced** to tag your uploaded frames as a **Recording of a successful operation** (default) or a **Recording of an operation with an error**. Click **OK**.

4 Click **Upload**.

5 Enter a name for the frame set and click **OK**.

6 You are given the option to view uploaded frames directly from Studio. Click **OK** to be directed to the Portal.

You are automatically logged in to the **Frames** tab in the portal.
You can view and email uploaded frames at any time by logging in to the Portal and navigating to the **Frames** tab from the **Administration** link for your environment.
6 Device Information

To view device information for an acquired device, you can:

- Right-click the device and select Device Info, or
- From the menu bar, select Device > Device Info.

This opens the Device Information window, which contains tabs for device-specific features and identifying information for reporting device issues. This information is maintained and updated by Keynote. You will need to use some of the information listed in this window when reporting device issues to Keynote Support.

6.1 Features

This tab lists device specifications and carrier information:

- From the menu bar, select Device > Device Info.
- **Operating system**, e.g., Android
- **OS Version**, e.g., 2.3.3
- **Screen resolution** in pixels, e.g., 360x480
- **Phone number**
- **Carrier**, e.g., Verizon
- **CPU Name**, e.g., ARM
- **CPU Type**, i.e., single or dual core
- **Onboard Memory** in MB of RAM
- **IMEI/ESN**—International or US device identifier/serial number
- **UDID**—Unique identifier for iOS devices
- **Supported Device Functions**—these are the features available on the device and by which you can filter devices.
6.2 DeviceAnywhere Info

This tab displays information used by Keynote to uniquely identify a device. This information must be included in any communication to Keynote when reporting device issues.

- **MCD**—A unique identifier assigned to each device by Keynote
- **Device location**—Geographical location
- **Server**—Server device is connected to
- **ESN (Dec)**—Electronic serial number (decimal)
- **ESN (Hex)**—Electronic serial number (hexadecimal)
- **Integration type**—Type of device control technology used to control device inputs and outputs
- **On Device Agent Version**—version number of the installed DeviceAnywhere Agent
Click **Copy to Clipboard** to copy the device MCD number. This is useful when Reporting an Issue with a device to Keynote Support.
7 Reporting an Issue

You might need to request a feature or application on a device or report an issue with it. To submit a ticket to Keynote:

1. Right-click a device in the device list or in the workspace and select **Report an Issue**.

2. You are directed to the Keynote Support Portal (http://support.keynote.com) in a browser window and automatically signed in.

3. Select **Cases** tab > **Create New Case**.

4. Enter information in the new ticket. Be sure to include the following **device information**:
   - Phone number
   - Location
   - Integration type
5 **Submit** your ticket. You can also **Submit & Add Attachment**.

**NOTE** If you are unable to log in to Keynote Support, you may report an issue by calling 1-888-KEY-SYST (539-7978).