

# DEVICE REQUIREMENTS DLNA VERSION 6.1

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**[Device supplier should contact Device Marketing Product Development for Assistance]**

Revision History

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## 1 Introduction <VZW-REQS-132-3>

This document describes the requirements to be met by a wireless device supplier to support Digital Living Network Alliance (DLNA) capabilities for media content sharing within a home network.

All requirements generated, only apply to new product launches. Any running changes or field upgrades need to be handled as special cases under extraordinary circumstances involving coordination with Device Marketing and Network.

### 1.1 GLOSSARY/DEFINITIONS <VZW-REQS-132-4>

This section defines acronyms and terms used throughout the document.

Term [Abbreviation (if Applicable)]	Definition
DLNA	Digital Living Network Alliance
DRM	Digital Rights Management
GIF	Graphics Interchange Format
HDMI	High Definition Multimedia Interface
JPEG	Joint Photographic Experts Group
M-DMC	Mobile Digital Media Controller
M-DMD	Mobile Digital Media Downloader
M-DMP	Mobile Digital Media Player
M-DMS	Mobile Digital Media Server
M-DMU	Mobile Digital Media Uploader
MPEG	Moving Picture Experts Group
PNG	Portable Network Graphics
UPnP	Universal Plug and Play
Wi-Fi®	A certification mark developed by the Wi-Fi Alliance to indicate that wireless local area network (WLAN) products are based on the Institute of Electrical and Electronics Engineers' (IEEE) 802.11 standards. Also, sometimes used as an acronym for Wireless Fidelity.
WMA	Windows Media Audio
WMDRM-ND	Windows Media DRM for Network Devices
WMV	Windows Media Video

### 1.2 Applicability to Existing VZW Device Requirements and Compliance Test Plans <VZW-REQS-132-5>

Unless specifically identified in this document, the device shall comply with Verizon Wireless Device Feature Definition/Requirements and Verizon Wireless Device Testing Process.

### 1.3 NEW VZW DEVICE COMPLIANCE TEST PLANS REQUIRED TO SUPPORT THESE DEVICE REQUIREMENTS <VZW-REQS-132-6>

TBD.

### 1.4 Entrance Criteria <VZW-REQS-132-7>

The vendor shall comply with all applicable requirements specified in the “Verizon Wireless Device Compliance Test Entrance Criteria”.

The following additional items shall be included as part of the device testing submission:

Proof of DLNA certification shall be provided prior to device type approval. Refer to [www.dlna.org](http://www.dlna.org) for additional information.

For HDMI-capable devices, vendor shall submit HDMI Compliance Testing Specification results. Refer to [www.hdmi.org](http://www.hdmi.org) for additional information.

### 1.5 HOW TO USE THIS DOCUMENT <VZW-REQS-132-8>

Section 1 – Introduction, definitions, and applicability.

Section 2 – Marketing requirements that are translated to technical requirements defined in sections 4 – 8.

Section 3 – User interface definition where applicable.

Section 4, 5, 6, 7, 8 – Technical requirements used in device compliance testing and acceptance.

Section 9 – References.

### 1.6 Advanced Device (Smartphone, PDA, Converged, etc.) Applicability <VZW-REQS-132-9>

Wi-Fi capable devices may comply to these requirements. Applicability shall be determined by the Verizon Wireless Device Marketing product development team at feature lockdown.

## 2 Marketing Requirements <VZW-REQS-132-10>

### 2.1 Service, Product, Feature, and/or Application Offering Description <VZW-REQS-132-11>

Integration of DLNA into mobile devices is not seen as a separate product. It is intended to add additional functionality to mobiles, as well as add value to customer content – allowing for use and consumption across multiple interfaces.

### 2.2 Deployment Plans <VZW-REQS-132-12>

DLNA functionality will not require any additional network infrastructure. The client will operate only over LAN/PAN networks, and interoperate with software installed on consumer electronics devices and personal computers. The software client will be pre-installed on the device, and integrated with default media storage locations on the device.

## 2.3 Applications to be supported <VZW-REQS-132-13>

DLNA will need to interface with device storage, as well as on-board device media players. The DLNA technology may also be implemented with its own “Network Browser” in order to view available media files on the home network.

The DLNA Client/Service should have the ability to scan/search the mobile device to find picture, music, and video files.

## 2.4 DETAILED DESCRIPTION OF CAPABILITIES TO BE SUPPORTED <VZW-REQS-132-14>

End-users should be able to launch the client on their mobile device and browse multimedia content stored on their home network. Upon launch of the client, all devices that support DLNA and have content sharing enabled will be shown within the End-user Client. Customers can then browse content (separated by media type- e.g. music, video, pictures), as well as search for content (e.g. genre, artist, actors, keywords, etc). Selected content can then be moved to or from the mobile device, or streamed for instant access.

Within DLNA, devices will adopt classes in order to support the transfer and control of content. These device classes fall into two categories: Home Network Devices and Mobile Network devices. Below is an outline of the classes, and a high-level overview:

Home Network Category Device Classes:

- DMS (Digital Media Server)
  - Store Content and share to DMP's/DMR's
  - Examples: PC's, Network Attached Storage
- DMP (Digital Media Player)
  - Find content on DMS's and provide Playback capabilities
  - Examples: TV's, Home Theaters, Gaming Consoles
- DMC (Digital Media Controller)
  - Find content on DMS's and make it available to DMR's
  - Examples: Internet Tablets, Digital Cameras, PDA's
- DMR (Digital Media Renderer)
  - Play content received from a DMC which will find content from DMS
  - Examples: TV's, A/V Receivers, Wireless Monitors, remote speakers
- DMPr (Digital Media Printer)
  - Provide Printing services to DLNA-Networked devices
  - Examples: Photo Printers, All-in-One Printers

Mobile Network Device Classes:

- M-DMS (Digital Media Server)
  - Store Content and Make it available to Networked devices such as M-DMP's, DMR's, and DMPr
  - Examples: Mobile Phones, Digital Music Players
- M-DMP (Digital Media Player)
  - Find and play content from DMS and M-DMS



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- Mobile Phones and mobile media tablets designed for viewing content (i.e. low storage)
- M-DMU (Digital Media Uploader)
  - Devices to send/Upload content to DMS and M-DMS
  - Digital Cameras, Mobile Phones
- M-DMD (Digital Media Downloader)
  - Devices to find and store content from DMS and M-DMS
  - Portable Music Players, Mobile Phones
- M-DMC (Digital Media Controller)
  - Find content on DMS or M-DMS and send to a DMR
  - Examples: PDA's, Mobile Phones

It is important to note that a single device can support multiple classes. The device class will be chosen for the application, based on the end-user's request.

The DLNA Specification outlines the ability for users to transfer, stream, or view content on another networked device. The below table outlines both required and optional support for media formats and transport technologies in order to support DLNA:

DLNA Interoperability Stack		
Features	Criteria	Explanation
Link Protection	DTCP/IP (Mandatory) WMDRM – ND (Optional)	<ul style="list-style-type: none"> <li>Protects commercial content on the home network</li> </ul>
Media Formats	MPEG2, MPEG4, AVC/H.264, LPCM, MP3, AAC LC, JPEG, XHTML-Print + optional formats	<ul style="list-style-type: none"> <li>Encoding and identifying media content for interoperability</li> </ul>
Media Transport	HTTP (Mandatory) RTP (Optional)	<ul style="list-style-type: none"> <li>Transferring media content</li> </ul>
Media Management	UPnP AV 1.0 UPnP Print Enhanced 1.0	<ul style="list-style-type: none"> <li>Identifying, managing, and distributing media content</li> </ul>
Discovery & Control	UPnP Device Architecture 1.0	<ul style="list-style-type: none"> <li>Device discovery and control</li> </ul>
IP Networking	IPv4 Protocol Suite	<ul style="list-style-type: none"> <li>Physical connection and communication between wired and wireless devices</li> </ul>
Connectivity	Wired: Ethernet 802.3 Wireless: Wi-Fi 802.11 Bluetooth	

Furthermore, [the client should be able to validate whether or not content is protected via DRM \(either digital license or forward-locked content\). Forward-locked content should not be allowed to be shared with other machines. Content that is protected via DRM should be shared – as per the license allows.](#)

## 2.5 [User Experience](#) <VZW-REQS-132-15>

### 2.5.1 [Use Cases](#) <VZW-REQS-132-16>

[Note that the DLNA functions identified in the following use cases may be provided by a standalone DLNA application or by an application with integrated DLNA functionality.](#)

In the following use cases, the device has connectivity to other DLNA-capable devices via either a Wi-Fi connection or a direct HDMI connection.

#### **2.5.1.1 USE CASE 1: TWO-BOX PULL: HANDSET AS MEDIA PLAYER <VZW-REQS-132-17>**

Stream media from PC to handset:

- 1) User opens DLNA-capable application on handset
- 2) User selects option to play media
- 3) DLNA-capable application shows media servers available on network
- 4) User selects media server to browse
- 5) User selects media type to stream/view (Music, Video, Picture)
- 6) User selects content to access
- 7) User selects location to play media (Mobile to be presented as available location)
- 8) DLNA-capable application on handset launches appropriate application to view content (i.e. Media Player, Picture viewer)

#### **2.5.1.2 USE CASE 2: TWO-BOX PULL: HANDSET AS MEDIA SERVER <VZW-REQS-132-18>**

User at external player, selects media from handset to play on external player:

- 1) User opens DLNA-capable application on external device
- 2) User selects option to play media
- 3) DLNA-capable application on external device shows media servers available on network
- 4) User selects Handset's Media Server to browse content
- 5) User selects media type to access
- 6) User selects media to play
- 7) DLNA media server on handset begins transfer of content to external player

#### **2.5.1.3 USE CASE 3: TWO-BOX PUSH: HANDSET AS MEDIA SERVER AND CONTROLLER <VZW-REQS-132-19>**

User at handset, selects media from handset to send to external renderer:

- 1) User opens DLNA-capable application on handset
- 2) User selects option to play media
- 3) From handset's media server, user selects media type to stream/view (Music, Video, Picture)
- 4) User selects Content to access
- 5) User selects location (external device) to play media
- 6) DLNA Client on handset remains active while content playing on external device, giving user options to Play, Pause, Fast Forward, Rewind, Stop
- 7) Upon completion of playback, customer returned to Media Selection screen

#### **2.5.1.4 USE CASE 5: TWO-BOX DOWNLOAD: HANDSET AS MEDIA DOWNLOADER <VZW-REQS-132-75>**

Copy media from PC to handset:

- 1) User opens DLNA-capable application on handset
- 2) User selects option to copy media to handset
- 3) DLNA-capable application shows media servers available on network
- 4) User selects PC's Media Server to Browse

- [5\) User selects media type to access](#)
- [6\) User selects media to copy/sync](#)
- [7\) Application begins transfer of content to mobile handset](#)
- [8\) Progress bar shows Media transfer status](#)
- [9\) Application returns to its home screen when transfer completed](#)

#### **2.5.1.5 USE CASE 6: TWO-BOX DOWNLOAD: HANDSET AS MEDIA SERVER <VZW-REQS-132-22>**

[User at external downloader, selects media from handset to download and store on external device:](#)

- [1\) User opens DLNA-capable application on external device](#)
- [2\) DLNA-capable application shows media servers available on network](#)
- [3\) User selects Handset's Media Server to Browse](#)
- [4\) User selects media type to access \(Music, Video, Picture\)](#)
- [5\) User selects media to copy/sync](#)
- [6\) DLNA software on handset begins transfer of content to external downloader](#)

#### **2.5.1.6 USE CASE 7: TWO-BOX UPLOAD: HANDSET AS MEDIA UPLOADER <VZW-REQS-132-76>**

[Copying content from Mobile Device to PC:](#)

- [1\) User opens DLNA-capable application on handset](#)
- [2\) User selects option to copy media to server](#)
- [3\) User selects media type to browse \(Music, Video, Picture\)](#)
- [4\) User selects content to copy](#)
- [5\) User selects location to send content \(PC\)](#)
- [6\) Application begins transfer of content to PC](#)
- [7\) Progress shown by moving status bar on display](#)
- [8\) Upon completion of transfer, user presented with Home screen of DLNA-capable application](#)

#### **2.5.1.7 USE CASE 8: TWO-BOX UPLOAD: HANDSET AS MEDIA SERVER <VZW-REQS-132-24>**

[User at external uploader, selects media from external device to upload and store on handset:](#)

- [1\) User opens DLNA-capable application on external uploader](#)
- [2\) User selects Media type to browse \(Music, Video, Picture\)](#)
- [3\) User selects Content to upload/sync](#)
- [4\) User selects handset as location to send content](#)
- [5\) Application begins transfer of content to mobile](#)
- [6\) DLNA software on handset receives content and stores in default location on handset](#)

#### **2.5.1.8 USE CASE 9: THREE-BOX MODEL: HANDSET AS CONTROLLER <VZW-REQS-132-77>**

[Use handset as Remote Control:](#)

- [1\) User opens DLNA-capable application on handset](#)
- [2\) User selects option to play media](#)
- [3\) DLNA-capable application shows media servers available on network](#)
- [4\) User selects external Media Server to browse](#)
- [5\) Selects Media type to stream/view \(Music, Video, Picture\)](#)
- [6\) User selects Content to access](#)
- [7\) User selects external location to play media](#)
- [8\) DLNA Client on handset remains active while content playing on external device, giving user options to Play, Pause, Fast Forward, Rewind, Stop](#)
- [9\) Upon completion of playback, customer returned to Media Selection screen](#)

#### **2.5.1.9 USE CASE 10: THREE-BOX MODEL: HANDSET AS MEDIA SERVER <VZW-REQS-132-26>**

[User at external media controller, selects media from handset and sends to second external device for rendering:](#)

- [1\) User opens DLNA-capable application on external media controller](#)
- [2\) DLNA-capable application shows media servers available on network](#)
- [3\) User selects handset's Media Server to browse content](#)
- [4\) User selects Media type to stream/view \(Music, Video, Picture\)](#)
- [5\) User selects Content to access](#)
- [6\) User selects location to play media](#)
- [7\) DLNA software on handset begins transfer of content to external player](#)
- [8\) DLNA client on external controller remains active while content playing, giving user options to Play, Pause, Fast Forward, Rewind, Stop](#)

#### **2.5.1.10 USE CASE 11: TWO-BOX PRINT: HANDSET AS MEDIA SERVER AND PRINTING CONTROLLER <VZW-REQS-132-78-DEC2011>**

[User at handset, selects media from handset to send to external printer:](#)

- [1\) User opens DLNA-capable application on handset](#)
- [2\) User selects option to print media](#)
- [3\) From handset's media server, user selects Picture media type](#)
- [4\) User selects Content to access](#)
- [5\) User selects external printer to print media](#)
- [6\) User optionally selects print job options \(paper size, layout, print preview, etc.\)](#)
- [7\) DLNA Client on handset remains active while content printing on external printer, giving user options to monitor and display the print job status](#)
- [8\) Upon completion of printing, customer returned to Media Selection screen](#)

#### **2.5.1.11 USE CASE 12: THREE-BOX PRINT: HANDSET AS PRINTING CONTROLLER <VZW-REQS-132-79-DEC2011>**

[Use handset as Remote Printing Controller:](#)

- [1\) User opens DLNA-capable application on handset](#)
- [2\) User selects option to print media](#)
- [3\) DLNA-capable application shows media servers available on network](#)
- [4\) User selects external Media Server to browse](#)
- [5\) Selects Picture Media type](#)

- [6\) User selects Content to access](#)
- [7\) User selects external printer to print media](#)
- [8\) User optionally selects print job options \(paper size, layout, print preview, etc.\)](#)
- [9\) DLNA Client on handset remains active while content printing on external device, giving user options to monitor and display the print job status](#)
- [10\) Upon completion of printing, customer returned to Media Selection screen](#)

## 2.5.2 USER USAGE STATISTICAL ANALYSIS <VZW-REQS-132-28>

N/A.

## 2.5.3 USER PERFORMANCE EXPECTATIONS <VZW-REQS-132-29>

[User performance is expected to meet the DLNA specification minimums. Standard DLNA transfers should operate at a minimum of 400kbps over the Wi-Fi network, but should use the highest bandwidth possible. The application, and device, should be able to handle the processing, parsing, and playback of streamed content over the Wi-Fi network or HDMI connection with minimal interruptions, and smooth playback.](#)

## 2.6 [Ancillary](#) <VZW-REQS-132-30>

### 2.6.1 ACCESSORIES <VZW-REQS-132-31>

[If the user is transferring DLNA content over an HDMI connection, an HDMI cable with a micro HDMI connector is required.](#)

### 2.6.2 OTHER <VZW-REQS-132-32>

[Once DLNA certification is received, DLNA logo's can be included in documentation, as well as packaging with the device.](#)

## 3 [User Interface](#) <VZW-REQS-132-33>

[The DLNA user interface design including menu settings, icons, indicators, notifications, and flows shall be reviewed and approved by the Verizon Wireless UI team during feature lockdown.](#)

[The DLNA User Interface design shall conform to Remote User Interface requirements integrated into the DLNA Guidelines as of March 2012. Impacted requirements areas for UI design and behaviors include architecture, protocols, and profiles. These standards are based atop CEA-2014A, which was revised to CEA-2014B in 2011. In user interface design and behaviors, where there are questions on interoperability with other DLNA-compliant devices, it is strongly suggested OEMs refer to CEA-2014B for guidance on appropriate design and interactions.](#)

## 4 [Hardware Specifications](#) <VZW-REQS-132-34>

### 4.1 [Mechanical](#) <VZW-REQS-132-35>

#### 4.1.1 **HDMI CONNECTOR--OPTIONAL** <VZW-REQS-132-36>

The device may include a micro HDMI connector to support DLNA content transfer over an HDMI connection.

### 4.2 **Electrical** <VZW-REQS-132-37>

#### 4.2.1 **WI-FI SUPPORT** <VZW-REQS-132-38>

The device shall support an 802.11 b/g/n radio to support DLNA content transfer over a Wi-Fi network connection.

## 5 **Software Specifications** <VZW-REQS-132-39>

### 5.1 **Device Based** <VZW-REQS-132-40>

#### 5.1.1 **DLNA Compliance** <VZW-REQS-132-41>

Unless otherwise indicated in this document, the device shall comply with all mandatory requirements as specified in the DLNA Guidelines, August 2009.

#### 5.1.2 **Device Categories** <VZW-REQS-132-42-DEC2011>

The device shall provide a DLNA engine that shall support the following DLNA Mobile Handheld Device (MHD) categories:

- Mobile Digital Media Server (M-DMS)
- Mobile Digital Media Player (M-DMP)
- Mobile Digital Media Uploader (M-DMU)
- Mobile Digital Media Downloader (M-DMD)
- Mobile Digital Media Controller (M-DMC)

The device shall provide a DLNA engine that shall support both the Printing Controller-1 (+PR1+) and Printing Controller-2 device capabilities (+PR2+).

#### 5.1.3 **Device Discovery and Control** <VZW-REQS-132-43>

The device shall support DLNA Device Discovery and Control.

The device shall support UPnP™ Device Architecture v1.0 for Device Discovery and Control.

#### 5.1.4 **Search Support** <VZW-REQS-132-44>

The DLNA software shall provide the ability to search for specified content from available DLNA media servers.

The DLNA software, when functioning as a media server, shall respond to search queries from other DLNA devices.

Search options shall include:

- Artist
- Album
- Song/Video Title
- Genre/Category
- Playlist
- Keyword

### **5.1.5 Media Management and Control** <VZW-REQS-132-45-DEC2010>

The device shall function as an UPnP AV Media Server.

### **5.1.6 DLNA Service Configuration** <VZW-REQS-132-46>

The device shall provide menu settings for the configuration of DLNA services. The following settings shall be supported:

- 1) Enable/disable media upload to device from other DLNA-compliant devices.
- 2) Designate media types to share when device is configured as a media server. Supported media types include the following:
  - Audio (Songs/Sounds)
  - Images
  - Video
- 3) Specify which DLNA-compliant devices are allowed/not allowed to connect to the device. The device shall enable the user to specify a white list of permitted devices and a black list of banned devices.
- 4) Specify media server name for device. The default media server name shall be the device model name.

### **5.1.7 Media Storage Integration** <VZW-REQS-132-47>

For BREW OS devices, the DLNA software shall support storage, display, and transfer of media from the default storage locations on the device as specified in the VZW Media Content Directory Structure requirements.

For all other OSes, the DLNA software shall support storage, display, and transfer of media from the default storage locations on the device as specified in the appropriate OS SDK.

### **5.1.8 Media Formats** <VZW-REQS-132-48>

The device shall support all DLNA-compatible media formats as specified in the VZW Device Feature Definitions requirements document. These include, but are not limited to, the following:

- Portable Network Graphics (PNG)
- Joint Photographic Experts Group (JPEG)
- Graphics Interchange Format (GIF)
- AMR

- [AMR-WB](#)
- [MP3](#)
- [Windows Media Audio \(WMA\) Version 9 and Version 10 Pro](#)
- [Moving Picture Experts Group \(MPEG-4\)](#)
- [H.263](#)
- [H.264](#)
- [Windows Media Video \(WMV\)](#)

### 5.1.9 [Media Player Integration](#) <VZW-REQS-132-49>

[Audio files, pictures, and videos transferred to the device for rendering shall be played by the device player.](#)

### 5.1.10 [APIs](#) <VZW-REQS-132-50>

[The device shall provide the DLNA APIs identified in the following subsections. These APIs will allow other applications on the device to integrate DLNA functions.](#)

#### 5.1.10.1 M-DMC API <VZW-REQS-132-51>

[This API enables an application to provide the Mobile Digital Media Controller \(M-DMC\) function.](#)

#### 5.1.10.2 M-DMS API <VZW-REQS-132-52>

[This API enables an application to provide the Mobile Digital Media Server \(M-DMS\) function.](#)

#### 5.1.10.3 M-DMP API <VZW-REQS-132-53>

[This API enables an application to provide the Mobile Digital Media Player \(M-DMP\) function.](#)

#### 5.1.10.4 M-DMD API <VZW-REQS-132-54>

[This API enables an application to provide the Mobile Digital Media Downloader \(M-DMD\) function.](#)

#### 5.1.10.5 M-DMU API <VZW-REQS-132-55>

[This API enables an application to provide the Mobile Digital Media Uploader \(M-DMU\) function.](#)

#### 5.1.10.6 PrCP API <VZW-REQS-132-80-DEC2011>

[This API enables an application to provide the Printer Control Point functions \(+PR1+ and +PR2+\).](#)

### 5.1.11 [Printing Support](#) <VZW-REQS-132-81-DEC2011>

[The device shall function as a UPnP Printer Control Point \(PrCP\).](#)

[The device shall support the UPnP PrintEnhanced:1 specification.](#)

[The device shall support a page description language composed of the following elements:](#)

- [XHTML-Print](#)



[- CSS Print Profile](#)  
[- CSS2 Print Enhanced](#)

## 5.2 Device to/from Accessories and associated devices based <VZW-REQS-132-56>

### 5.2.1 Connectivity <VZW-REQS-132-57-JUN2011>

[The device shall support 802.11 b/g/n \(Wi-Fi\) for connectivity to other DLNA-compliant devices](#)

[The device may support Wi-Fi Direct for connectivity to other DLNA-compliant devices](#)  
[In addition to Wi-Fi connectivity, HDMI-capable devices shall support HDMI for connectivity to other DLNA-compliant devices. That is, the device shall support the HDMI Ethernet Channel as specified in HDMI version 1.4.](#)

### 5.2.2 Protected Content Support <VZW-REQS-132-58-JUN2011>

[For secure transport of DRM-protected content, the device shall support DTCP-IP.](#)

### 5.2.3 Media Transport <VZW-REQS-132-59>

[The device shall support HTTP for media transport to/from other DLNA-compliant devices](#)  
[The device shall support RTP for media transport to/from other DLNA-compliant devices](#)

## 5.3 NETWORK TO/FROM DEVICE BASED—N/A

N/A.

## 6 Scenarios <VZW-REQS-132-61>

### 6.1 Error Conditions and cause codes <VZW-REQS-132-62>

#### 6.1.1 NO NETWORK CONNECTION <VZW-REQS-132-63>

[If the user is not connected to a Wi-Fi network or HDMI connection, the DLNA application should indicate that no network connections are available.](#)

#### 6.1.2 SIGNAL LOST <VZW-REQS-132-64>

[1\) DLNA Application will attempt to re-connect to Network/remote machine](#)  
[2\) If Failed – customer presented with Lost Network Connection Error Message](#)  
[3\) Application will Exit](#)

#### 6.1.3 REQUESTED CONTENT PROTECTED BY LICENSE (ALLOWED TO MOVE) <VZW-REQS-132-65>

- [1\) DLNA Application will check to see if content is protected](#)
- [2\) Content that is protected, but allowed to be shared, will be accessible via DLNA](#)
- [3\) If content is copied, license will be appropriately updated by mobile device](#)

#### **6.1.4 REQUESTED CONTENT PROTECTED BY LICENSE (NOT ALLOWED TO SHARE, INCLUDES FORWARD LOCKED CONTENT) <VZW-REQS-132-66>**

- [1\) User selects protected content that is not allowed to be shared](#)
- [2\) Customer receives notification in DLNA application that content is rights-protected](#)
- [3\) DLNA Application will refer customer to appropriate application/URL to purchase another version of content from VZW \(e.g., MOD, VOD Applications\)](#)

### **6.2 Interruptions <VZW-REQS-132-68>**

#### **6.2.1 USER RECEIVES A TEXT MESSAGE/PICTURE MESSAGE <VZW-REQS-132-69>**

- [1\) Customer receives notification of a new text message \(via Messaging application\)](#)
- [2\) User shall be able to read/access message during DLNA content transfer](#)
- [3\) If DLNA visual content is currently being played back on mobile device, user should be given option to pause playback to view message](#)
- [4\) If DLNA audio content is currently being played back on mobile device, user shall be able to continue audio playback while viewing message](#)

[See the VZW Multi-Tasking device requirements for additional information.](#)

#### **6.2.2 USER RECEIVES A VOICE CALL <VZW-REQS-132-70>**

- [1\) Customer receives notification of incoming phone call](#)
- [2\) Customer presented with options to answer or ignore call](#)
- [3\) If call Answered:](#)
  - [a\) Data Transfer will continue in background via Wi-Fi or HDMI](#)
  - [b\) If Content being played on mobile device, playback will be paused for duration of voice call \(user has option to play DLNA audio at attenuated volume\)](#)
  - [c\) Upon exit of voice call, and returning to DLNA application, content playback will continue](#)

[See the VZW Multi-Tasking device requirements for additional information.](#)

## **7 Provisioning <VZW-REQS-132-71>**

### **7.1 FACTORY OR PRE-LOADED APPLICATION LOGISTICS <VZW-REQS-132-72>**

[A standalone DLNA application may be pre-loaded on the device. Applicability shall be determined by the Verizon Wireless Device Marketing product development team at feature lockdown.](#)

## 8 Performance <VZW-REQS-132-73>

The DLNA application shall comply with DLNA QoS requirements for 802.11 connectivity, including WMM priority tagging support.

## 9 References <VZW-REQS-132-74>

<Industry Standards References>

1. 3GPP TS 26.140 V5.1.0 (2002-06) Release 5
2. “DLNA Guidelines, August 2009”
3. “HDMI Specification Version 1.4a”

<Verizon Specific Documentation References>

4. “Verizon Wireless Device Testing Process”
5. “Verizon Wireless Device Compliance Test Entrance Criteria

<Other Applicable References>