

ADVANTECH

Embedded
Design-In Forum

ePaper Introduction



AE Homer Wang

Agenda

Outline

EPD Solution Architecture

ePaper Display advantage

Advantech's EPD solution

EPD-230,EPD-332 Network Topology

Set up steps

ePaper Solution Suites Powered by DeviceOn/ePaper

Accelerating Your ePaper Implementation with Centralized Management



Inventory Management

Production Cart

Clinic Information Board

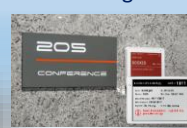
Bedside Card

Instruction Signage

Scheduling Card

Bus Stop

Smart Lighting



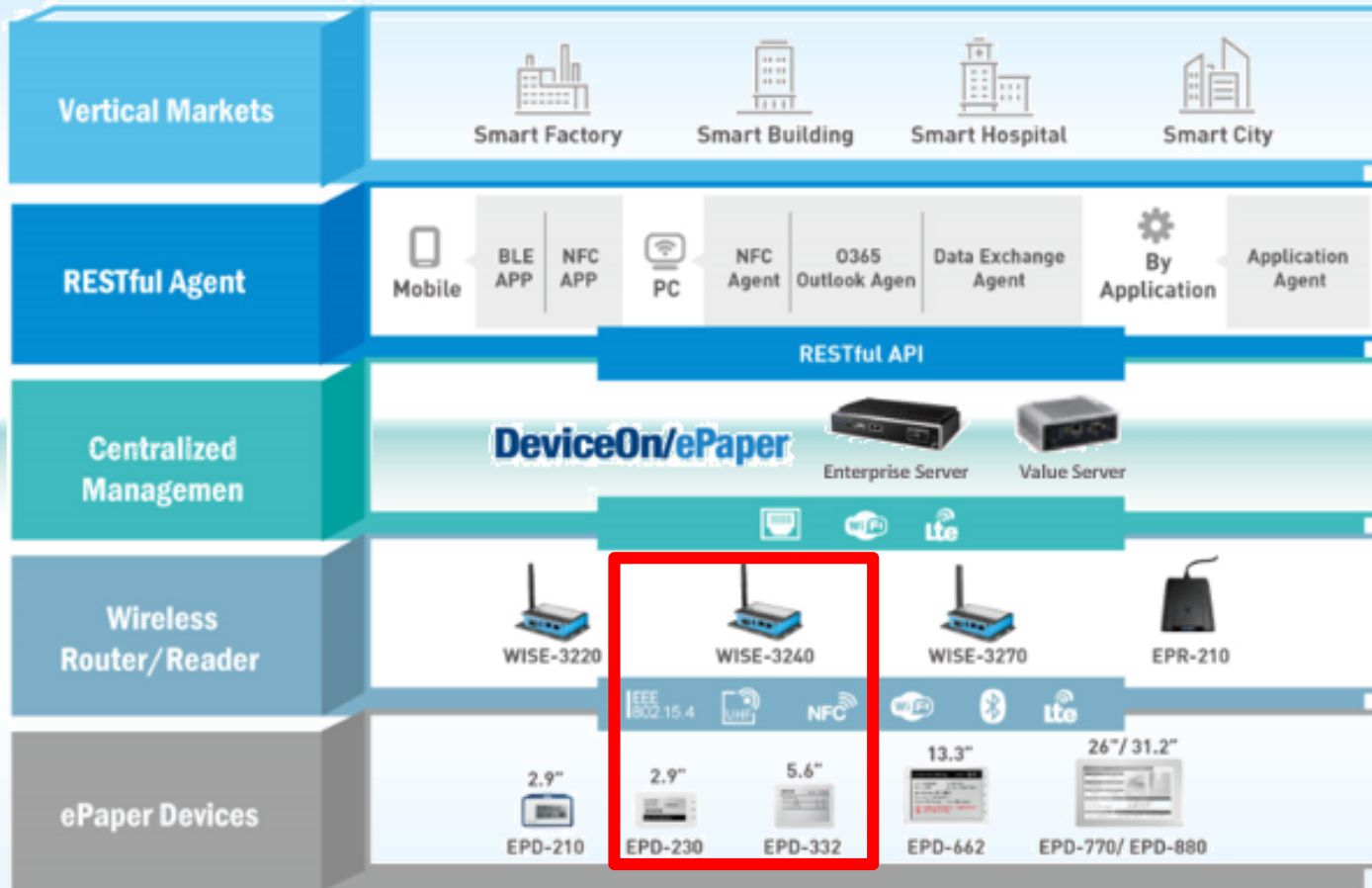
Smart Factory

Smart Hospital

Smart Building

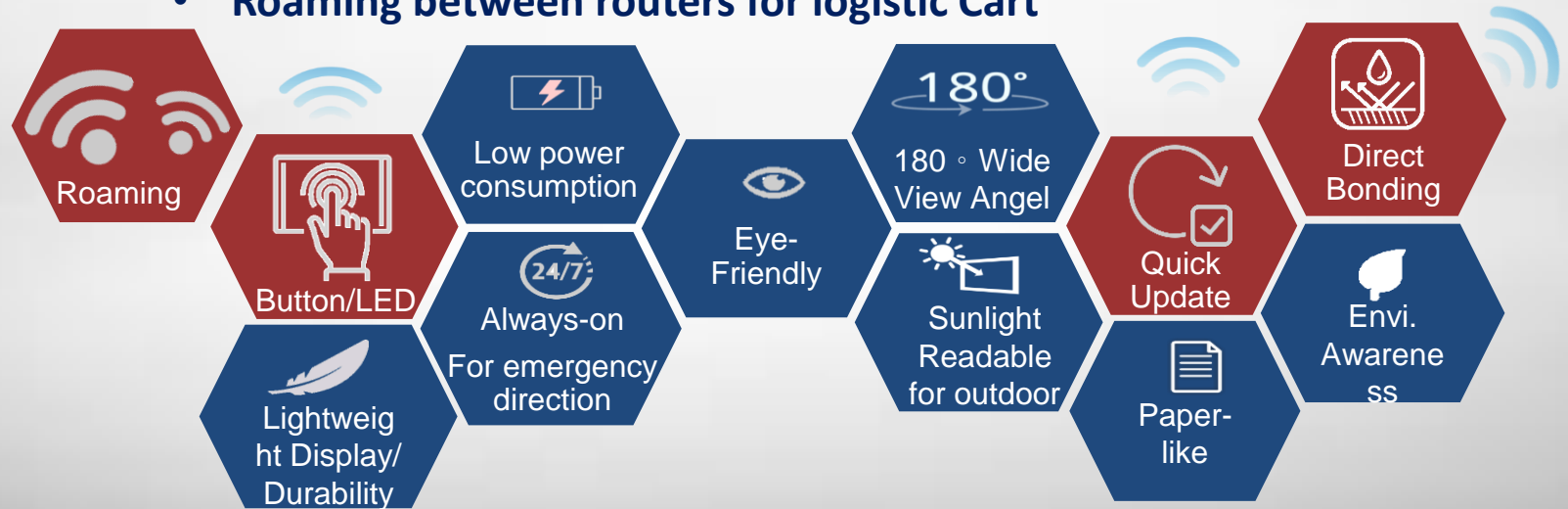
Smart City

EPD Solution Suite Architecture

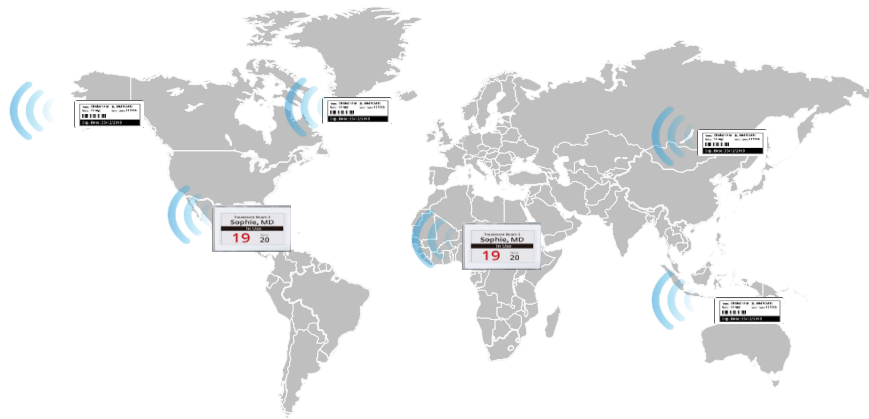
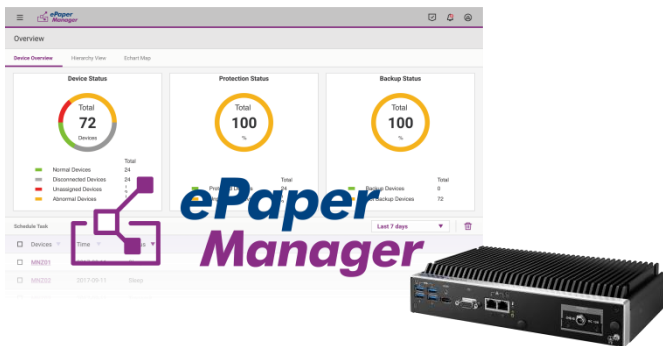


Advantech Wireless EPD Series Solution

- Strong Protection via IK and IP Mechanical Design
- Direct Bond to avoid the moisture and refraction
- Provide latest Instruction and warning to field operator
- Multi-button, LED and Page for more interaction
- Roaming between routers for logistic Cart



Content Management Software



Device Management

- Device monitoring
- Tag battery alert
- Tag status report
- Remote control

Image Generator

- Generate image file(full and partial) and preview
- Image file transform to system format and zip
- Provide API for tag image update

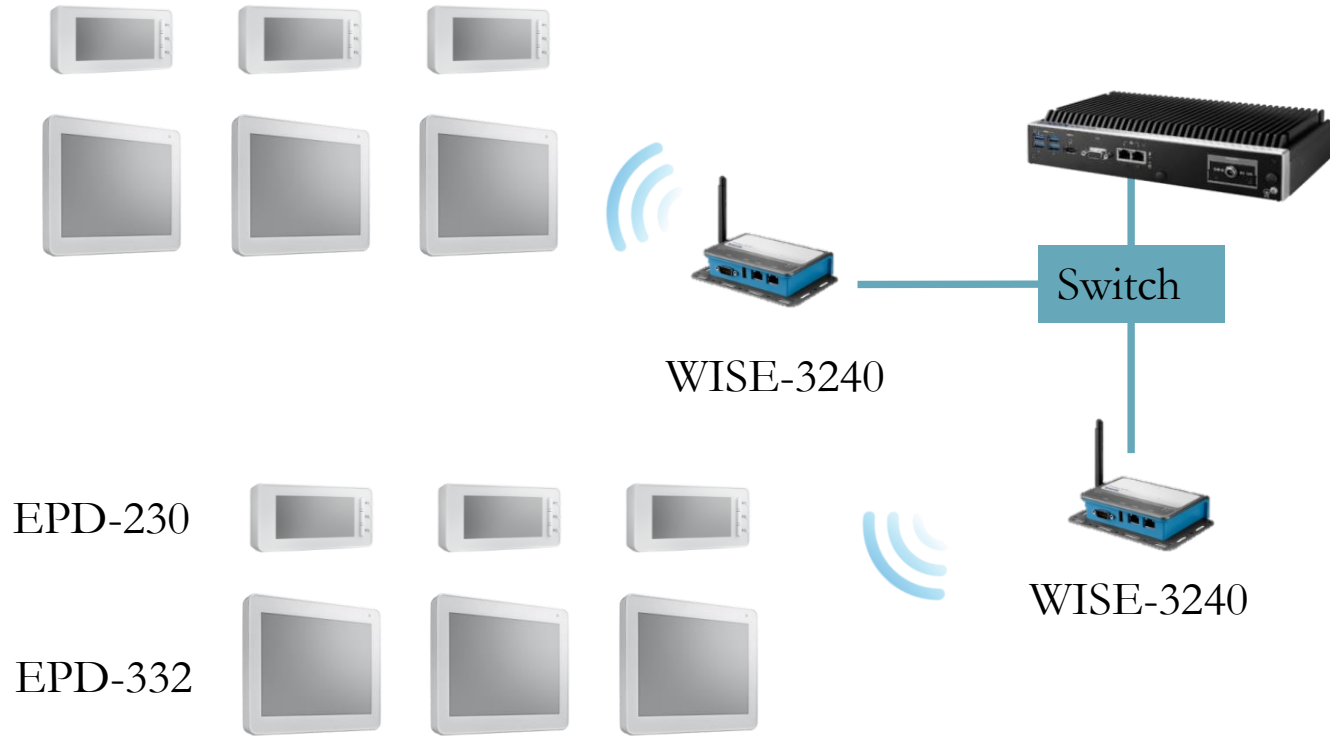
Account Management

- Account role
- Permission for account and role/group

Service Management

- FTP: FW/image to device
- Execute action e.g. tag image update: schedule/image generating

EPD-230,332 Network Topology



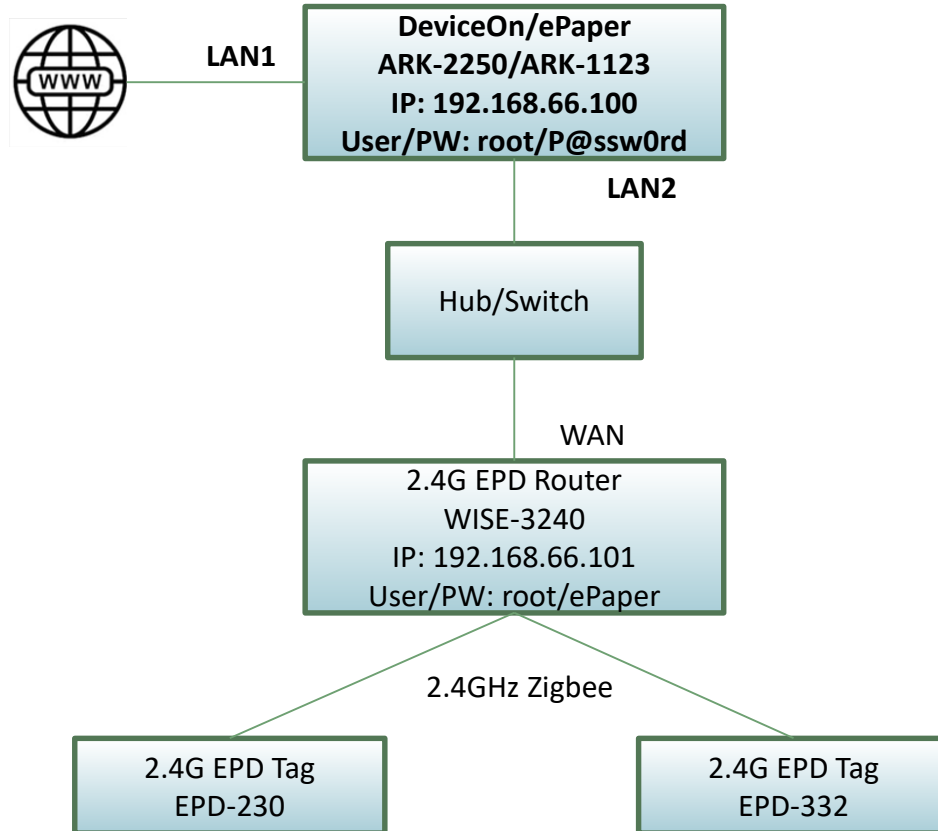
Agenda

- **Preparation**
 - Hardware Equipment
 - Network Architecture
- **Tag Devices Deployment**
 - EPD system setting
- **Image Generation**
 - Template generation
 - Data Binding
- **Refresh Tag Devices**
 - Image Refresh /Transmit (Device,Group)
- **Firmware upgrade**
- **Resful API & SampleCode**

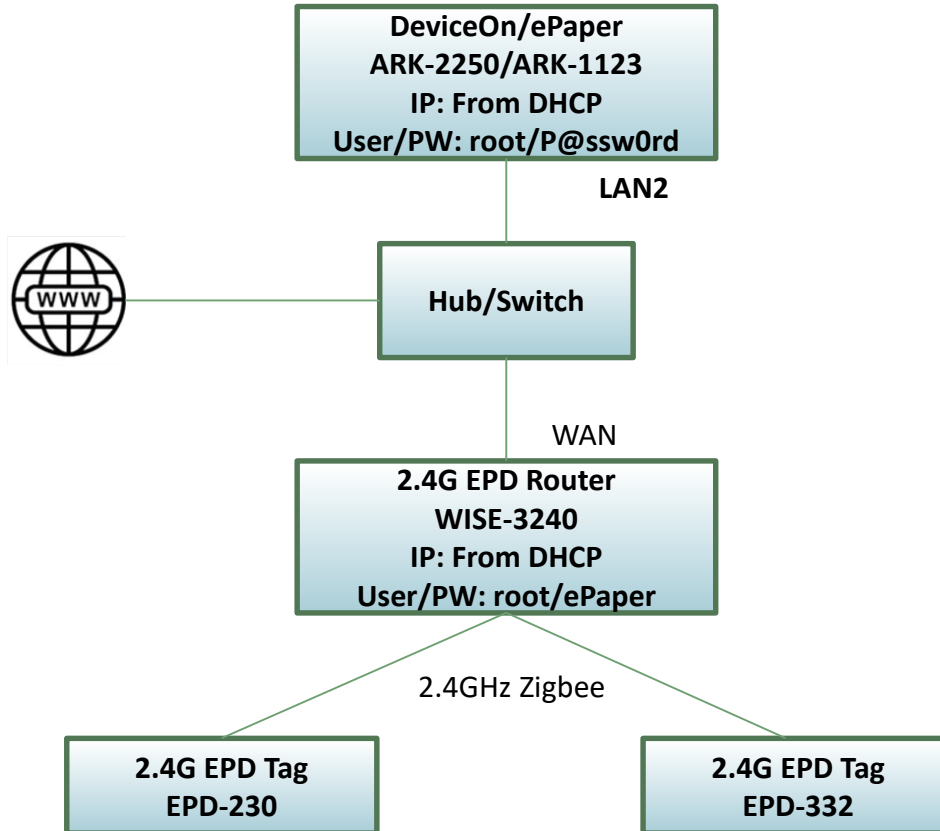
Preparation- Hardware Equipment

- EPD-230 x1, EPD-332 x1
- WISE-3240
- ARK-1123H ePaper Manager Server x1
- WiFi Hub x1

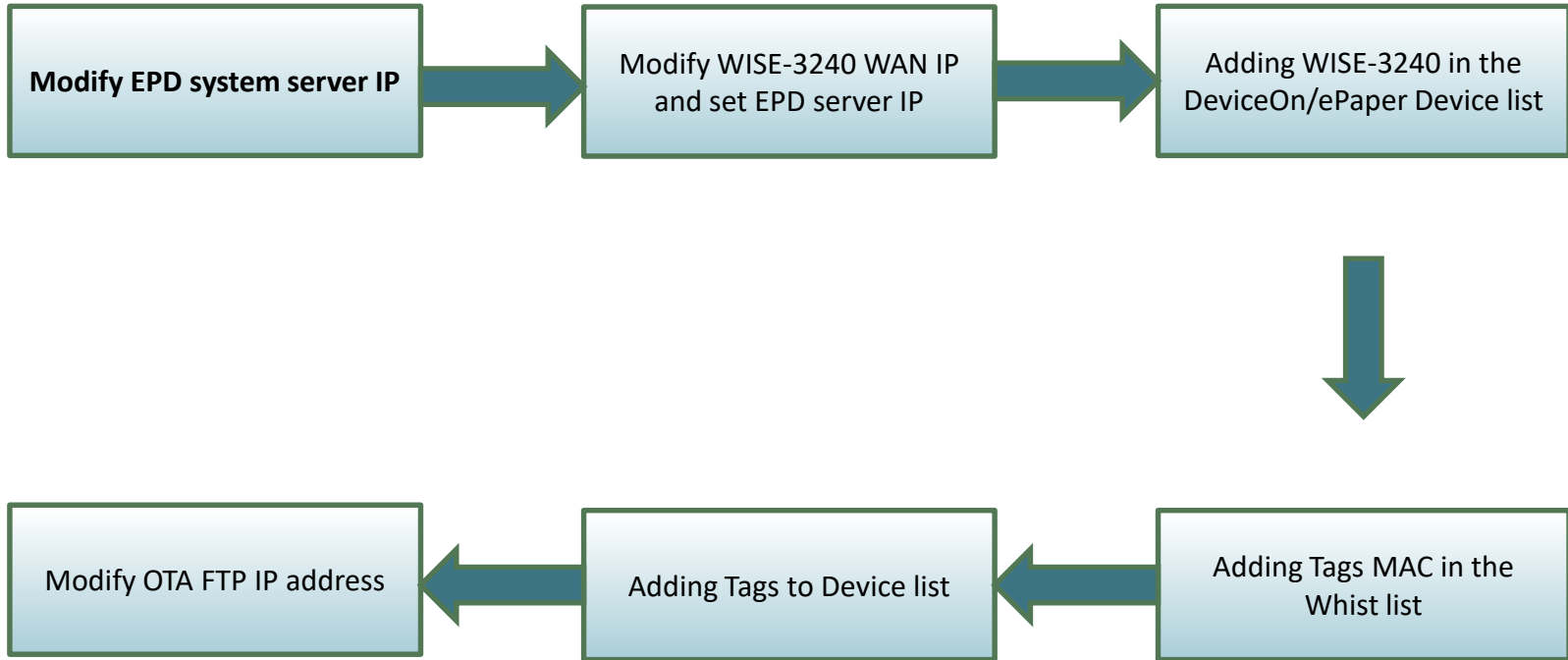
EPD DemoKit's Network Architecture1



EPD DemoKit's Network Architecture2



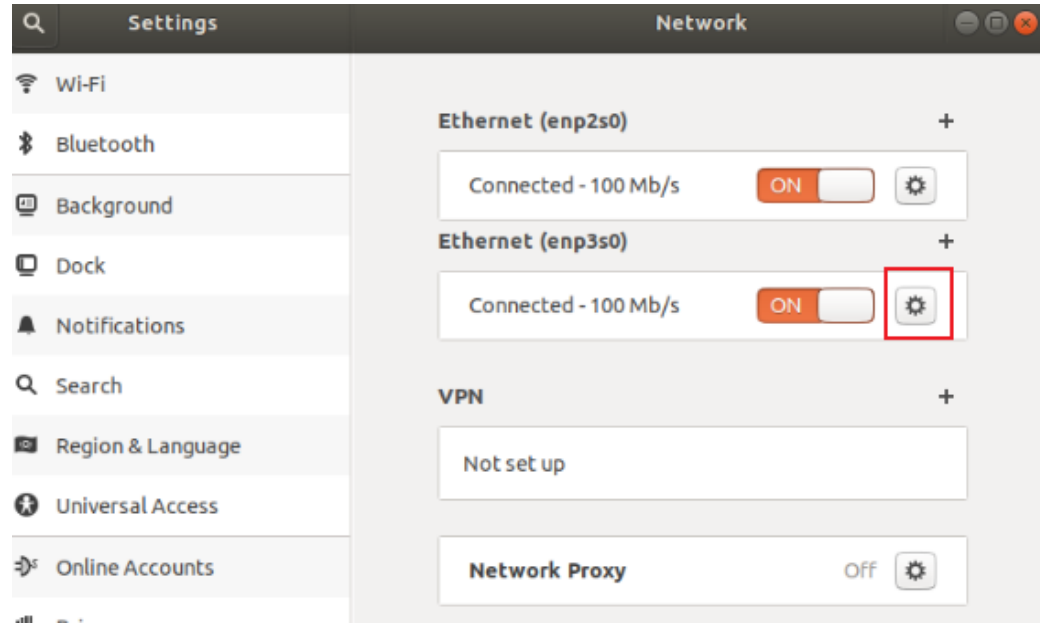
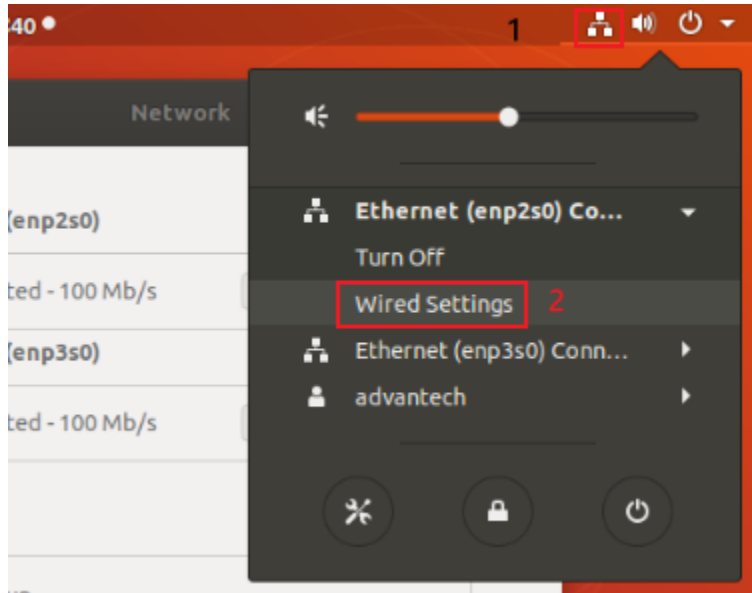
EPD System setting workflow



EPD system IP setting

Account: advantech

Password: P@ssw0rd

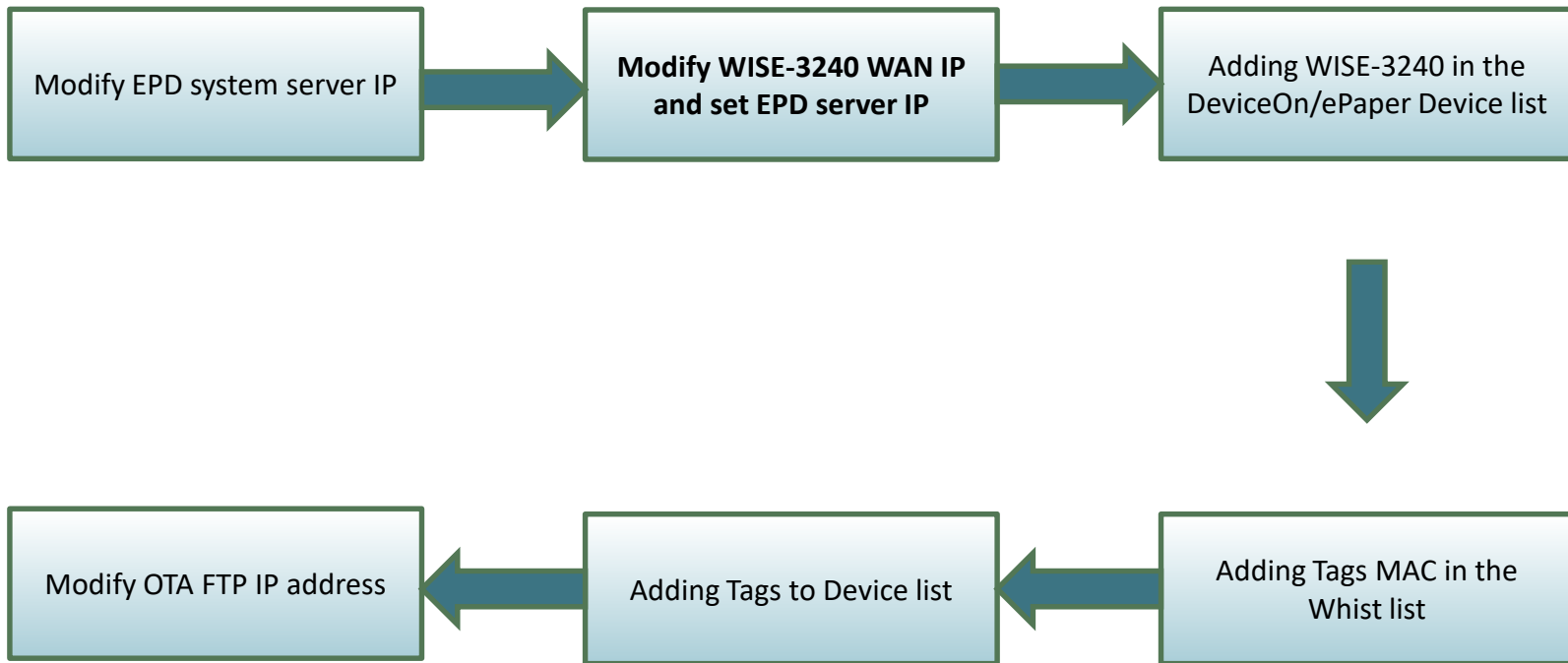


EPD system IP setting

The screenshot shows a configuration window titled "Wired" with tabs for "Details", "Identity", "IPv4", "IPv6", and "Security". The "IPv4" tab is selected and highlighted with a red box. Under "IPv4 Method", the "Manual" radio button is selected. The "Addresses" section contains a table with two rows. The first row is highlighted with a red box and contains the IP address "192.168.66.100" and netmask "255.255.255.0". The "DNS" section at the bottom has an "Automatic" toggle switch that is turned "ON".

Address	Netmask	Gateway
192.168.66.100	255.255.255.0	

EPD System setting workflow

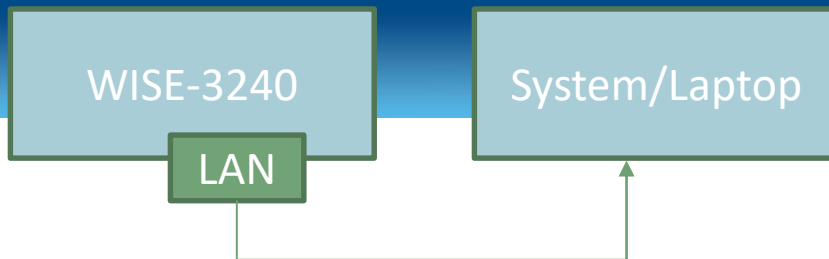


Login WISE-3240

IP: 192.168.1.1

Account: root

Password: ePaper



Browser address bar: 192.168.1.1/cgi-bin/luci

ADVANTECH

Authorization Required

Please enter your username and password.

Username:

Password:

Browser address bar: 192.168.1.1/cgi-bin/luci/stok=...

ADVANTECH Status System Security Network ePaper Manager Logout **AUTO REFRESH ON**

WAN LAN

Network menu: Ethernet (highlighted), Wifi, Diagnostics

Interfaces

Interface Overview

Network	Status	Actions
LAN br-lan	Uptime: 25d 5h 54m 57s MAC-Address: 74:FE:48:55:69:C8 RX: 1.29 MB (13517 Pkts.) TX: 1.57 MB (11802 Pkts.) IPv4: 192.168.1.1/24	<input type="button" value="Connect"/> <input type="button" value="Stop"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>
WAN eth0	Uptime: 25d 5h 54m 57s MAC-Address: 74:FE:48:55:69:C9 RX: 1.50 GB (4329781 Pkts.) TX: 602.95 MB (3840117 Pkts.) IPv4: 192.168.66.101/24	<input type="button" value="Connect"/> <input type="button" value="Stop"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>

WISE-3240 WAN Port setting


← → ↻ 不安全 | 192.168.1.1/cgi-bin/luci;/stok=... ☆

ADVANTECH Status ▾ System ▾ Security ▾ Network ▾ ePaper Manager ▾ Logout **AUTO REFRESH ON**

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You can also use VLAN notation INTERFACE.VLANNR (e.g.: eth0.1).

Common Configuration

General Setup **Advanced Settings** Physical Settings Firewall Settings

Status	 eth0	Uptime: 25d 5h 57m 33s MAC-Address: 74:FE:48:55:69:C9 RX: 1.51 GB (4330071 Pkts.) TX: 603.01 MB (3840409 Pkts.) IPv4: 192.168.66.101/24
--------	--	--

Protocol

IPv4 address

IPv4 netmask

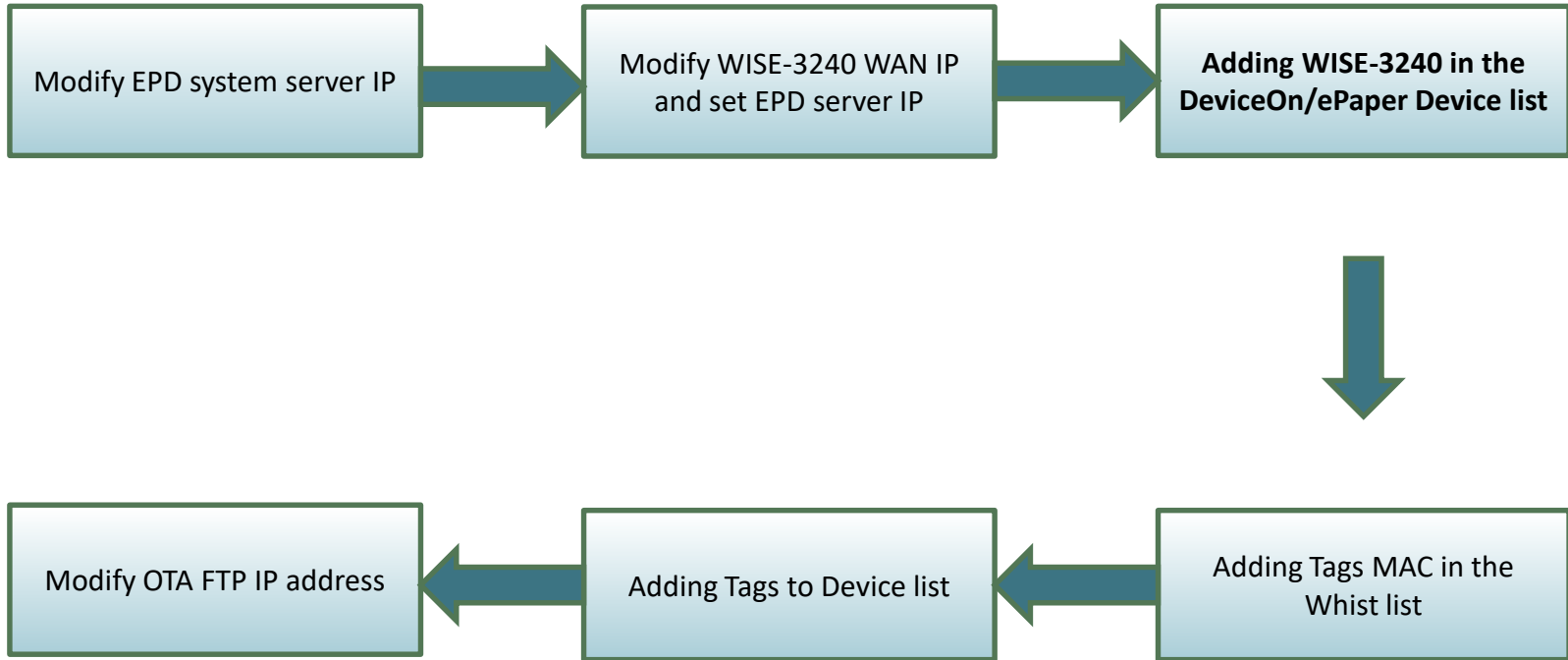
Set ePaper Manager server IP

The screenshot shows the Advantech ePaper Manager web interface. At the top, there is a navigation bar with the Advantech logo and menu items: Status, System, Security, Network, ePaper Manager, and Logout. Below the navigation bar, the page title is "ePaper Manager" with a subtitle "User can configure IP address connect to ePaper Manager server." A dropdown menu is open under "ePaper Manager", showing "EPD Hub Configuration" (marked with a red box and "1.") and "EPD Deployment".

The "Configuration" section contains a "Server IP" label and a text input field containing "192.168.66.100" (marked with a red box and "2.").

At the bottom right, there are three buttons: "Save & Apply" (marked with a red box and "3."), "Save", and "Reset".

EPD System setting workflow

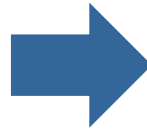
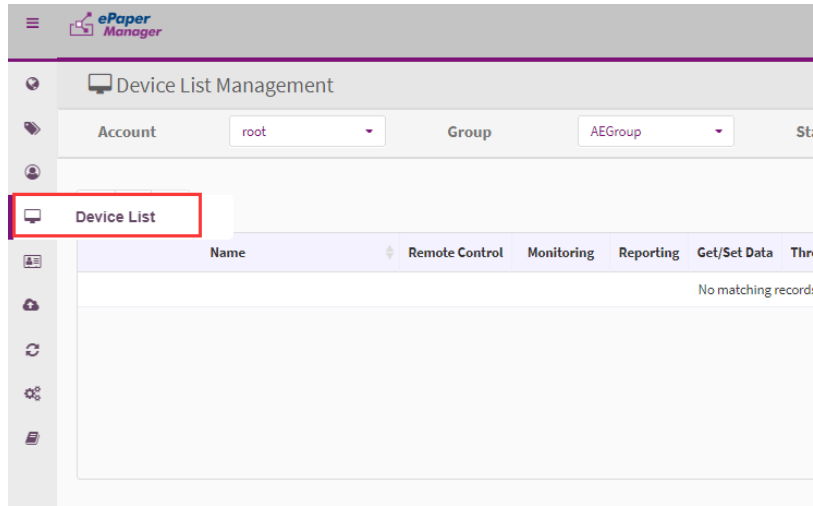


Router Devices Deployment- Add Router

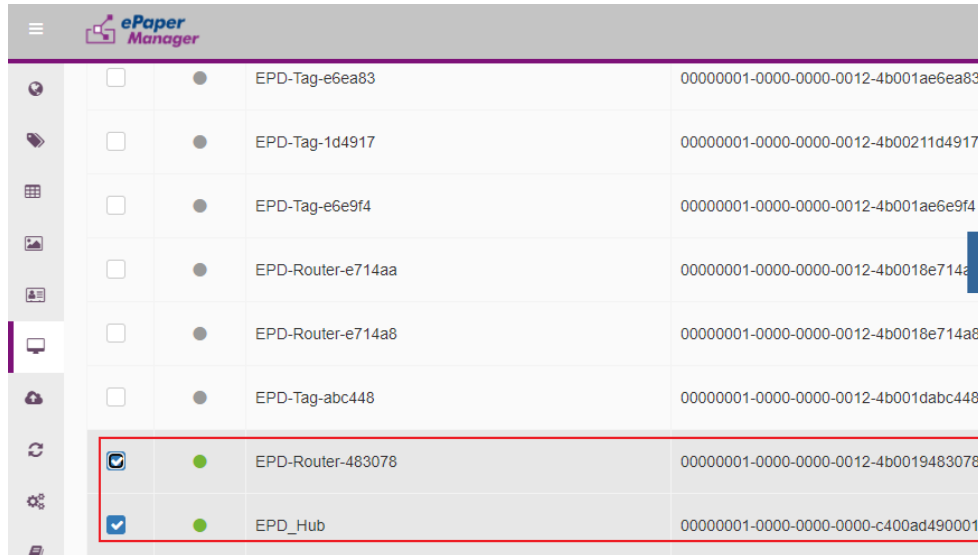
Open the web browser and modify the URL to 127.0.0.1:8080 and you will see the ePaper Manager web. The login information is as below:

Account: root

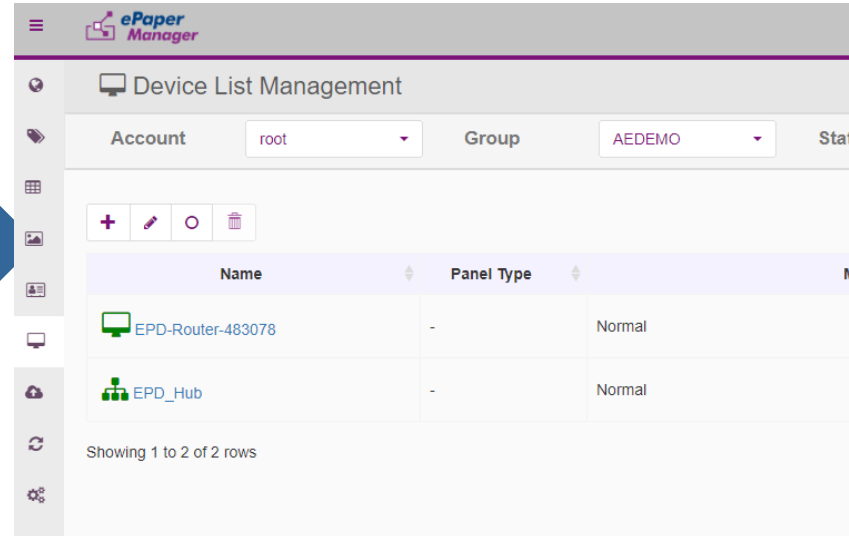
Password: P@ssw0rd



Router Devices Deployment- Add Router



<input type="checkbox"/>	<input type="checkbox"/>	●	EPD-Tag-e6ea83	00000001-0000-0000-0012-4b001ae6ea83
<input type="checkbox"/>	<input type="checkbox"/>	●	EPD-Tag-1d4917	00000001-0000-0000-0012-4b00211d4917
<input type="checkbox"/>	<input type="checkbox"/>	●	EPD-Tag-e6e9f4	00000001-0000-0000-0012-4b001ae6e9f4
<input type="checkbox"/>	<input type="checkbox"/>	●	EPD-Router-e714aa	00000001-0000-0000-0012-4b0018e714aa
<input type="checkbox"/>	<input type="checkbox"/>	●	EPD-Router-e714a8	00000001-0000-0000-0012-4b0018e714a8
<input type="checkbox"/>	<input type="checkbox"/>	●	EPD-Tag-abc448	00000001-0000-0000-0012-4b001dabc448
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	●	EPD-Router-483078	00000001-0000-0000-0012-4b0019483078
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	●	EPD_Hub	00000001-0000-0000-0000-c400ad490001



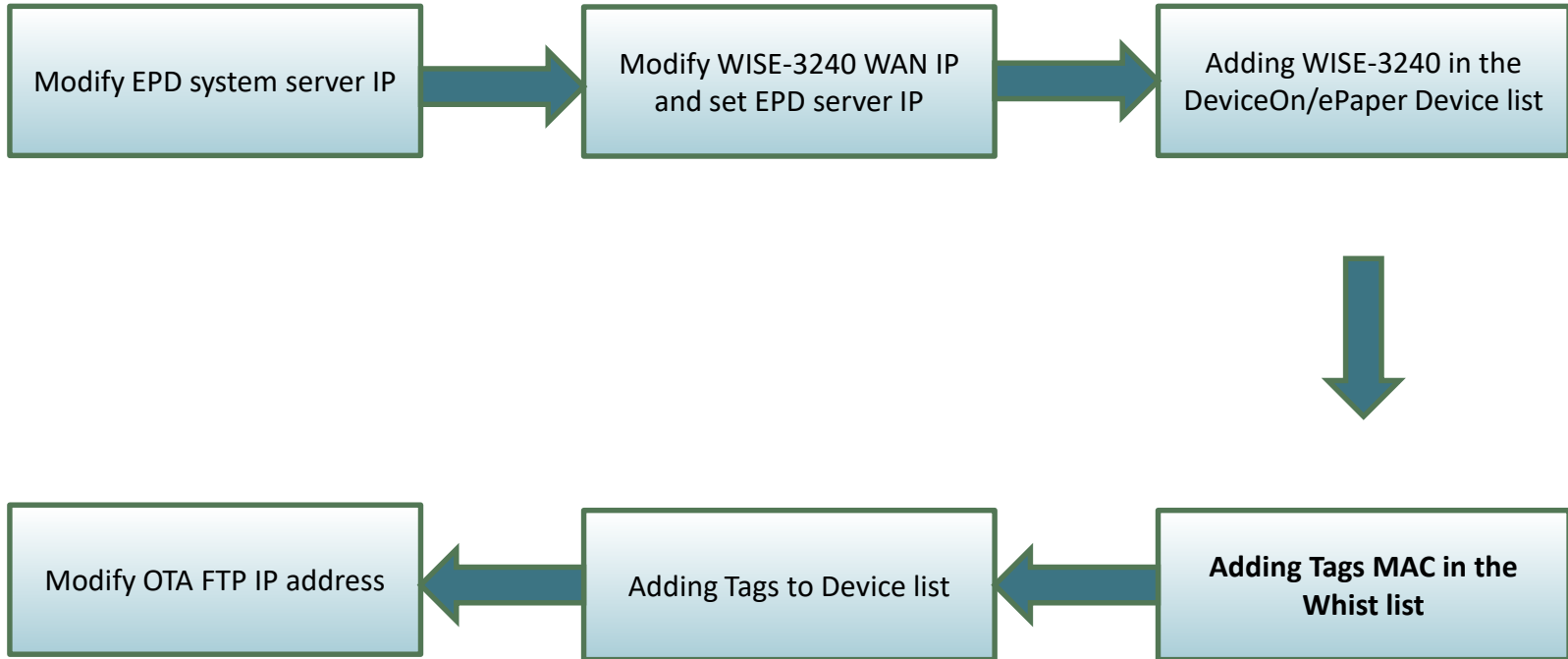
Device List Management

Account: root | Group: AEDEMO

Name	Panel Type	
EPD-Router-483078	-	Normal
EPD_Hub	-	Normal

Showing 1 to 2 of 2 rows

EPD System setting workflow



White List Setting (EPD-023/EPD-053)

- Import adding tag devices with unique mac address
- File format can be generated by json and CSV file

White List Setting

Import file

Import this file?

OK Cancel

Tag_list.csv

```
mac,group
00124b001ae6d983,ToCustomer
00124b0016562805,ToCustomer
```

Rules for Uploading a file

Now we support three file types: JSON, Excel, and CSV.

- JSON format (Example)

```
{
  "tags": [
    {
      "mac": "00124b0015577208",
      "group": "1F"
    },
    {
      "mac": "00124b0015577209",
      "group": "1F"
    }
  ]
}
```

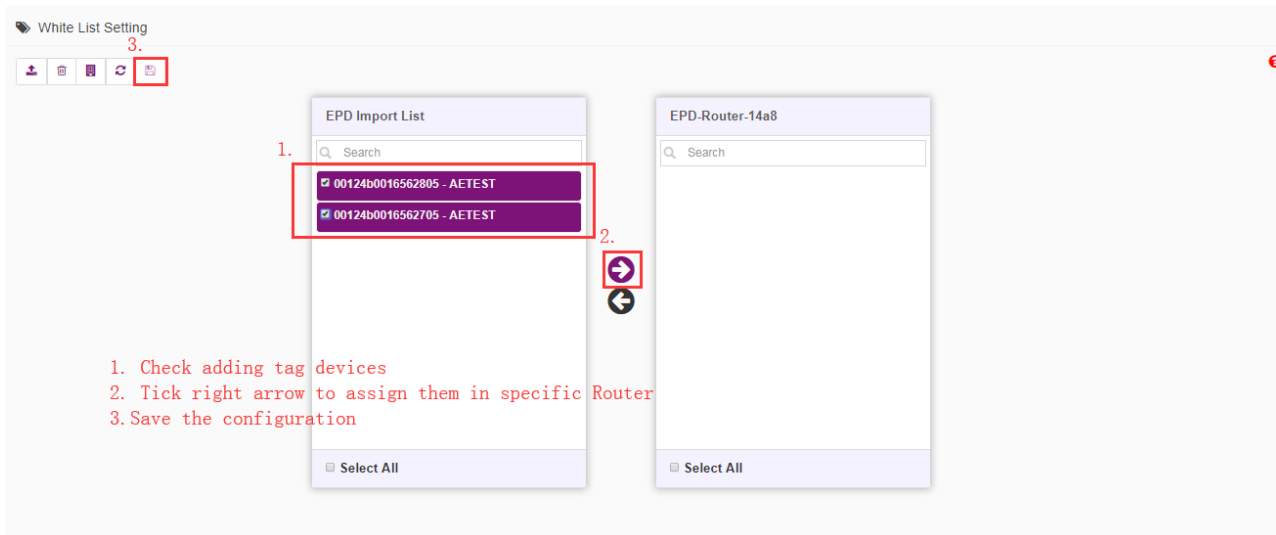
- Excel/CSV format (Example)

mac	group
00124b0015577208	1F
00124b0015577209	1F

Check uploading File rule

White List Setting (EPD-023/EPD-053)

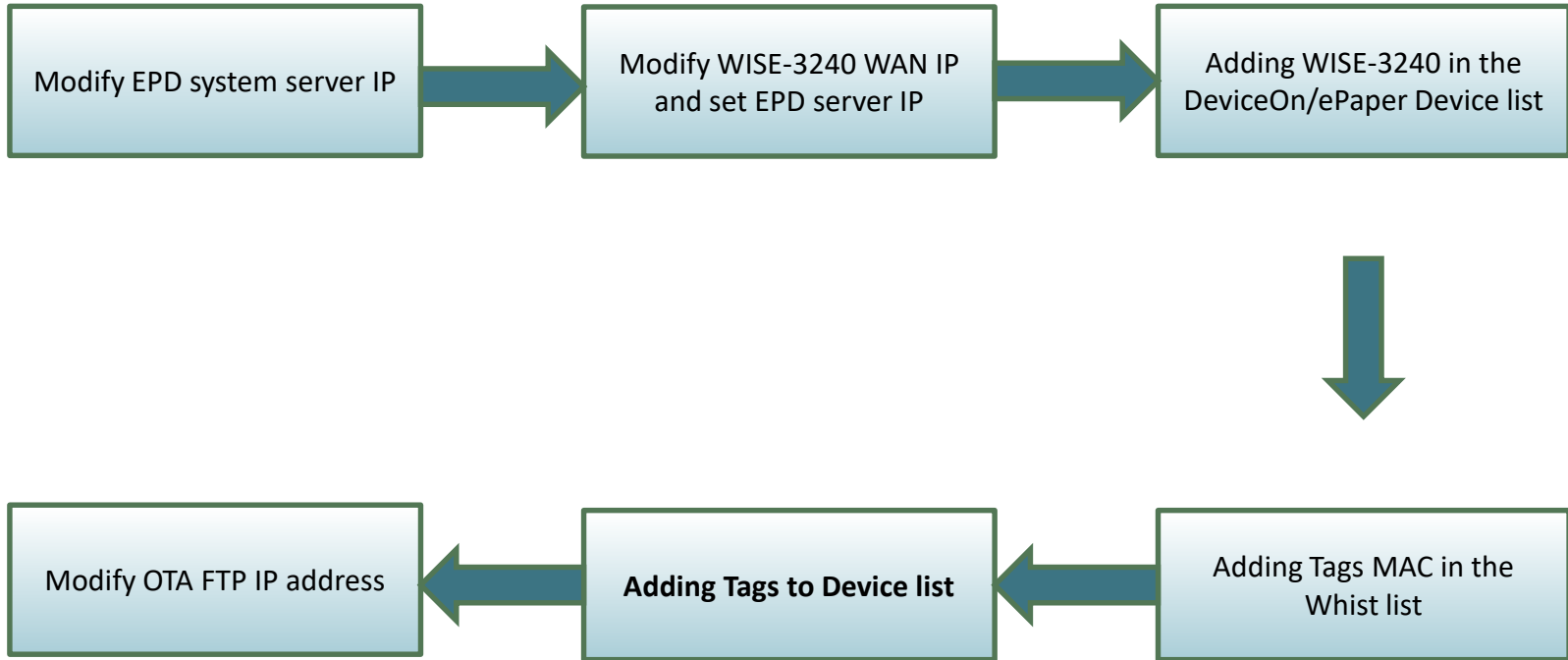
- Import adding tag devices with unique mac address
- File can be generated by json and CSV format
- Assign tag devices to specific Router



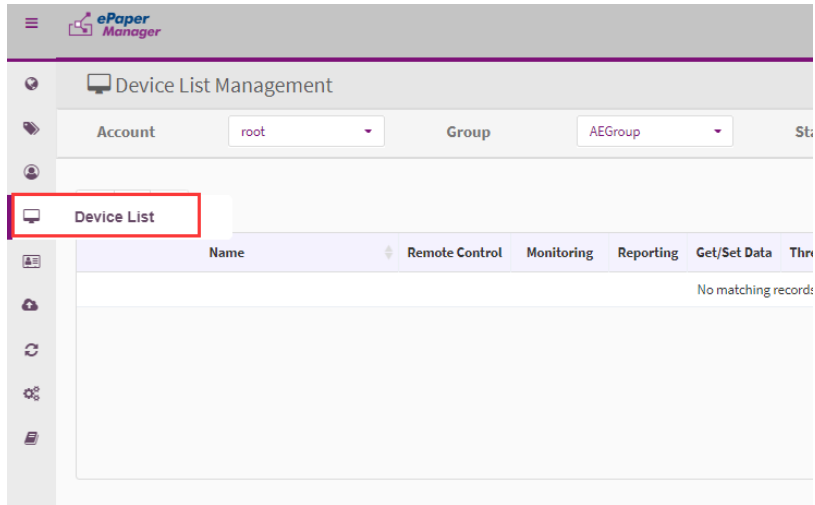
The screenshot displays the 'White List Setting' interface. On the left, the 'EPD Import List' panel contains a search bar and two device entries, each with a checked checkbox. A red box highlights these entries, with a red '1.' next to it. Below this panel is a 'Select All' button. On the right, the 'EPD-Router-14a8' panel also has a search bar and is currently empty, with a 'Select All' button at the bottom. A red box highlights the right-pointing arrow icon between the two panels, with a red '2.' next to it. At the top left of the interface, a toolbar contains several icons, with a red box highlighting the save icon and a red '3.' next to it. A red error icon is visible in the top right corner.

1. Check adding tag devices
2. Tick right arrow to assign them in specific Router
3. Save the configuration

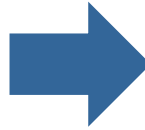
EPD System setting workflow



Tag Devices Deployment- Add tag devices



The screenshot shows the 'ePaper Manager' interface. The main heading is 'Device List Management'. Below it, there are dropdown menus for 'Account' (set to 'root') and 'Group' (set to 'AEGroup'). A 'Device List' tab is highlighted with a red box. Below the tab is a table with columns: 'Name', 'Remote Control', 'Monitoring', 'Reporting', 'Get/Set Data', and 'Thru'. The table is currently empty, with the text 'No matching records:' displayed below it.



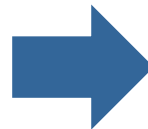
This is a zoomed-in view of the 'Add Device' button. The button is located in the top left corner of the table area, next to a plus sign icon, an edit icon, and a delete icon. A red arrow points to the plus sign icon. The table header is visible, showing columns: 'Name', 'Remote Control', 'Monitoring', and 'Reporting'.


Add tag devices (EPD-023/EPD-053+WISE-3240)

ePaper Manager

<input type="checkbox"/>	EPD-Tag-d876	00000001-0000-0000-0000-e04f4302d876	
<input type="checkbox"/>	EPD-Tag-cb12	00000001-0000-0000-0000-e04f4302cb12	
<input type="checkbox"/>	EPD-Tag-cad2	00000001-0000-0000-0000-e04f4302cad2	
<input type="checkbox"/>	EPD-Tag-cae4	00000001-0000-0000-0000-e04f4302cae4	
<input type="checkbox"/>	EPD-Tag-2805	00000001-0000-0000-0012-4b0016562805	Add EPD-023/EPD-053, Router, WISE-3610Z
<input type="checkbox"/>	EPD-Tag-2705	00000001-0000-0000-0012-4b0016562705	
<input type="checkbox"/>	EPD-Router-14a8	00000001-0000-0000-0012-4b0018e714a8	
<input type="checkbox"/>	EPDGW_023_053	00000001-0000-0000-0000-74FE48250291	

Showing 1 to 16 of 16 rows rows per page





Success
Add device successfully

Device List

Device List Management

Account Group Status Mode



Search

Name	Status Message
EPD-Tag-2805	Disconnected
EPD-Tag-2705	Disconnected
EPD-Router-14a8	Normal
EPDGW_023_053	Normal
EPD-Tag-cc2a	Normal
EPDGW-132	Normal

Showing 1 to 6 of 6 rows rows per page







Device List (EPD-023/EPD-053)

- the icon light of tag devices will change from gray to green after few seconds

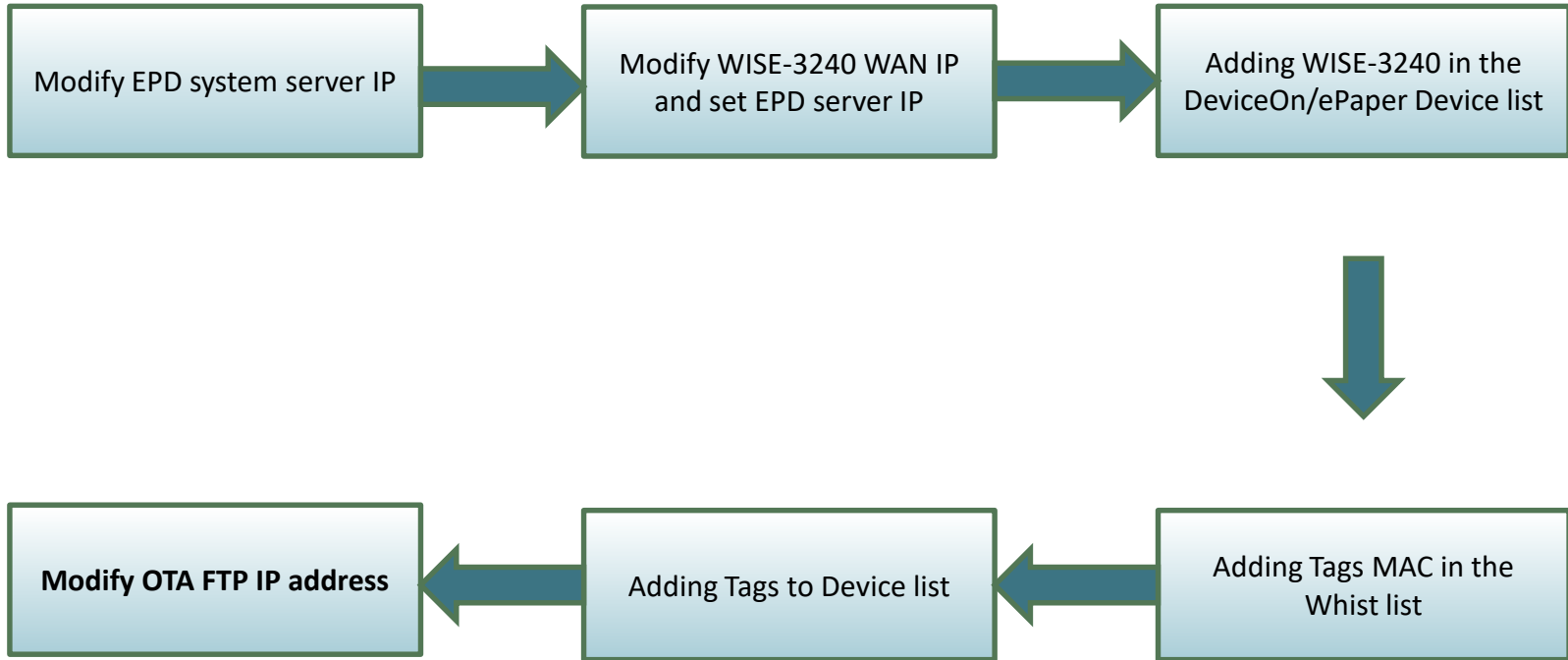
Device List Management

Account: root Group: AEGROUP Status: All Mode: Device

+ 🔍 🗑️ Search

<input type="checkbox"/>	Name	Status Message
<input type="checkbox"/>	 EPD-Tag-2805	Normal
<input type="checkbox"/>	 EPD-Tag-2705	Normal
<input type="checkbox"/>	 EPD-Router-14a8	Normal
<input type="checkbox"/>	 EPDGW_023_053	Normal
<input type="checkbox"/>	 EPD-Tag-cc2a	Normal
<input type="checkbox"/>	 EPDGW-132	Normal

EPD System setting workflow



Modify OTA FTP IP address

Storage Management

Storage Name	Type	Security	Max Connections	Operation
localStorage	FTP	NONE	5 30	

OTA

Upgrade

Package

Storage

172.22.20.160:8080/main/storage

Edit FTP Storage

* Storage Name: localStorage

* Security: NONE FTPS FTPES

* Domain: 172.22.20.160

Port: 21

* Account Name: user1

Back Confirm

Item Data edit

- Import existed item data from CSV or JSON file

DeviceOn/ePaper

Item Data Management

EPD023DEMO EPD053CAREPD EPD123DEMO MeetingRoom WholeDaySchedule Warehouse TestGraphic

Item Data 1

pd-210-demo EPD-662_Hospital_demo EPD_Page_Marker + Add 2

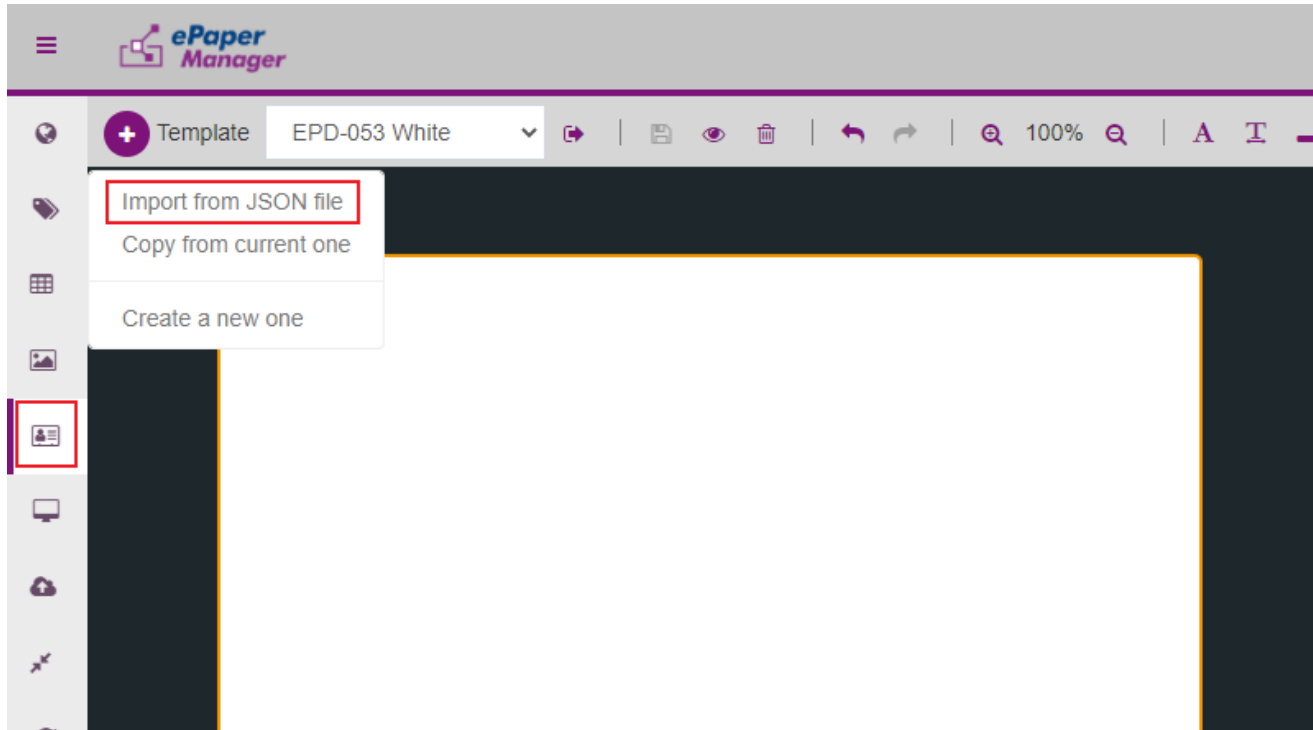
3

Search

Part No	Desc	Mfr	Package	Series	Freq	Memory	Amount	
771-FS32K148UAT0VLQOT	MCU S32K148 144 LQFP	NXP Semiconductors	LQFP-144	S32K1xx	112 MHz	2 MB	15	https://product
634-JG12B500FGM48C	MCU ARM Cortex-M3	Silicon Labs	QFN-48	EFM32JG12	40 MHz	1024 kB	20	https://product


Image Generation- Template Generation

- Import existed template from JSON file
- File can be generated by json and CSV format



Template Generation

The screenshot shows the ePaper Manager interface. At the top, there is a navigation bar with the ePaper Manager logo and a menu icon. Below it is a toolbar with various icons. The main content area is a dark grey canvas with a red box containing the template content. The template content includes the following text:

roomID *date* Whole Day Schedule 
time Click Me

status *appointer* *ext*

subject

Red annotations on the image indicate the following steps:

1. (A red box highlights the 'MeetingRoom' dropdown menu in the toolbar.)
2. Edit template (A red box highlights the text formatting icons in the toolbar.)
3. Save the template (A red box highlights the save icon in the toolbar.)

Data Binding

The screenshot displays the 'ePaper Manager' interface for 'EPD Controlling Management'. The top navigation bar includes a menu icon, the 'ePaper Manager' logo, and notification icons for a hammer, a bell with '200', and a globe. Below the navigation bar, the main title 'EPD Controlling Management' is shown. A filter bar contains the following elements: a folder icon (labeled '1'), 'Account' (root), 'Group' (ToCustomer), 'Status' (All), and 'Mode' (Device). A sidebar on the left contains various icons, with an eye icon (labeled '2') highlighted. The main content area features a table with columns: Status, Power, RSSI, Mark, Tag Name, Item & Template, Action, and Schedule. Two rows of data are visible. The first row shows a 'Success' status, 90% power, -25dBm RSSI, and a tag name 'EPD-053R EPD-Tag-e6d983'. The 'Item & Template' column for this row contains 'LK-202(EPD-053)' and 'MeetingRoom', with a red box (labeled '3') around the 'LK-202(EPD-053)' and its associated edit and refresh icons. The 'Action' column for this row includes 'Preview', 'Refresh', 'Transmit', 'Cancel', 'Monitor', and '0 List'. The second row shows a 'Success' status, 100% power, -30dBm RSSI, and a tag name 'EPD-053R EPD-Tag-562805'. The 'Item & Template' column for this row contains 'LK-202(EPD-053)' and 'MeetingRoom'. The 'Action' column for this row includes 'Preview', 'Refresh', 'Transmit', 'Cancel', 'Monitor', and '0 List'. At the bottom, a pagination bar indicates 'Showing 1 to 5 of undefined rows' and '5 rows per page'.

1 Account root Group ToCustomer Status All Mode Device

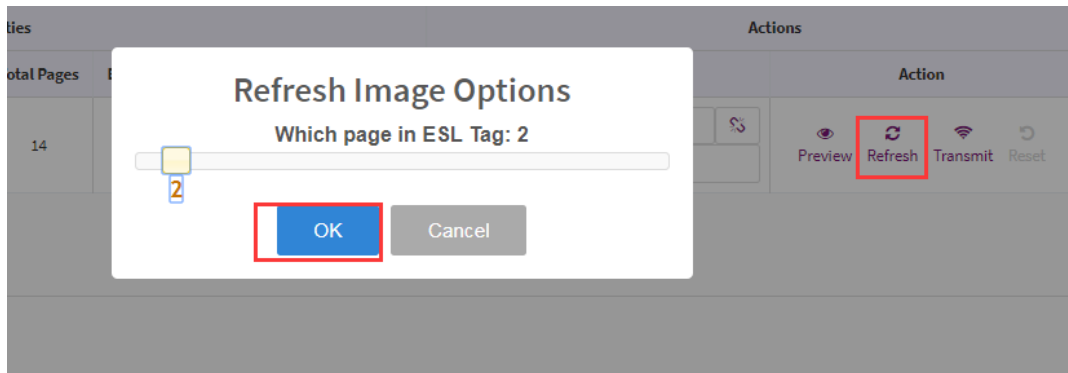
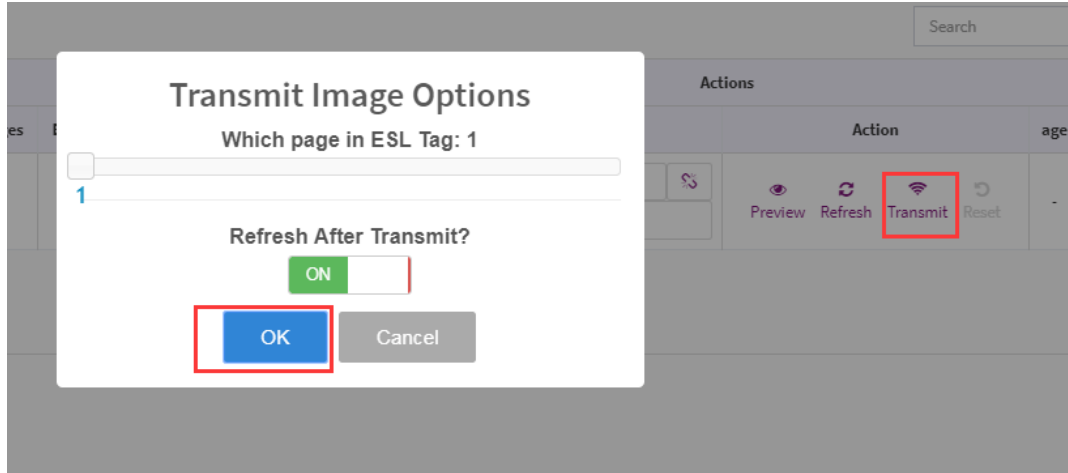
2

Status	Power	RSSI	Mark	Tag Name	Item & Template	Action	Schedule
Success	90%	-25dBm	2019.08.02	EPD-053R EPD-Tag-e6d983 00000001-0000-0000-0012-4b001ae6d983	LK-202(EPD-053) MeetingRoom	Preview Refresh Transmit Cancel Monitor	0 List
Success	100%	-30dBm	2019.08.02	EPD-053R EPD-Tag-562805 00000001-0000-0000-0012-4b0016562805	LK-202(EPD-053) MeetingRoom	Preview Refresh Transmit Cancel Monitor	0 List

3

Showing 1 to 5 of undefined rows 5 rows per page

Refresh Tag Device- Image Refresh & Transmit



Firmware Upgrade- OTA

Upgrade Management

↑ Upgrade Operation

Choose Action

Upgrade Download Deploy

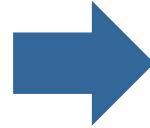
Choose Package

EPD023B						
Version	OS	Arch	Optimized	Storage	Name	
<input checked="" type="radio"/> 0.7.7.0	n/a	n/a	false	OTA	EPD023B-v0.7.7.0-e14d7b9b7dd11e81476d262211cbb176.zip	

EPD053R

Back OK

Total 6 10/page < 1 >



Upgrade Processing Information - EPDGW_023_053

Downloading

Name	Stage	Progress	Cancel
EPD023B-v0.7.7.0-e14d7b9b7dd11e81476d262211cbb176.zip	Downloading	<div style="width: 100%;"><div style="width: 100%;"></div></div> 100%	<input type="button" value="Cancel"/>

Deploying

Name	Stage	Message
There are no ongoing deploy tasks		

Downloading

Name	Stage	Progress	Cancel
There are no ongoing download tasks			

Deploying

Name	Stage	Message
EPD053R-v0.7.3.0-1a31b569527e6a540a2e4689ba8b8fa.zip	Deploying	Deploy task doing

Resful API & SampleCode

Step 1. Sign In

Step 2. Single Page Transmit

Step 3. Transmit With LED

Step 4. Transmit Multiple Images

Step 4. Switch Page

Step 5. Update Information

Step 6. Bind Batch Data

Single Tag Transmit

Test API **Source Code**

API URL:

RUN

Method:

Request Parameters:

Device group :

Which EPD device?

Which page?

Refresh or not? Yes No

```
{
  "agentid": "00000001-0000-0000-0012-4b0016562185",
  "page": "0",
  "refresh": 1
}
```

Response:

Status Code :

*Go Together,
We Go Far and Grow Big*

