![BOXLIGHT]

Network Device Management System (NDMS)

User Guide

Contents

How to use this NDMS Guide:

Each topic section within the guide is set up with the following sections *(as applicable):*

- 🌐 Overview

- 👣 Action Steps

- 🔎 Special Considerations

- 🎥 Links to Videos and Screenshots

Use the following hyperlinked icons for actions within the guide:

- 🏠 Use the Home icon to return to the Table of Contents.

- ↩ Use the back icons within the Appendix to return back to the specific topic.

In the NDMS Console, the **left navigation menu** used throughout the guide refers to the following:
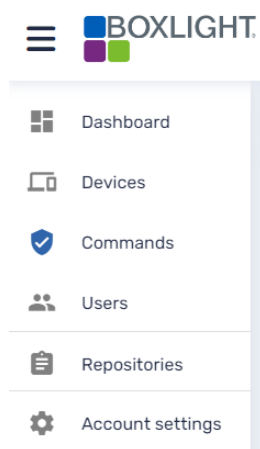
System Architecture

🌐 Overview

Boxlight's Network Device Management System (NDMS) is cloud-based software that gives you the ability to control and report on the operation of your devices through one easy-to-use portal via your web browser.

Manage usage, groups, panel location(s), updates, customized user access, and more through one simple, centralized system.

🔍 Special Considerations

Any managed devices without internet access will still need to connect to the Boxlight NDMS server to maintain device management.

The recommended approach is to configure the firewall to whitelist (meaning allow access) **only** to the Boxlight NDMS server.

Create and Register a New Account

🌐 Overview

Creating and registering a new account and beginning to connect devices is a simple process.

It is important to understand the terminology used by Boxlight's Network Device Management System, hereafter referred to as NDMS, and explain the different fields, roles, and concepts.

NDMS Terminology

❖ **Domain**: Also known as the **Account**. This is the actual account name that will follow you throughout the system. Can be any text that is legal or available during registration.

❖ **Server**: The address of the server that is composed of the main domain and the subdomain.

- For example, **https://Boxlight.glbth.com**. The domain Boxlight would be your domain.

❖ **User**: The entity that manages devices. Each user can be assigned from the admin account.

- The default user name will be **admin@your-domain** and **cannot** be changed.

- The format of a user will always be **xxxxx@your-domain**, with **xxxxx** being the user and **your-domain** as the account name you enrolled.

Action Steps

Register a new account:

1. From an internet browser, navigate to your NDMS registration page. For example, https://**yourdomain**.glbth.com/v1/login.html.

2. Click the register button.

3. Complete the required information: user, password, email address, organization, phone number, and contact name.

4. Click the register button.

5. Once completed you should receive an email containing an account activation link. Be sure to click the link to complete the account activation process.

Sign into your new account:

a) Navigate to your NDMS console page and enter the username and password.
   1. The username format is username@your-domain
      a. (Remember there are no suffixes like .com)
   2. NDMS Console Login Page: https://**yourdomain.**glbth.com/v1/login.html.

b) Click login.

Special Considerations

❖ When connecting a device, make sure to leave the server address as the default. For example, https://yourdomain.glbth.com.

❖ The default username will be admin@yourdomain and **cannot** be changed.

❖ Each user will be assigned from the admin account.

🎥 Links to Videos and Screenshots

- [Video: Register a new account](#)

- [Screenshots: Register a new account](#)

Dashboard

🌐 Overview

The dashboard is the first screen you see when you login to the NDMS console. Each tile will represent a block of information.

Blocks of Information include:

Total devices	Total number of registered devices
Active devices	Total number of devices checked within the last 24 hours
Total users	Total number of users registered with the domain
Active users	Number of users logged on (except yourself)
Connected devices	Number of devices connected according to their last check-in
Last seen device locations	Approximate location of the device's last reported connection
Recently enrolled devices	List of recently enrolled devices with device add date
Most used apps	List of the most frequently used apps
Last commands	List of the last commands committed
OS Distribution	List showing the device operating systems

🎥 Links to Videos and Screenshots

- [Screenshot: NDMS Console Dashboard](#)

Adding a Device

🏠

🌐 Overview

Adding a device is one of the key components of NDMS. Also, choosing to use the Advanced Wizard during the device enrollment window allows for several customized options that can be time saving and very beneficial.

New accounts can be added directly from this newly enrolled device as an option within enrollment as well.

👣 Action Steps

Steps for Adding a New Device:

1. From the **user device**, ensure that the latest firmware is installed on the device.

2. After the firmware check, navigate and select the ⁙ (All Apps waffle) from the **Home** screen of the device.

3. Locate and select the **NDMS app**.

4. When the **NDMS app** opens, accounts components are shown on the left, while device enrollments are shown on the right.

5. To activate and enroll a device, add your domain in the Account Name box, select the Accept Terms and Conditions check box, and then select the **Enroll** button.

6. This adds the device to the NDMS account and can be found in the **Device** list in the NDMS Console. Note that the device name, any tags, etc. will need to be added in the NDMS Console.

For a more customized experience, enroll using the **Advanced Wizard**.

1. From the NDMS app, select the **Advanced Wizard** link.

2. Select the **Start Here** button under Activate and Enroll your device.

3. Enter the **NDMS account name** (username), the **Server Address**, and the **Device Name**. Select **Next**.

4. Add any **Tags** that you would like to associate the Device with. Select **Next**.

5. You can set a **Password** on the device to limit access to the agent. Select **Next**.

6.   The final page is a review of the device and entered information. Select **Finish** to complete the enrollment process.

Special Considerations

The **Advanced Wizard** in the enrollment of a device will allow a more customized enrollment process. It will allow the addition of Device Names, Tags, etc. This will save some time from needing to add this information later from the NDMS console.

Links to Videos and Screenshots

*   Video: Adding a Device
*   Screenshots: Adding a Device

Adding Users

🌐 Overview

You may wish to delegate various rights to different users/managers within the NDMS console. To do this, you may create new users with different privileges, roles, interface languages, and group rights.

👣 Action Steps

Steps for Adding a User:

1. From the NDMS Console, select the **Users** icon from the **left navigation menu**.
2. From the **Users** list, select the ✚ icon (top right of the screen).
3. In the pop-up window, select the user type in the **Select Type** dropdown (VISO user, Google account, Microsoft account).
4. For VISO users, add a username (the username will automatically add your domain as a suffix)
   a. new.user@abc123-domain
5. For all account types, add a full **Email Address**, **Password**, select the **User Type**, **Select Language**, and any **Tags** you used to limit user viewing and control.
6. Select "**Change User Permissions**" to open another pop-up window to select specific user permissions.
7. Click "**Confirm**" to save the new user.

Special Considerations

- NDMS console users have no relations to the local device users.
- VISO Users will have the added option for creating a username.
  - Usernames can only contain small lowercase letters, numbers and either – or _.
- Full email addresses are needed for each user for alerts and messages to the user.
- Passwords **MUST** be at least eight characters with a combination of letters Aa-Zz, numbers, and symbols.

- There are several different user types:

admin@your-domain	The default mandatory user found in every account; has all rights
Admin rights	Rights for all functions
User rights	Rights for all functions excluding user management
Observer rights	Rights to view device locations
Teacher rights	Can use **TeacherView** module functionality

- Tags can be used to limit user interaction to only corresponding devices. The devices must contain these tags for this functionality to work. For example,
  - If a user is not tagged, then all devices enrolled will be visible.
  - If a user is tagged with 1234, then only devices with the 1234 tags are visible.
  - If a user is tagged with 1234 and abcd, then only devices with both tags are visible.
- The language preference will set the default console language for that user.

Links to Videos and Screenshots

- [Video: Adding a User](#)
- [Screenshots: Adding a User, Change User Permissions](#)

Authentication Token

🌐 Overview

For security reasons, a first handshake between a device and the NDMS server will create a unique authentication token. This token is stored on the server and the device.

Sometimes a missing authentication token notice may occur, and the device may need the authentication token reset.

👣 Action Steps

Steps for Resetting the Authentication Token:

1. From the NDMS Console, select the **Device** icon from the **left navigation menu**.
2. Select the specific device you want to reset.
3. Under the **Manage** tab on the right, select the **Reset Auth Token**.
4. Select **Reset Auth Token** in pop-up window to confirm this action.
5. Retry the enrollment process for the device and it should succeed.

🔍 Special Considerations

Missing authentication tokens can occur when a device loses the token and fails to register with the server.

- Usually this is the result of an uninstall and reinstall, factory reset of the device, data wipe, or in any case the app data is cleared.
- To resolve this issue, reset the authentication token with the steps above.

🎥 Links to Videos and Screenshots

- [Video: Resetting the Authentication Token](#)
- [Screenshots: Resetting the Authentication Token](#)

Manage Groups and Filters

🌐 Overview

Grouping and filtering devices are very useful methods of managing many devices with different locations and purposes. A group contains devices that are dynamically filtered by specific criteria.

The "All" group is a master group containing all the devices enrolled to the domain that are authorized to be viewed by the current user. Devices may be a member of more than one group.

👣 Action Steps

Steps to Create a New Group:

1. From the NDMS Console, select the **Device** icon from the **left navigation menu**.
2. Select the **Groups** icon towards the top right. The **Groups** list will open on the right.
3. Select the desired group or use the ✚ icon to add a new group.
4. Give the **Group name** and add **Group description** (if desired).
5. Add at least one **tag**. More tags may be added by pressing enter.
6. **Group packages** may be added with an agent version greater than 11.5.1.1
7. Select **Confirm** to save the new group or any applicable changes.
8. Selecting the ⋮ will open the actions list that can be completed with the group.

Steps to Create a Filter(s):

1. From the NDMS Console, select the **Device** icon from the **left navigation menu**.
2. Select the **Search** box at the top of the devices list. The filters window will appear.
3. Previously created filters are located under the **Saved Filters** list on the right.
4. To create a new filter, choose the "**And**" / "**Or**" conditions relation.

5. Use the dropdown menus to create your condition. More conditions may be added using the **Add Condition** button.

6. Select the **Save Filter** button.

7. Finish creating your filter by creating a **Filter Name**.

8. You may also select some additional options like **Set as Private**, **Select Color**, and **Select Icon**.

Special Considerations

- There is no limit to the number of groups you can create in an account.

- If a device falls under a filter criterion, it will immediately appear in a group and be applied with all rules and tasks relevant to that group.

- Tags are case sensitive. If using tags, be sure your devices receive the correct tags.

- If using Persistent Groups, be sure to read through the **Persistent Groups and Commands** section.

Links to Videos and Screenshots

- [Video: Manage Groups and Filters](#)
- [Screenshots: Manage Groups and Filters](#)

Remote Screen View and Control

🌐 Overview

Remote control is a very powerful function that makes remote assistance easy and effective.

👣 Action Steps

Steps for Remote Sessions:

1. From the NDMS Console, select the **Device** icon from the **left navigation menu**.
2. From the **Device** list, navigate to and select the device you want to remote control.
3. From the device control panel menu on the right, select **Remote**. A new remote session window will open.
4. Remotely view and control the device according to the supported device environment and conditions below.
5. Close the Remote Session window when finished with the session.

Requesting user confirmation for remote sessions:

1. From the NDMS Console, select the **Domain Settings** menu icon (gear) from the **left navigation menu**.
2. Switch toggle: **Require users' permission for remote control**.
3. Click "**Save**". Users will be prompted to confirm a remote session.

Special Considerations

Controlling or viewing a device is according to the supported device requirement list.

Android:

- ❖ **User Permissions**: Remote view ONLY

- ❖ **System Permissions**: Remote view and Control

- ❖ **Root Permissions**: Remote view and control

Links to Videos and Screenshots

- Video: Launching a remote session
- Screenshot: User Confirmation for Remote Sessions steps

Android Device Settings Repository

🌐 Overview

The **Settings** repository is a toolbox of many device-level settings that can be set on Android devices. The settings are <u>not</u> forced, which means that the local user has the rights to change these settings unless combined with settings that will prevent the user from making changes.

Settings can be applied separately or in bundles by turning "on" or "off" the slider for the desired setting. There are two types of slider toggles, a two-way toggle and three-way.

<u>The three-way toggle</u>:

The "neutral" mode means that this settings item is ignored in this bundle.

The "on" mode means that this settings option will be turned on in this bundle.

The "off" mode means that this settings option will be turned off in this bundle.

<u>The two-way toggle</u>:

The "off" mode means that this settings item is ignored in this bundle.

The "on" mode means that this settings option will be turned on in this bundle and values can be set on it.

Action Steps

Steps for creating a new settings bundle:

1. From the NDMS console, select the **Repositories** icon from the **left navigation menu**.

2. Within the **Repositories** window, select **Device Settings**. This will bring up a window with all previously created device settings bundles.

3. All settings bundles have the same icons for each: **Pick Color**, **Pick Icon**, **Edit**, **Clone**, **Delete** and **Pin to Top**.

4. To create a new settings bundle, select **Add New** at the bottom left of this window.

5. Give the new settings bundle a name then go through various Settings tabs to select the desired settings to be included within the bundle.

   a. Various setting tabs include **Details**, **Wifi**, **Security**, **General**, **APN**, **Wallpaper**, **Certificate**, and **Lock Screen**.

6. Once the desired Settings have been chosen and appropriately activated, select the **Confirm** button to save.

Special Considerations

- Should you want to create a locked-down environment, it is recommended to consider combining "Settings" and "Policy" together.

- The default selection for each of the settings is either "off" (two-way toggle) or neutral (three-way toggle).

Links to Videos and Screenshots

- [Video: Android Settings Repository](#)
- [Screenshots: Android Settings Repository](#)

Overview

The **Various Controls** section will cover several popular **Device Settings** controls including password complexity, disallowing apps to be uninstalled, connectivity options, and setting of device wallpapers.

For this section all these control options can be found in **Device Settings** either when editing a pre-existing device setting bundle or adding a new bundle.

Action Steps

Steps for Password Complexity settings:

1. From the NDMS console, select the **Repositories** icon from the **left navigation menu**.

2. Within the **Repositories** window, select **Device Settings**. This will bring up a window with all previously created device settings bundles.

3. If this is a new device settings bundle, select **Add New**. If a new setting, ensure the setting has a **Name** and **Description**.

4. From the New/Edit Setting window, select the **Security** (shield) icon/tab on the left.

5. Use the toggle(s) and make changes to the desired Password Complexity options you want enabled.

6. Select the **Confirm** button to save your desired setting(s).

Steps for "Disallow Uninstall of Apps" setting:

1. Follow steps 1-3 above to navigate and select the **Device Settings** bundle.

2. From the New/Edit Setting window, select the **General** (gear) icon/tab on the left.

3. Under the **Apps** section within the **General** tab, use the toggle to "turn on" if a user is disallowed from uninstalling applications.

4. Select the **Confirm** button to save your desired setting(s).

Steps for Connectivity settings:

1. Follow steps 1-3 above to navigate and select the **Device Settings** bundle.
2. From the New/Edit Setting window, select the **General** (gear) icon/tab on the left.
3. Scroll down to the **Connectivity** section within the **General** tab.
4. Use the toggle(s) to "turn on" specific settings related to the devices including options like **Ethernet State**, **Wifi State**, and even if users are disallowed from resetting network settings with the **Disallow Network Reset** setting.
5. Select the **Confirm** button to save your desired setting(s).

Steps for Setting Device Wallpapers:

1. Follow steps 1-3 above to navigate and select the **Device Settings** bundle.
2. From the New/Edit Setting window, select the **Wallpaper** (picture) icon/tab on the left.
3. Use the toggle to "turn on" the **Set Device Wallpaper**.
4. Upload the desired Wallpaper file.
5. If you want to stretch the file, use the **Stretch on Screen** toggle.
6. Select the **Confirm** button to save your desired setting(s).

Special Considerations

Multiple Device Settings controls can be added to Device Settings bundles even throughout the various setting tabs. This allows the deploying of controls to be faster and more seamless.

Links to Videos and Screenshots

- Video: Various Controls
- Screenshots: Various Controls

Remote Software Installation

🌐 Overview

Remote software installation can be applied to one or many devices. To install applications remotely, an installation package must first be created/applied from the package repository.

👣 Action Steps

Steps for Remote Software Installation:

1. From the NDMS Console, select the **Repositories** icon from the **left navigation menu**.
2. Select **Packages** from the **Repositories** list.
3. Select either an existing package or select the **Add New** button in the bottom left of the window.
4. For a new package, start by selecting the upload method: **File from URL**, **Upload file**, **Package from Play Store**, **iOS Enterprise Application**
5. Select the installation arguments/parameters.
   a. Android installers do not require arguments.
6. Give the installation package a **Name** and potential **Description**.
   a. Remember descriptions will make it easier for other users to understand what this installation package does.
7. Select whether the installation package is **Set as Private** to be visible only to you.
8. When completed, select the **Confirm** button to save the installation package.

Special Considerations

For package upload method:

1. For **File from URL**: This is URL reachable from the web (HTTP or direct FTP link). This allows storing the installation file anywhere on the web for quick download.
   a. This _must_ be a link to a file, _not_ to the address of Google Play or installation marketplace application.
2. **Upload file**: Option to upload an installation package to the server on your account.
   a. This option will deduct the size of the installation package from your total account server storage space.
3. **Package from the Play Store**: Option will require the application _URL from the Play Store_, to _Select Country_, and _Device Type_.
4. **iOS Enterprise Application**: Option will require the upload method to be a _File from URL_ or _Upload file_.

Supported Installation Package Formats:

- Windows: MSI Windows installer and EXE setup files
- Android: installation packages are APK files.

Existing installation packages can be edited and have their package installation cards edited as well.

Links to Videos and Screenshots

- [Video: Remote Software Installation](#)
- [Screenshots: Remote Software Installation](#)

Installing Packages Directly from Google Play

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🌐 Overview

Installing packages directly from Google Play to one or many devices starts by using some of the same steps from the Remote Software Installation section.

Direct installation is only possible for free apps. Google Play services or even a Google account on the devices you wish to install the apps on is not required.

See Special Considerations regarding app updates for Google Play Store apps.

👣 Action Steps

Steps for Remote Sessions:

1. From the NDMS Console, select the **Repositories** icon from the **left navigation menu**.
2. Select **Packages** from the **Repositories** list.
3. Select the **Add New** button in the bottom left of the window.
4. Select the upload method: **Package from Play Store**
5. Select the **Play Store** link to open the Google Play Store.
   a. If you know the exact name of the APK bundle there is no need to open the Google Play Store.
6. Search Google Play for the desired free app.
7. Copy the URL of the app and paste in the **Copy App URL** line.
8. Confirm the **Country** and **Device Type**.
9. Select **Sync**. Once the sync takes place, the following lines will be displayed with defaulted information: **Repository Name**, **Package Description**, **Package Name**, **Package Version Number**.
   a. You may change the Package Name and Description, if desired.

10. Select **Download APK File**.

11. Select whether the installation package is **Set as Private** to be visible only to you.

12. When completed, select the **Confirm** button to save the installation package.

🔍 Special Considerations

When installing from Google Play, it is important to be aware that updates to these apps will not occur automatically.

Whenever there is an update, you will need to repeat this process and create a new package as you are not actually installing directly from Google Play, but rather the NDMS server.

🎥 Links to Videos and Screenshots

- Video: Installing Packages Directly from Google Play
- Screenshots: Installing Packages Directly from Google Play

🌐 Overview

NDMS can now run OTA (Over-The-Air) updates for devices running at least Android 11. To enable this feature, users **must first install** the latest Boxlight NDMS agent and SCManager apps on the devices prior to pushing any OTA packages.

👣 Action Steps

1. Navigate to https://**your-domain**.glbth.com.
    a. For example, https://**boxlight**.glbth.com. The Boxlight domain would be your domain.
2. Login to your account.
3. Select the **Repositories** button on the left navigation menu.
4. From Repositories, select **OTA**.
5. When the OTA repository window opens, select the **Add new** button at the bottom left.
6. In the New OTA window, enter the **Name** and **Description**.
    a. For easy reference, it is recommended to use the model number for the name.
7. On the **File URL** line, copy and paste the URL for the firmware based on the specific device.
8. On the **File Hash** line, copy and paste the OTA Hash # from the table above.
9. For the **Version** line, it is recommended to use the last two sets of numbers from the URL above.
    a. This signifies date 20230626 (July 26, 2023) and version number.

10. Select **Confirm** to confirm this OTA package creation.

11. These OTA packages can now be sent through NDMS to the desired, appropriate devices.

    a. Remember, the NDMS Agent app and SCManager apps **must be completed prior** to sending OTA packages.

    b. The update process takes about 10 minutes, and the panel will reset twice. **Please do not turn off the panel during this process**.

Special Considerations

- Ensure the latest APK files for both the NDMS agent app and the SCManager app have been downloaded on your local computer.
- Ensure the latest NDMS agent and SCManager apps have been installed on the devices prior to pushing any created OTA firmware packages.
- **FYI: App updates may cause a need to reset the Authentication Token for the devices in NDMS**.
- Ensure the correct OTA package is selected before applying to the desired device(s).

Links to Videos and Screenshots

- [Screenshots: OTA Repository](#)

Installing Apps for All User Profiles

🌐 Overview

When admin employ multiple user profiles on the devices, not all apps may appear for individual profiles. However, NDMS admin users can use groups to push installation packages for the desired apps on the devices. This will ensure all desired apps show for all user profiles.

👣 Action Steps

1. Navigate to https://**your-domain**.glbth.com.
    a. For example, https://**boxlight**.glbth.com. The Boxlight domain would be your domain.
2. Login to your account.
3. Select the **Device** icon on the left navigation menu.
4. Once in the Device list, select the **Groups** button on the top right.
5. Select the desired group or use the ✚ icon to add a new group.
6. Give the **Group name** and add **Group description** (if desired).
7. Add at least one **tag**. More tags may be added by pressing enter.
8. **Group packages** may be added with an agent version greater than 11.5.1.1
9. Select **Confirm** to save the new group or any applicable changes.
10. More initial installation packages may be added later to the group by selecting the ⋮ for that group then selecting **Group Management**.

🔍 Special Considerations

- For "On-the-fly" installation packages for groups/multiple users, select the ⋮ and select **Install Package**. Finish the process by selecting the desired installation package(s) followed by **Apply**.
- Use this group installation method even for single devices that are employing multiple user profiles on the selected devices.
- Remember that groups use tags for identification purposes and those tags are case sensitive.

🎥 Links to Videos and Screenshots

- Screenshots: OTA Updates
  - Install Packages from a Newly Created Group
  - Adding Installation Packages to Pre-Existing Groups

Apply Commands and Operations to Devices

🌐 Overview

One of the main purposes of a device management system is to command and operate the devices. Applying commands to devices can be done on a single device, a group of devices, one or more selected devices that are not in a group, or all available devices at once.

👣 Action Steps

Steps for Applying Commands to a Single Device:

1. From the NDMS Console, select the **Device** icon from the **left navigation menu**.
2. Select the single device you would like to apply the task/command to from the device list. The device control panel window should open.
3. From the list of commands on the right, select the desired command.
   a. When working in a single device, all commands are *immediate and cannot be scheduled*.
   b. Some commands are unique to a 1-to-1 operation, such as "Remote Control", can *only* be started from the device control panel.
4. Common commands may also be applied to a specific device using the ⋮ of that device in the **Device List**.

Steps for Applying Commands to a Group:

1. From the NDMS Console, select the **Device** icon from the **left navigation menu**.
2. Select the **Groups** button on the top right. The **Groups** list will open on the right.
3. Locate the desired group you want to apply the command to and select the ⋮ to open the **Actions** list.
4. Select the desired action from the list and apply it to the group.

Special Considerations

Applying commands to selected devices can be done by selecting the desired devices and using the ⋮ to open the **Actions** list.

Most of the commands that can be applied on a single device can also be applied to a group. Here is a list of group-level commands you can apply on more than one device.

Function	Repository	Ad-Hoc	Comments
Install Package(s)	X		
Send Files	X		
Remote Exec	X		
Workflow	X		
Restart		X	
Wake on LAN		X	
Tags		X	
Policies	X		
Shut Down		X	
Send Message		X	
Sound Siren		X	
Change the Agent Password		X	
Uninstall Package		X	
App Usage Report		X	
New Command (Set Trigger)		X	

Links to Videos and Screenshots

- Video: Apply Commands and Operations to Devices
- Screenshots: Apply Commands and Operations to Devices

Execute Commands

🌐 Overview

To execute a more advanced command, a script, or even apply commands that are not currently available on the NDMS interface, using the Remote Execute Commands Repository is the best option.

This works for both Android and Windows. Also read the Special Considerations section about creating new commands.

👣 Action Steps

Steps for Creating a New Execute Command:

1. From the NDMS Console, select the **Repositories** icon from the **left navigation menu**.
2. Select **Remote Execute** from the **Repositories** list.
3. Select either an existing command bundle or select the **Add New** button in the bottom left of the window.
4. For a new command, start by giving the command a **Name**.
5. Add the main command in the **Command** line.
6. Add any arguments for the command in the **Arguments** line.
7. Select the following options: **Wait for Exit**, **Collect Output**, **and Run with High Privileges**. See Special Considerations for more information.
8. Select whether the execute command is **Set as Private** to be visible only to you.
9. When completed, select the **Confirm** button to save the execute command.

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🔍 Special Considerations

- Since you may run the commands with **high local device privileges**, please use this *only* if you are familiar with writing batches and scripts and you know what you are doing.

- Options for New Execute Commands:

  - **Wait for Exit**: This will indicate if the command result should be sent after the command finishes to run on the remote device or not.

  - **Collect output** – This will indicate if the process standard result output is collected back as part of the command result.

  - **Run with high privileges** – Run the command with higher local device privileges.

Android Command Examples

What will it do?	Command	Arguments	Wait	Collect	High Priv
Disable Google Play Store	pm	disable com.android.vending			X
Get a list of running apps and display result	top	-n1	X	X	X
Open a website using a default browser	am	start -a android.intent.action.VIEW -d https://boxlight.com			

🎥 Links to Videos and Screenshots

- [Video: Execute Commands](Video:%20Execute%20Commands)
- [Screenshots: Execute Commands](Screenshots:%20Execute%20Commands)

Workflow Repository

🌐 Overview

Workflows allow combining of several actions and commands together in one task instead of applying each command/action one by one.

👣 Action Steps

Creating a new Workflow:

1. From the NDMS Console, select the **Repositories** icon from the **left navigation menu**.
2. Select the **Workflow** icon.
3. Select the green "**Add new**" icon in the bottom left corner.
4. Give the following information: **Workflow Name**, **Description**, and use the toggle if this workflow is to be "**Set as private**".
5. See steps below for **Adding Commands**.
6. Select "**Confirm**" to save the new workflow.

Add an action or command to the workflow:

1. From the NDMS Console, select the **Repositories** icon from the **left navigation menu**.
2. Select the **Workflow** icon.
3. Locate the desired workflow and click the **Edit** icon on that Workflow.
4. Select the commands clipboard icon, then "**Add Command**"
   - Choose the Command(s) you want to add to the workflow.
5. "**Confirm**" any changes made to the workflow.

Special Considerations

Some commands or actions will have extra steps to prepare that action/command to be added to the workflow.

- Be sure to complete all steps within adding commands.
- Depending on the action/command, you will need to select confirm/add in these pop-up windows for the action/command.
- Check for any added options within the action/command list.
- Confirm changes to the workflow when complete.

Links to Videos and Screenshots

- [Screenshots: Workflow Repository](#)

Persistent Groups and Commands

🌐 Overview

The NDMS platform has the option to create persistent groups and commands. These are powerful tools for enabling the automation of commands for new devices enrolled in the platform.

Persistent Groups – Groups created to enable a preset of packages that will automatically install on every new device that is added to these persistent groups.

Persistent Commands – Like persistent groups, persistent commands enable the automation of commands (including package installation) to automatically apply on every new device added to the group.

👣 Action Steps

Steps for Creating Persistent Groups:

1. From the NDMS Console, follow the steps for creating a group as found in the **Manage Groups and Filters** section.
2. While creating a new group, utilize the **Tags** feature. Tags are the 2nd tab found in the **Create New Group** / **Edit Existing Group** window.
3. Add a **Tag** labeled "new" or another tag that will help identify the persistent group.
   a. Every new device enrolled in NDMS automatically receives a "new" tag and would be related to the new devices group. This makes creating this persistent group easier for actions like onboarding devices quickly.
   b. See important note in the Special Considerations below.
4. On the 3rd tab, **Packages**, add packages to the group using the **Add Packages** button. See important note in the Special Considerations below.

5. Select the packages you wish to add to this group then select **Update**.

6. Once the tags and packages are added, finalize the group by selecting **Confirm** in the **Create New Group** window.

7. Next time a device is added to the group, the preset packages will be automatically installed.

Steps for Creating Persistent Commands:

1. From the NDMS Console, select the **Devices** icon from the **left navigation menu**.

2. Once in the Device list, select the **Groups** button (top right).

3. When the **Groups** side bar menu opens, click on the ⋮ next to a group to apply a command to that group.

4. From the **left navigation menu**, select the **Commands** icon to be taken to the Commands list.

5. Search for that command that was applied to the group then select the ⋮.

   a. If you cannot find the command easily, use the search function at the top of the list.

6. From this menu, choose the **Persist** option. Confirm your selection in the subsequent prompt window.

7. To stop a command from being persistent, select the ⋮ again then select the **Stop Persistence** option.

   a. The command will go back to a blue status ☑ and will no longer be applied any devices added to the group.

Special Considerations

- If you don't wish to create a new group for onboarding purposes, you can use that default group instead.

- Make note that group packages require an agent with version greater than 11.5.1.1

- Commands applied to group packages will have a blue ✓ versus a gray ✓ in the **Type** column.

- When a **Persistent Command** is activated, the Command Color will change ✓ in the **Type** column.
    - This provides a visual indication that the command is now persistent and will apply to every new device added to this **Persistent Group**.

Links to Videos and Screenshots

- [Screenshots: Persistent Groups and Commands](#)

Create and Apply Triggers

🏠

🌐 Overview

Triggers are used to automate commands and act on events. You can set different events, their thresholds, and selectively apply different triggered events accordingly.

There are three steps needed to complete the triggered event creation:

1. Create the command which will be triggered (Steps specified on [Apply Commands and Operations to Devices](#)).
2. Create the trigger (see Action Steps below).
3. Apply the triggered commands to selected groups (see Action Steps below).

👣 Action Steps

Steps for Create a New Trigger:

1. From the NDMS Console, select the **Repositories** icon from the **left navigation menu**.
2. Select the **Schedule & Trigger** icon.
3. Select either an existing trigger or select the **Add New** button in the bottom left of the window.
4. Give the following information for the new trigger: **Name**, **Description**, and use the toggle if this workflow is to be "**Set as private**".
5. On the Add Trigger tab, select the trigger you want to apply: **Timing**, **Geofencing**, or **Wifi**.
6. Complete the remaining fields based on the trigger selected.
7. Select "**Confirm**" to save the new trigger.

Apply Triggered Commands to Groups:

1. From the NDMS Console, select the **Device** icon from the **left navigation menu**.

2. Select the **Groups** icon towards the top right. The **Groups** list will open on the right.

3. Locate the desired group to apply the triggered command to.

4. Select the ⋮ to bring up the actions options list for the desired group.

5. Locate and select the **Scheduler & Triggers Command** option.

6. Provide a **Name** for your Schedule & Trigger Command.

7. Click the **Select Trigger** button to open the Schedule & Trigger list.

8. Locate and select the appropriate trigger then select the "**Add**" button.

9. Click the **Select Command** button to choose the action you want to complete.

10. Select "**Confirm**" to save the new Schedule & Trigger Command.

Special Considerations

Types of Triggers:

- Timing: Time-based triggers (every X days, every day at X, once a month, etc.)

- Geofencing: Trigger events based on location

- WiFi: Trigger events based on WiFi SSID connection

Links to Videos and Screenshots

- [Screenshots: Create and Apply Triggers](#)

Commands History

🌐 Overview

Commands history allows you to query command results or perhaps manage the ongoing commands. This can be done after applying commands to devices, groups, or even after creating triggered commands.

From the commands list, you can also choose to resend commands, which is very useful in saving time, especially if a command failed on a certain device(s).

👣 Action Steps

Steps for Accessing the Commands History:

1. From the NDMS Console, select the **Commands** icon from the **left navigation menu**.

2. This will open the Commands history list.

3. This list may be sorted based on the various columns or you may search for a particular command using the search function at the top of the list.

4. By selecting any Command line, you can see more in-depth information about the command itself, including whether the command was successful or not. ✷

    a. If a command was not successful, you can click on More Info to see information about the failure reason.

5. By selecting the ⋮, the actions window opens to show the following possible options:

    Stop Command, **Start Command**, **Edit Command**, **Resend Command**, **Resend Command to Failed Devices**, **Delete Command**, and **Persist/Stop Persistence**.

    a. Commands that cannot be used will be grayed out.

    b. If Persistence is enabled, the Stop Persistence button will appear in place of the Persist button.

🔍 Special Considerations

Commands that are applied to groups of devices will show the success/failure of the command for each device allowing a more in-depth analysis.

🎥 Links to Videos and Screenshots

- [Screenshots: Commands History](#)

Ad-Hoc One-Time Session

🌐 Overview

Ad-Hoc sessions were introduced to allow for the management of devices across different accounts and domains. You may temporarily add a device for remote support or remote control without enrolling the device to your account.

Note: The remote management session can be terminated at any time by the **remote user** or by the **admin**.

👣 Action Steps

Steps for Running an Ad-Hoc Session:

User Steps:

1. From the **User** side, have the user open the **NDMS agent**.
2. Select "**Start Ad-Hoc session**" from the menu in the top right.
3. The user will need to send the **Session ID** to the NDMS administrator that will be participating in the Ad-Hoc session.

NDMS Admin Steps:

4. From the NDMS Console, select the **Devices** icon from the **left navigation menu**.
5. Once in the Device list, select the **Ad-Hoc Session** 🔗 button (top right).
6. Enter the **Session ID** code as provided by the user.
7. Select "**Start**" to begin the session.

Special Considerations

- Once the session starts, the user device will be visible in your list just like any other device. You may apply any command, install apps, remote control the device, and so on.

- To end the session, simply click the "Stop session" button on the device dashboard.

Links to Videos and Screenshots

- [Video: Ad-Hoc One-Time Session](#)

- [Screenshots: Ad-Hoc One-Time Session](#)

Boxlight Customer Support

🌐 Overview

The Boxlight Customer Support team cannot actively assist in configuring the Network Device Management System to your specific network and complement of devices. However, the team can assist you with general questions, technical background, and general information related to NDMS.

🔍 Special Considerations

The Boxlight Customer Care Support Team can be reached at 877.696.4646 ext. 1

Boxlight Customer Care Support email: CustomerCare@boxlight.com

Boxlight website: https://boxlight.com/

Appendix A: Videos

🏠

1. [Create and Register a New Account](#) ↰

2. [Adding a Device](#) ↰

3. [Adding a User](#) ↰

4. [Authentication Token](#) ↰

5. [Manage Groups and Filters](#) ↰

6. [Remote Screen View and Control - Launching a Remote Session](#) ↰

7. [Android Device Settings Repository](#) ↰

8. [Various Controls](#) ↰

9. [Remote Software Installation](#) ↰

10. [Install Packages Directly from Google Play](#) ↰

11. [Apply Commands and Operations to Devices](#) ↰

12. [Execute Commands](#) ↰

13. [Ad-Hoc One-Time Session](#) ↰

1. Register a new account

   a) Register a new account
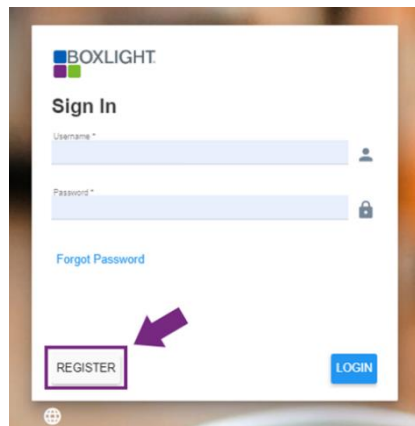
   b) Enter new account information.
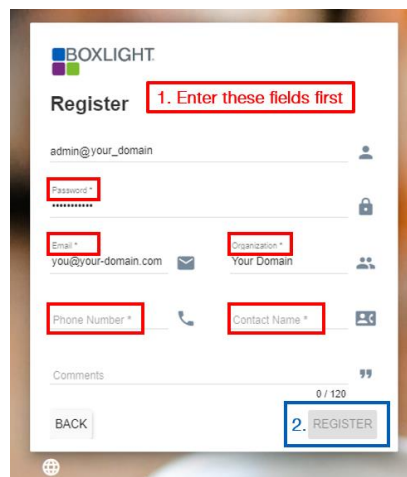
2. NDMS Console Dashboard ↰
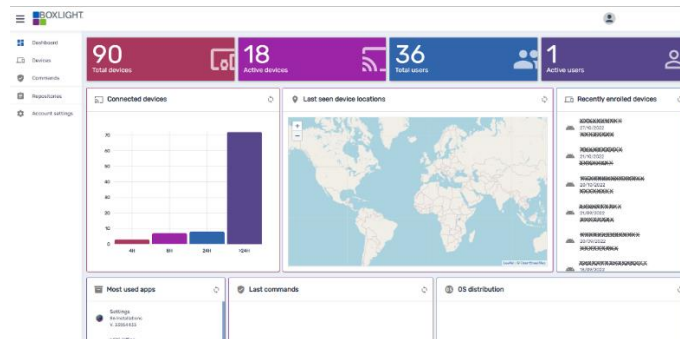
3. Adding a Device ↰

a) NDMS app: Enroll a Device

1. Enter the **NDMS domain name**

2. Accept **Terms and Conditions**

3. Select **Enroll**.

4. **Advanced Wizard link** at the bottom right.
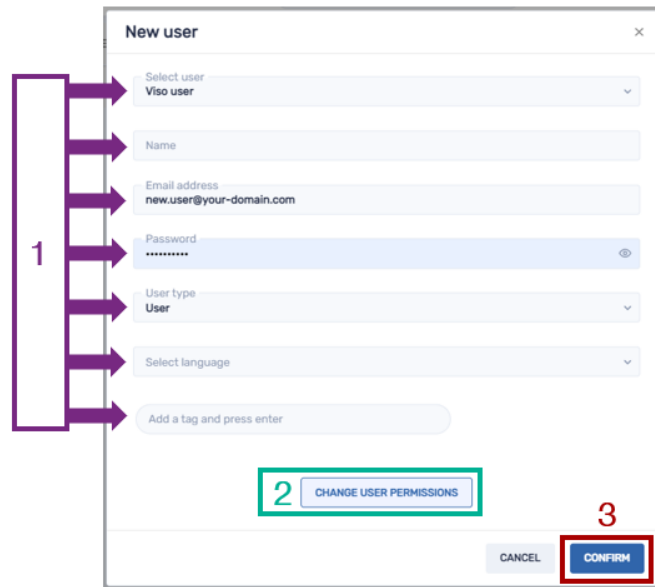
b) Advanced Wizard: Activate and Enroll your Device
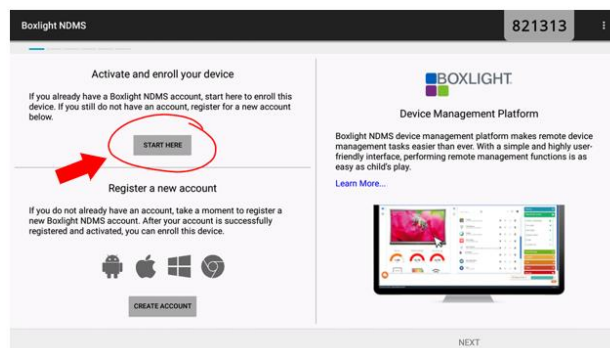
4. Adding Users ↰

a) Adding Users
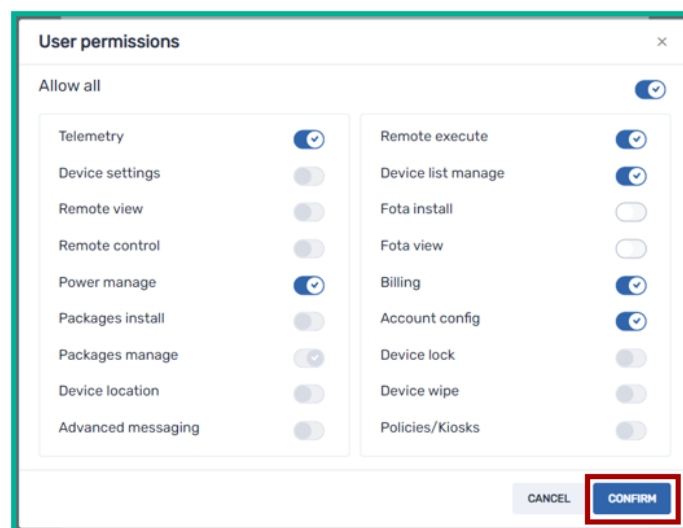
1. **Complete** the required information

2. **Change** User Permissions Pop-Up Window

3. **Confirm** the user creation.

b) Change User Permissions

5. Authentication Token ↰

a) Resetting an Authentication Token
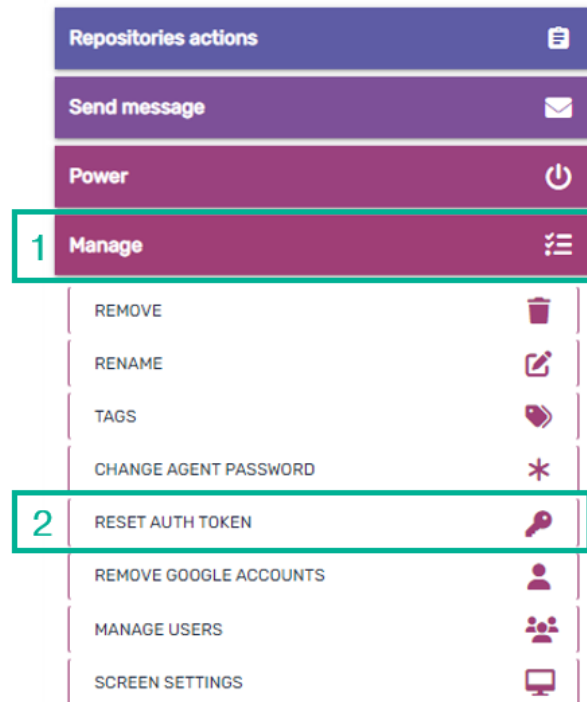
b) Confirm Reset of Authentication Token
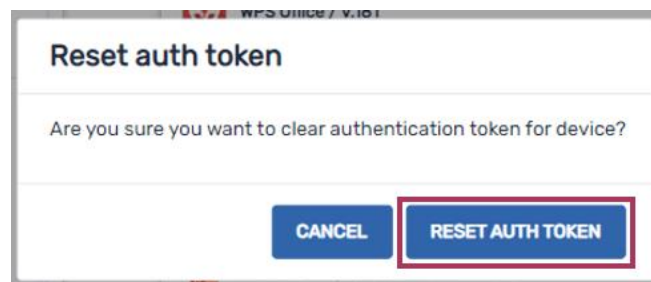
6. Manage Groups and Filters ↰

a) Adding a New Group
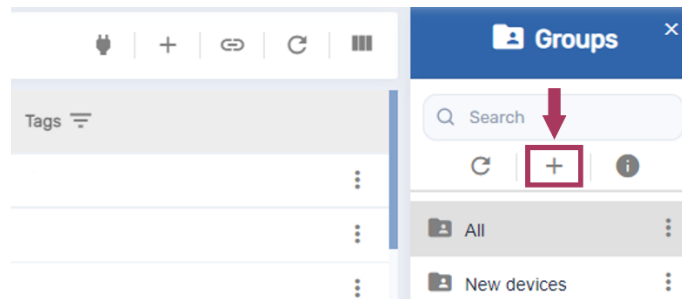
b) Group Actions
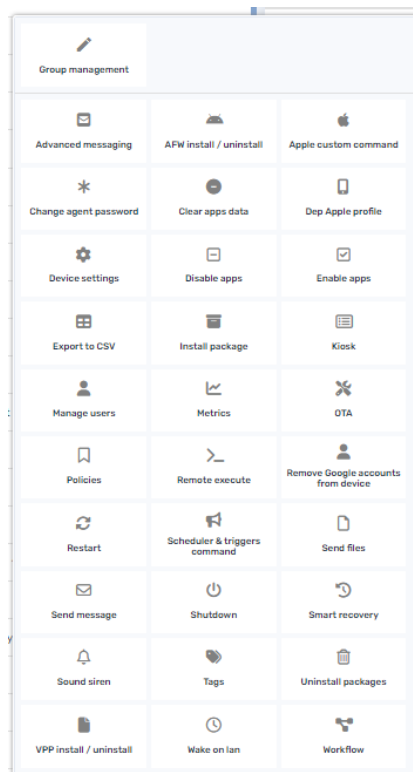
7. Remote Screen View and Control ↰

Requesting user confirmation for remote sessions:

1) **Navigate** to the **domain settings** menu option (gear icon on the left menu)

2) **Switch** toggle: **Require users' permission for remote control**

3) **Click** "Save". Users will be prompted to confirm a remote session.
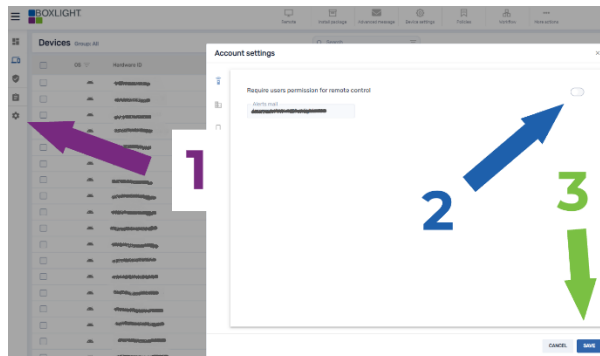
8. Android Device Settings Repository ↰

a) Device Settings bundle icons
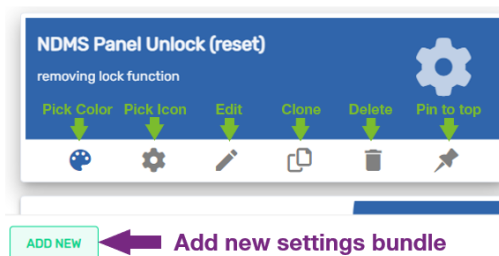
b) Device Settings Create New bundle tabs
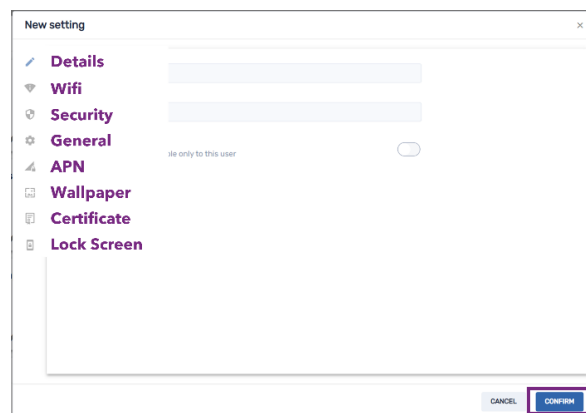
9. Various Controls ↰

a) Password Complexity under **Security** tab in **Device Settings**.

1) **Security** Tab (**1**), Use toggle(s) for desired option(s) (**2**); Change values as desired (**3**).
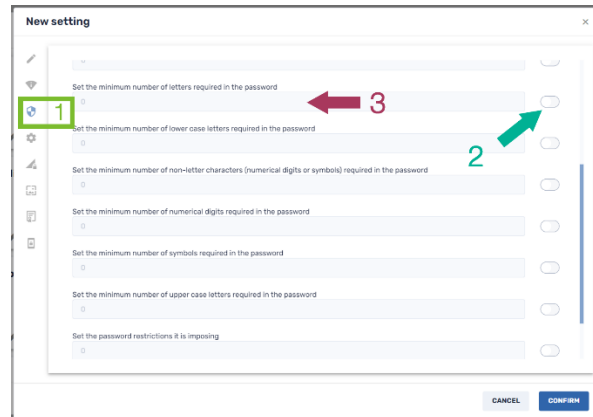
b) "**Disallow Uninstall Apps**" setting: Turn toggle to "**on**" position.
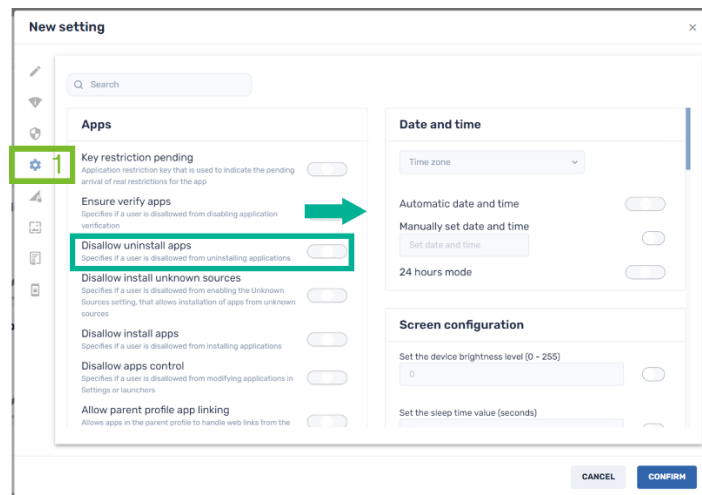
c) Connectivity Settings under "**General**" tab in **Device Settings**.
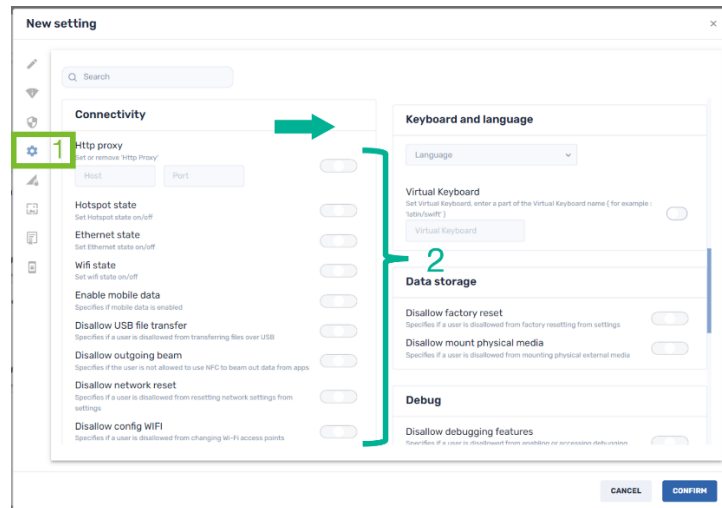
d) Setting Device Wallpapers under **Wallpaper** tab in **Device Settings**.

2) Select **Wallpaper** tab (**1**), turn toggle "**on**" for **Set Device Wallpaper** (**2**), Select the desired wallpaper **file** (**3**), and turn toggle "**on**" for **Stretch on Screen** (**4**), if desired.

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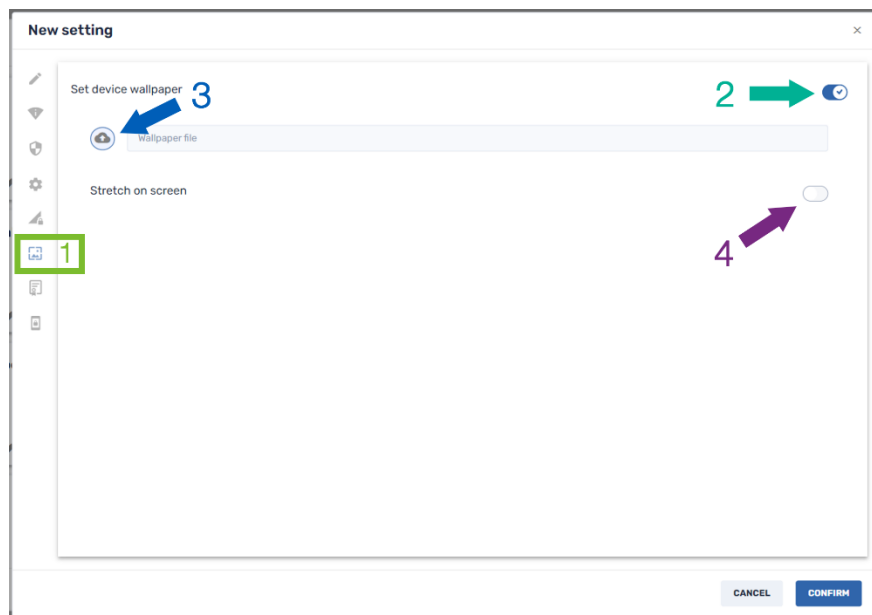
10. Remote Software Installation ↰

a) Remote Software Installation Create New Package
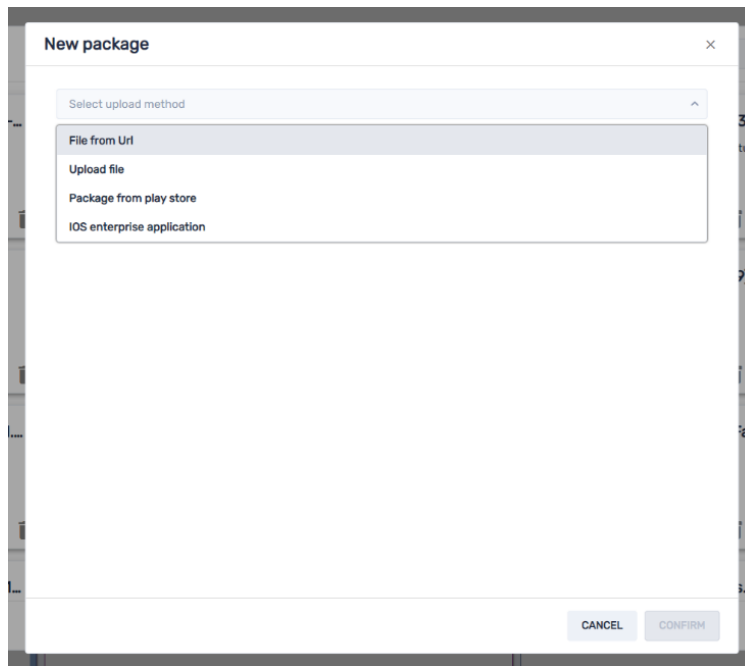
b) Remote Software Installation package icons
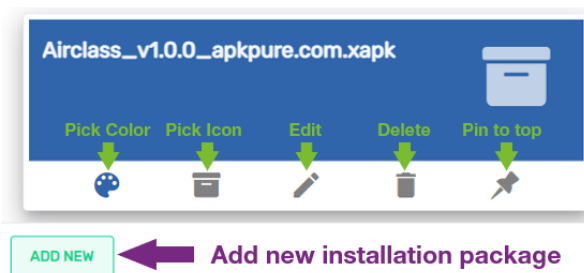
11. Install Packages Directly from Google Play ↰

New Install Package directly from Google Play Store

1) Select the upload method: **Package from Play Store**

2) Select the **Play Store link** to open the Google Play Store.

3) Copy the URL of the app and paste in the **Copy App URL** line.

4) Confirm the **Country** and **Device Type**.

5) Select **Sync**.

6) The following lines will be displayed with defaulted information: **Repository Name**, **Package Description**, **Package Name**, **Package Version Number**.

7) Select **Download APK File**.

8) When completed, select the **Confirm** button to save the installation package.

12. OTA (Over-The-Air) Updates ↰

OTA Repository

2) From Repositories, select **OTA**.
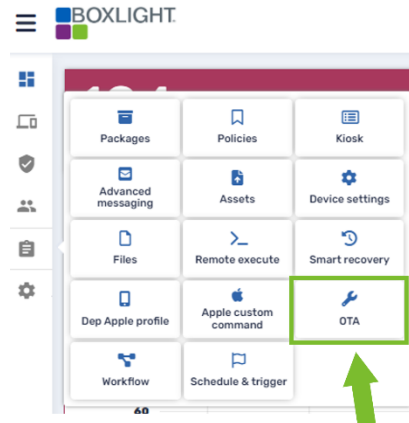
4) In the New OTA window, enter the **Name** and **Description**.

5) On the **File URL** line, copy and paste the URL for the firmware based on the specific screen size.

6) On the **File Hash** line, copy and paste the OTA Hash # from the table above.

7) For the **Version** line, it is recommended to use the last two sets of numbers from the URL above.

8) Select **Confirm** to confirm this OTA package creation.
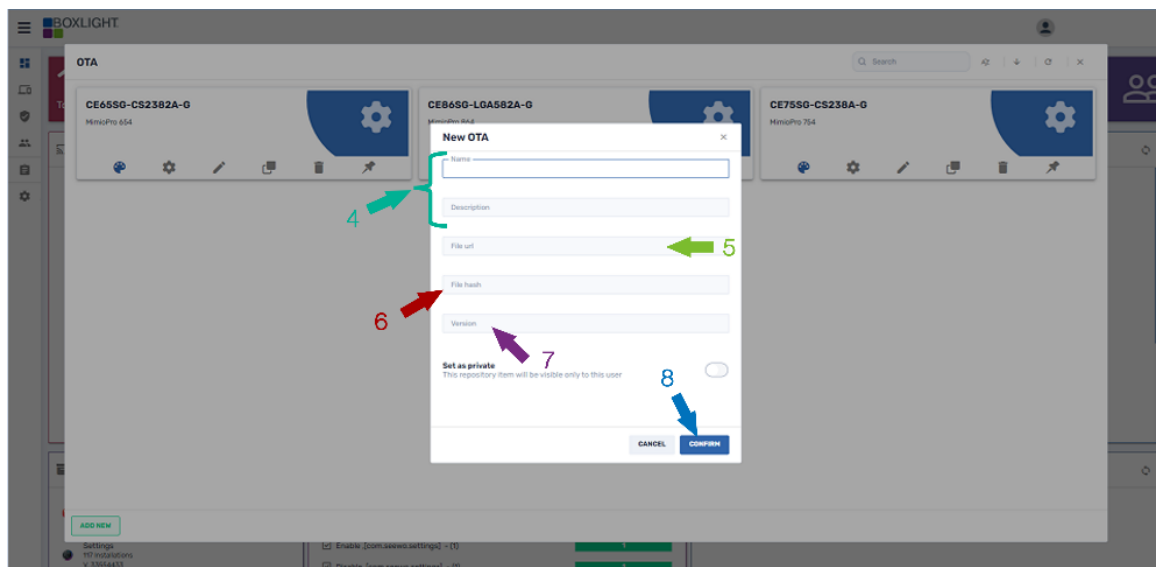
13. App Installation for Multiple User Profiles ↰

Install Packages from a Newly Created Group

From Groups, select the ✚ icon to add a new group.
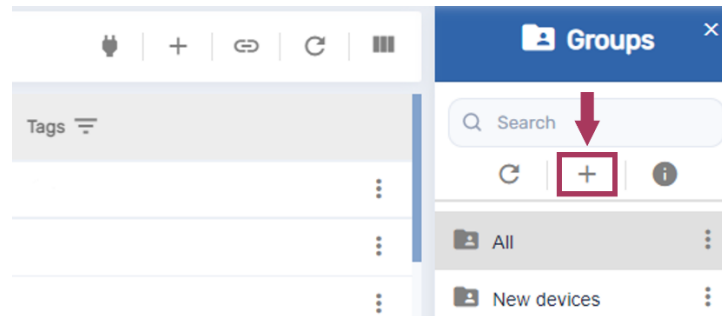
a) From the **Packages** (**1**) tab in the New Group window, select the **Add Packages** button (**2**).

b) Select the desired packages to be installed.

c) Select the **Add** button to confirm the installation packages.

d) Select **Save** (**3**) to finalize this group creation.

Adding Installation Packages to Pre-Existing Groups

3) In the Devices window, select the **Groups** button.

4) To add installation packages to pre-existing groups, select the $\vdots$ of the pre-existing group and then select **Group Management**.

5) Follow **steps a-d** above.
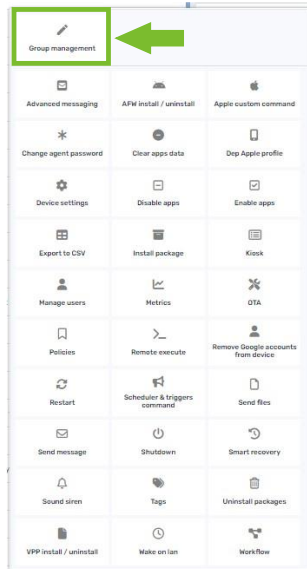
5) To add installation packages "on-the-fly" to pre-existing groups, select **Install Packages** from the $\vdots$ of the pre-existing group.
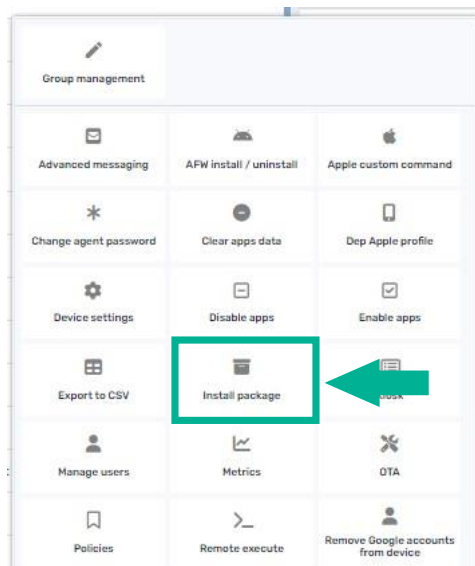
14. Apply Commands and Operations to Devices ↰

a) Single Device Control Panel Window
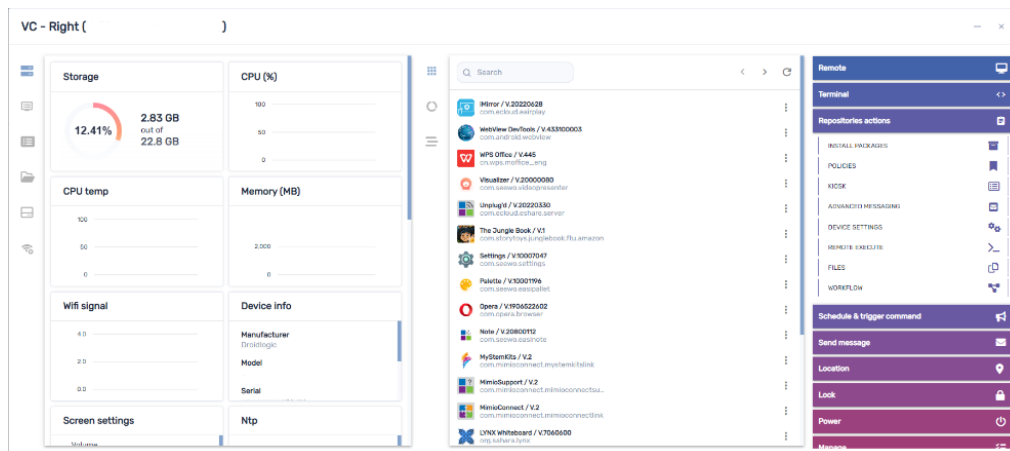
b) Single Device Command Actions
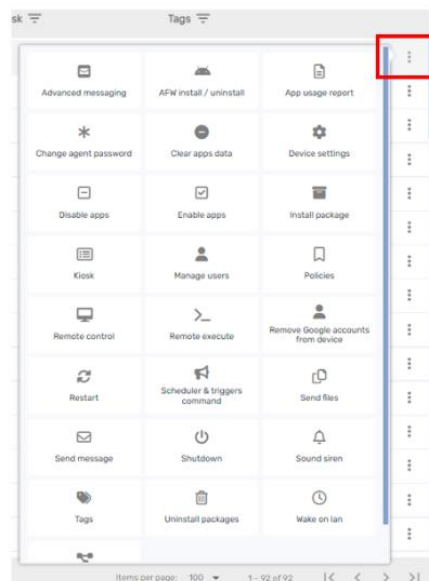
c) Applying Group Commands
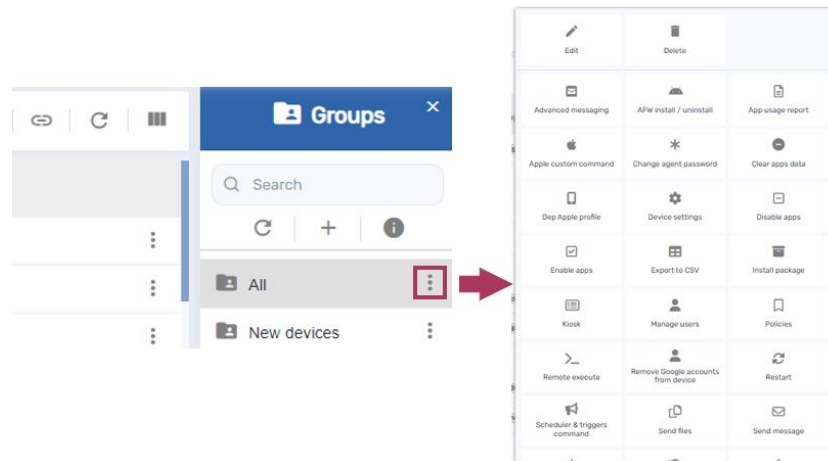
15. Execute Commands

Create New Execute Command

16. Workflow Repository ↰

a) Navigation to Repositories and Workflows

<u>Navigating to the workflows list from the repositories' menu</u>:

1. **Navigate** to the **repositories** menu option (clipboard icon on the left menu)

2. **Click** "Workflow". Will launch the workflow repositories.
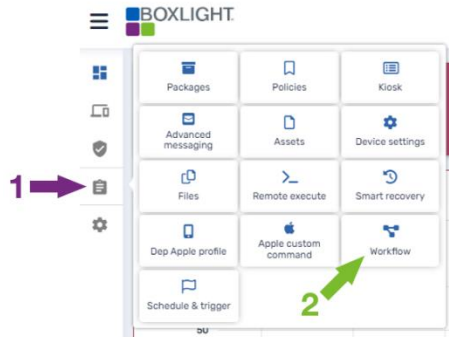
b) Workflow icons
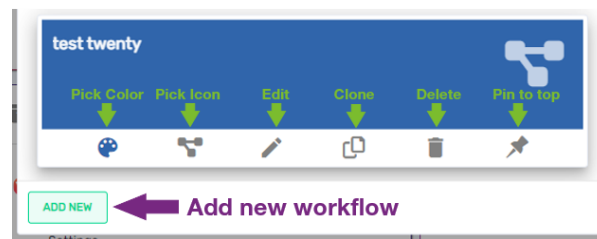
17. Persistent Groups and Commands ↰

a) Start Persist Command
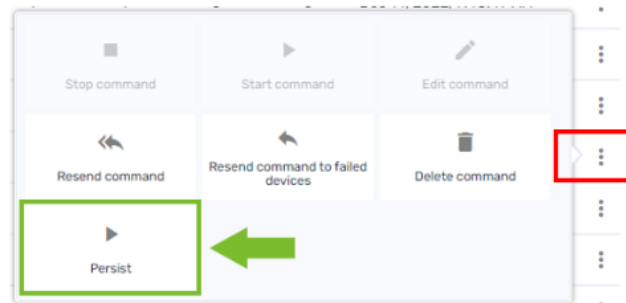
b) Stop Persistence Command

c) Command Type

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18. Create and Apply Triggers

a) Trigger Icons / Create New
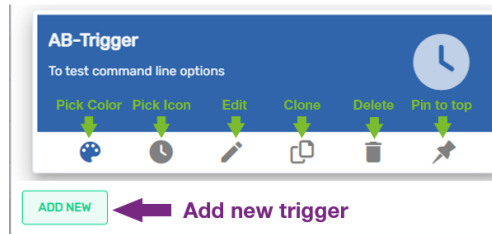
b) Schedule & Trigger Command

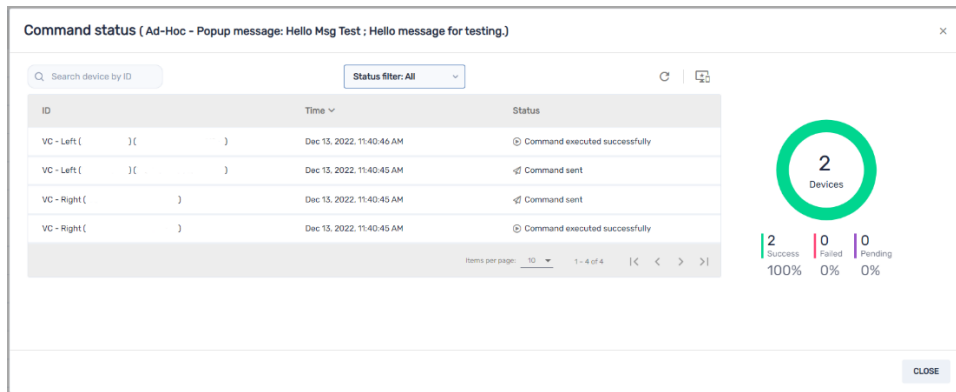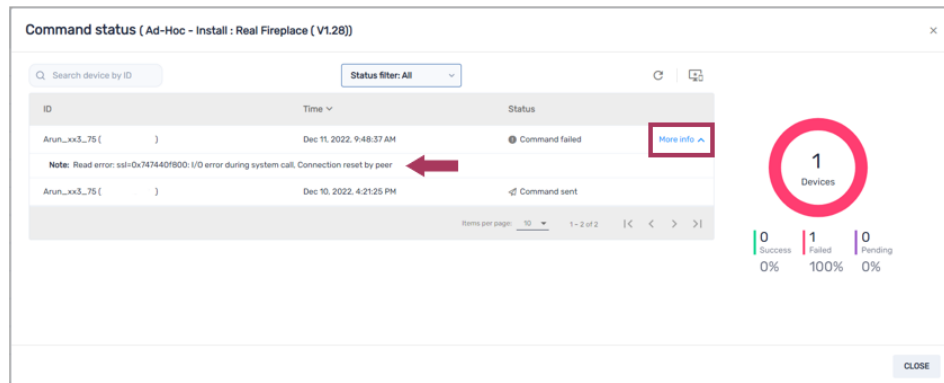## 19. Commands History ↩
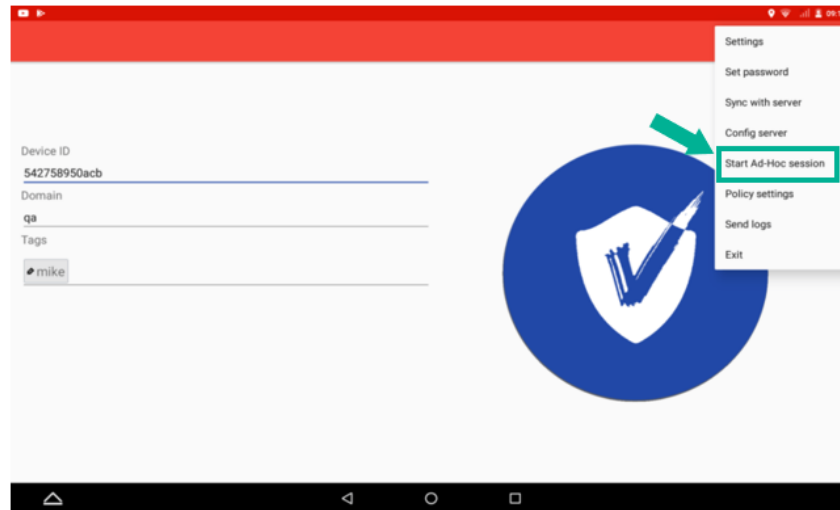
Command History Windows

Success:

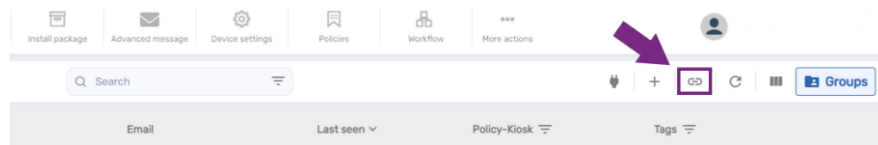Failure: (information note of failure under More Info)

20. Ad-Hoc One-Time Session ↰

a)   Start an Ad-Hoc One-Time Session (User side)

b)   Start an Ad-Hoc One-Time Session (NDMS Admin side)

Network Device Management System Guide

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