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1. Introduction

This quick start guide provides the necessary step by step instructions to set up and demonstrate the capabilities of PowerQUICC MPC8308 Network Smart Gateway Reference Design Platform.

PowerQUICC MPC8308 based Networked Smart Gateway Solution leverages high performance, easy to use, optimized open source integrated applications. The reference Design platform performs the following demonstrations as described in this Quick Start Guide.

High performance Wireless access point (AP) Gateway with easy-to-use, integrated and optimized open source applications that support the use of wireless web-based handsets or thin clients like laptop PCs, iPhone, iPad, and iPod-touch perform remote monitoring and control of various cloud services such as:

**NSG (Network Smart Gateway) solution and Home Automation with Modlet (Smart plug) enables remote monitoring and control of smart meter and appliances**

**NOTE**

The ThinkEco modlets are only rated for 110V, please use voltage adapter for 220/240V source

**Video Surveillance (NVR) solution supporting wire or wireless IP cameras with Auto detection**

**Media Gateway solution supporting the following protocols or applications**

a. DLNA (Digital Living Network Alliance) compliance solution – Streaming Video and Music files from Reference Platform to DLNA client device (e.g. Google TV, ipad, iphone, ipod touch)

b. Voice over IP (VoIP) solution leveraging open source Asterisk IP/PBX - VoIP (Voice over Internet Protocol) – Streaming Voice packets

**Bit Torrent solution supporting peer to peer networking**

Hardware and Software Requirements for the demonstration setup:

a. Unless stated separately, all the hardware will be provided inside the shipment box for easy setup in the Demo on Demand Kits.

b. Unless stated separately, all the Software files will be either on the SD cards or the USB memory stick inside the shipment box for Demo on Demand Kits. Additional Freescale Compass/Extranet Link will be provided for Software update. Always check with Compass/Extranet site for the latest software information.

**NOTE**

The Demo on Demand Kit (DoD) has the hardware accessories/peripherals listed below in the kit. Typically these are not included with the MPC8308NSG platform.
2. Hardware Equipment List for the Demonstration

Hardware Platforms
MPC8308NSG

Peripherals

Smart Energy Meter
ThinkEco Modlet and corresponding USB Dongle
SD Card
IP Cameras – Axis Model M1011 (2 sets)
IP phones – Grandstream BT201 (2 sets)
Gigabit Ethernet Switch
Ethernet CAT6 Cables (6)
Power Extension Cords (2)
Quick Start Guide and Poster
Scotch tape and Velco tape

Optional Equipments (Not provided inside the box)
Thin clients (iPad, iPod and iPhone) for DLNA and Smart Energy Gateway demo
(iPad needs to have Fusion Stream application installed and iPod needs to have
iMedia Suite application installed to act as the DLNA client)
Large display monitor (19” monitor, 42” SMART TV/HDTV, etc.)
Audio speakers
Desktop or laptop computer (to configure the GUI through HTTP and act as the
DLNA client) The PC should equipped with either the Microsoft XP (32-bit) or
Window 7 Professional (32-bit) operating system

3. Software Required for Demonstration

All the software required in the demonstration should be either pre-flashed or preloaded in the USB Memory stick or
SD memory card for Demo on Demand kits. Download the file “PowerPCDemoSoftware.zip” and it will contain all
the software and video clips required for the demonstration.
Basic Setup Instructions for MPC8308nSG Reference Platform

1. Setup the Hardware according to the Figure 1.
2. Configure the IP address of the network card of the windows PC
   a. Go to Start → Control Panel → Network Connection → Local Area Network.
b. Click on **Properties** and select **Obtain IP address automatically**.

3. Power up the Reference Platform.
4. Open the Internet Explorer (IE) browser, ensure you have no proxies set and enter 192.168.1.1.
5. This opens the **reference platform** homepage, you will be prompted to set up/provide the username and password for future use. Enter
Username: root
Password: root

6. Press Enter.

Check Remember the username and password checkbox for future use.

The webpage is shown as follows:

![Figure 7: Homepage](image)

### 4. Safely power off the reference platform

To power off the reference platform safely without the loss of data or without corrupting the files in the mounted devices, follow the steps below:

1. Connect the serial cable to the SPI interface of the board and the COM port of the PC
2. Hit enter to go to the “root@FSL#” prompt
3. Type “reboot”
4. Hit the enter key to stop the booting process (i.e: when the counter starts) to go to the u-boot mode
5. Now the board can be power off.

Before starting to deploy any applications; please power ON the board. Let the zigbee LED be stable and then proceed further to do the application.
This section describes the procedure to demonstrate the remote monitoring of electrical power meter through Zigbee

Make sure the zigbee LED light on the MPC8308 NSG is continuously on (stable)

1. Connect the power strip to the power outlet (shorter cable) of the Meter; Plug the power cord of the meter to the power and power on the meter.

In the Mozilla web browser, go to: //192.168.1.1/home.html (User name: root, Password: root)

The metering device dialog box should show the same reading as the power meter and should update the reading periodically

The web page is shown below.
6. Zigbee Home Automation

This application uses Mozilla/FireFox only. Please open a Firefox browser window and type 192.168.1.1

This section describes the procedure to demonstrate the remote control of electrical appliances through Zigbee (e.g. Remote Power on/off device and monitoring power consumption of each appliance)

1. Insert the Zigbee dongle into the USB port of the reference platform as described in Figure 1

![Zigbee Dongle](image1)

Figure 9: Zigbee Dongle

2. Connect the Zigbee Modlet (smart plug) to a multi socket power code connected to the power meter and connect any electrical appliance (e.g. Light, Washer, hair dryer) to the Modlet.

![Zigbee Modlet](image2)

Figure 9: Zigbee Modlet

**Use the Mozilla/Firefox web browser, go to: //192.168.1.1/home.html**


4. Double click on the “Backyardlight” blue button and then a window pops up. Click on the “sync” button (lightning icon) on the pop-up window. It will show the message “click OK and press the reset button on the modlet”
5. Click OK and then press “reset” button on the Modlet (Smart plug) and hold it for 8-10 seconds.

6. If there is a message in the response page that said “Invalid message”; repeat the previous step until you get the correct acknowledgement.

7. To turn on the appliance connected to the upper socket (socket close to the button) of the Modlet, click “ON” in the backyard light pop-up window.

8. To turn on the appliance connected to the upper socket (socket close to the button) of the Modlet, click “OFF” in the backyard light pop-up window.

9. The power consumed by both appliances will be displayed in the same pop-up window.

10. To perform the above mentioned 3 tasks for the appliance connected to the lower socket of the Modlet, select “Dryer” instead of “backyard light”.

To check the CPU utilization and the processes running at any time, go to System \(\Rightarrow\) Diagnostics and type `top` in the dialog box in front of the Command Run and click Command Run.
7. Digital Living Network Alliance (DLNA)

This section describes the steps required to demonstrate the audio/video streaming capability, using DLNA application, of the Reference Platform

Setup Reference Platform as DLNA Server

1. DLNA server had been pre-installed on the reference platform. The DLNA server will start automatically when power on. Media files were stored on the SD card that shipped with the reference platform. Please insert the SD card into the SD slot on the reference platform.

2. The reference platform is now ready to stream media files to any DLNA compliant Clients, please follow the instruction below to setup the DLNA clients.

Setup DLNA Clients (Windows PC, iPad, iPhone, iPod)

1. For iPad: Check whether you have Fusion Stream installed on the iPad, otherwise this paid application needs to be downloaded from Apple store. Make sure the iPad connects to the correct SSID.

   Start Fusion Stream application and click Refresh button (top left hand corner). Go to DLNA server → browse folder → All videos → select the video to play

2. For iPhone: Check whether you have iMediaSuite installed on the iPhone, otherwise this paid application needs to be downloaded from the Apple store.

   Open iMedia Suite application; go to DLNA server → browse folder → All videos → select the video.

For PC with Windows XP

Install the VLC media player on the Window PC; you can download a free version online.

(the same software is included in the USB memory stick, if you got a Demo Kit)

Using Mezzmo as DLNA Client
Click the Network tab (on the bottom bar) and select Network Media /DLNA server/ Video/All videos.
Click create playlist and select the newly created playlist. Click on one of the video files and check Add files to playlist. Click OK.

![Add Media Files](image)

Select the playlist that you want to use. For example: library → new playlist. Right click on the video file you want to play and select play. The video file will automatically open in the browser.

**NOTE**

*For PC with Windows 7, Windows Media Player 12 can also be used as a DLNA client.*

*In Windows Media Player 12, select DLNA server/Videos/All Videos.*

**NOTE**

If the DLNA server has not started when the reference platform is powered up, or if you want to manually start the DLNA server, refer to the instructions in Appendix A.

To check the CPU utilization and the processes those are running at any time: Go to **System → Diagnostics** and type `top` in the dialog box in front of the **Command Run** and click **Command Run**.

**Wireless Performance Data**

- **P10xx** – Support 802.11a/b/g/n to 559 Mbps with Dual card and Dual band 2.4G & 5G, 3x3 MIMO(289 Mbps - Dual band 3x3 MIMO)
- **MPC 8308** – Support 802.11 b/g/n > 120 Mbps with 2x2 MIMO (289 Mbps - Dual band 3x3 MIMO)
8. Voice over Internet Protocol (VoIP)

This section describes the steps required to demonstrate the IP-PBX server (VoIP) capability of the Reference Platform.

Follow the basic setup instructions as described in Figure 1.

![Image](image.png)

Figure 12: NVR Settings

Open the browser and type 192.168.1.1 to access the homepage of the reference platform.

On the homepage, go to Applications → IP PBX VoIP → users.

To create users:

a. Click on New. Enter Under create Extension (Username) and password (Example: Type 3000 and 3000 respectively and click on Save Changes.

b. For additional users, repeat step ‘4a’ by creating Extension (Username) and password and click on Save Changes and finally click on Apply Changes.

NOTE

You need to delete the pre-existing users and create new users as mentioned in step 4. To delete users, click on the delete button you see corresponding to a user and click on save changes.

The phone number of the IP phone is written on the phone. Use the number corresponding to the phone in step 4.

Remove the power cords from the IP phones and plug them back in. Patiently wait a minute for them to restart.
Check for a filled black square icon on top left corner on the phone screen. Pick the phone handsets and check if you able to hear a dial tone. Try calling one of the other phones using the numbers written on them/ the extensions you just programmed. Once both phones can call each other, this demo is complete.

9. Network Video Recorder (NVR)

This section describes the steps required to demo the NVR with auto detection of cameras.

- **Virtual Camera for windows XP**
  (Virtual Camera is to simulate the camera since the demo kit has only one/two real camera.)
  It is located in the folder `PowerPCDemoSoftware_8308\VirtualCamera4win32_auto`.

- **VLC for Windows XP**
  (VLC is the IE plug in program.)
  It is located in the folder `PowerPCDemoSoftware_8308\Utility`

**This application uses Internet Explorer only. Please open an IE browser window and type 192.168.1.1**

**Using NVR Auto-Detect**

Ensure that the VLC player is installed and the Firewall and Proxy connections are deactivated.

Ensure the NVR has been started with following parameters:

**Open the Internet Explorer (IE) browser and type 192.168.1.1 on the address bar.**

- Go to Applications → Network Video Recorder → Configuration page
- Click on Restart NVR and wait for restarting to finish.
NOTE: Please edit the script Freescale-ADS.cmd which is in the folder PowerPCDemoSoftware_8308\VirtualCamera4win32_auto

Right click on the script Freescale-ADS.cmd and click Edit.

You can get the IP address using a command “ipconfig” in command prompt window. Set the Parameter

set IP=192.168.1.X

Also make sure the fifth line in script is “@Rem netsh interface ip set address name="Local Area Connection" static 192.168.1.X 255.255.255.0”

Connect the real IP cameras to the platform (MPC8308NSG).

Use Window Explorer to open the folder PowerPCDemoSoftware_8308. Click and drag the folder Clip7 into command file Freescale-ADS.cmd and the command prompt window comes up
Go to Applications → Network Video Recorder → Camera.
Click Auto Detect Camera, Cameras in the network will be automatically attached to NVR system.

Figure 2: Camera Configuration

Check the status of the cameras that are automatically detected by Applications → Network Video Recorder → Status. Make sure all the visual cameras and real cameras are attached.
To watch camera videos, go to Applications → Network Video Recorder → Channel on the homepage.
Select 3x3 and select the camera to watch.
Click on the camera that you don’t want to watch. Remove the check mark and click on
Save Changes.
In the pop up window, click OK. 3x3 video stream windows should be shown.
If you want to make one video fullscreen, just double click on the video. If in one video full screen state, double click the video will return to the 3x3 video stream.

For using the IPAD/IPHONE/IPOD:
Go to Settings select the WiFi
Go to “Streamer” application and select the address of the visual camera you want to view
Go to Safari and type in the IP address taped on the live camera. This live camera has an IP address 192.168.1.x

Note: If you do not know the IP addresses then go to Network Video Recorder -> Camera to view the IP address in “Camera IP” column

MPC8308 NVR performance data

<table>
<thead>
<tr>
<th>Input Streams</th>
<th>Total Channels</th>
<th>Total Bit Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1/mp4v/30fps/1mbps</td>
<td>36</td>
<td>36 Mbps</td>
</tr>
<tr>
<td>D1/mp4v/30fps/3mbps</td>
<td>12</td>
<td>36 Mbps</td>
</tr>
<tr>
<td>HD - 1080p/mp4v/30fps/10mbps</td>
<td>3</td>
<td>30 Mbps</td>
</tr>
<tr>
<td>D1/H.264/30fps/1mbps</td>
<td>36</td>
<td>36 Mbps</td>
</tr>
<tr>
<td>D1/H.264/30fps/3mbps</td>
<td>12</td>
<td>36 Mbps</td>
</tr>
</tbody>
</table>

Appendix A

To start DLNA:

1. Install the Teraterm VT from the download software.
2. Configure the **Teraterm** with 115200-8-N-1.

3. In the TeraTerm command terminal, type the following commands:
   - `cd /tmp`
   - `mkdir shares`
   - `mount -t msdos /dev/sda1 /tmp/shares`

4. Open the IE browser and type 192.168.1.1; it will open the device homepage.

5. On the homepage, go to: **Applications → Media Service → DLNA**.

6. **Disable DLNA** (select the Disable radio button) → **Save Changes → Apply Changes**.

7. **Enable DLNA** (select the Enable radio button) → **Save Changes → Apply Changes**.

![DLNA Configuration](image)

**Figure 19: DLNA Configuration**
Appendix B

This section describes the steps required to demonstrate the VoIP capability of the Reference Platform using multimedia IP phones.

1. Follow the basic setup instruction as described in VoIP section (Page 16).
2. Set up the multimedia IP phones in similar way as regular IP phones by following the steps 2 – 6 on page 17.
3. Calling from one multimedia IP phone to the other multimedia IP phone
   a. Check for the dial tone on the phones.
   b. Press the line selection button and then press F2 to select line 2 (shown in figure below).
   c. Enter the extension number of the other phone and press Call button.

Figure 20: VOIP setup

Once both phones are able to call each other, the demo is complete.