Digital Home Standards: Choosing and Implementing the Right Ones

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Topics

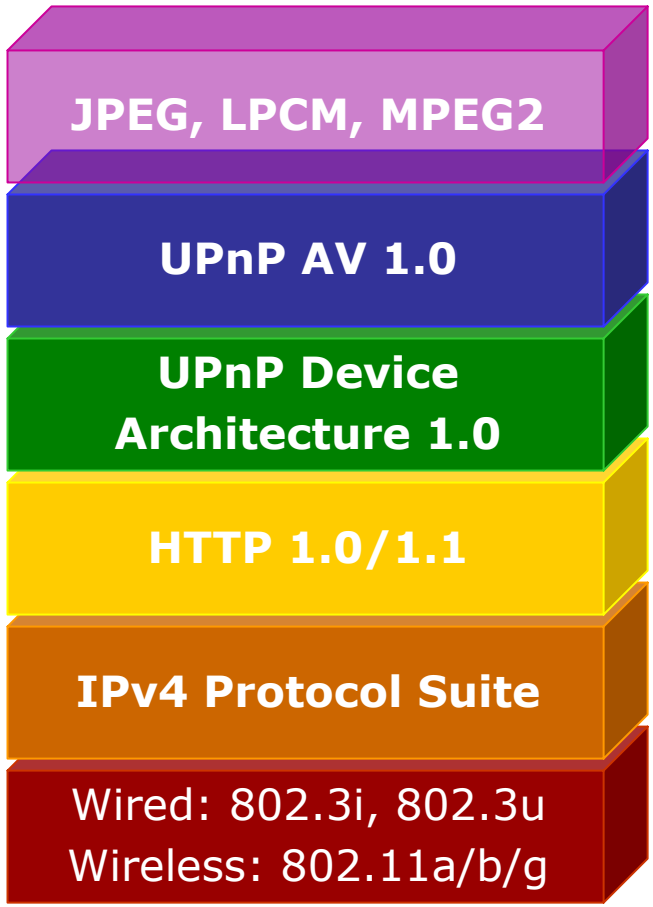
- DLNA Technology
- Complimentary Initiatives
  - UPnP Forum
  - Coral Consortium
  - Marlin Developer Community
- Summary
- Q&A

The DLNA Technology Solution

DLNA Interoperability Guidelines

Connectivity

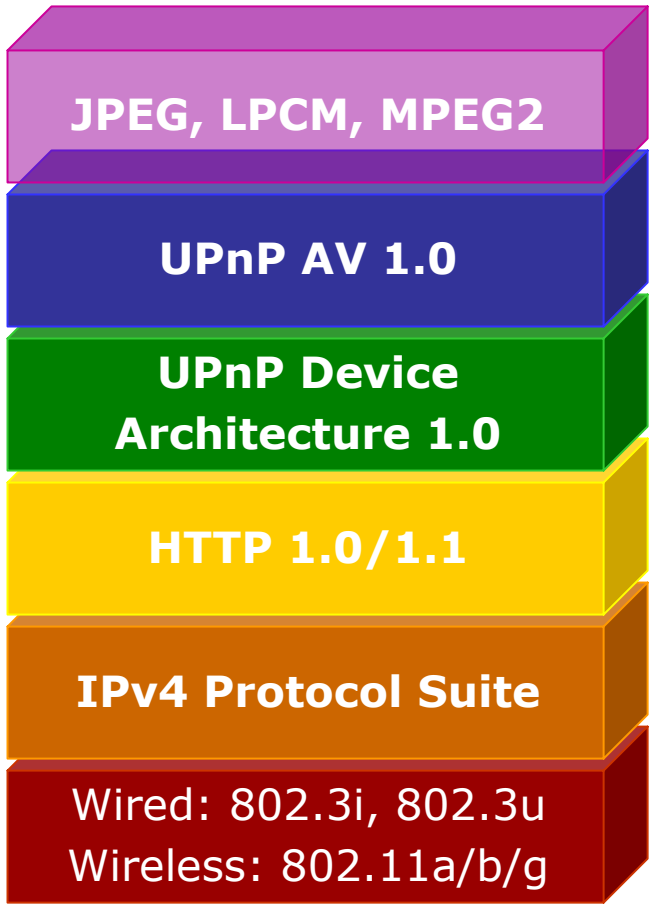
- Ethernet
- Wireless



DLNA Interoperability Guidelines

Networking

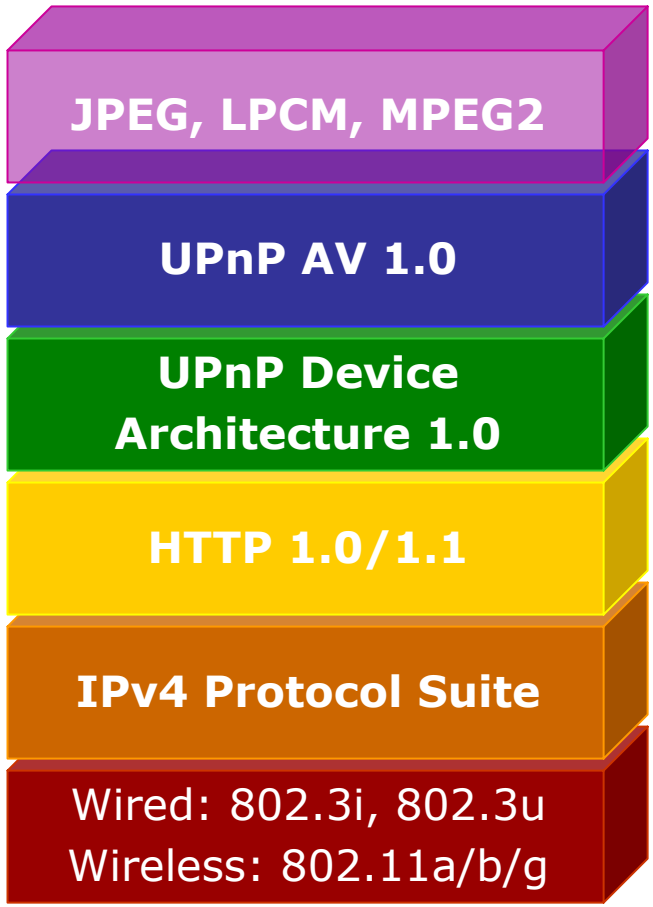
- IP foundation
  - Allows applications to run over different networks
  - Enables connecting devices to the Internet
  - Widely used and cost-effective



DLNA Interoperability Guidelines

Media Transport

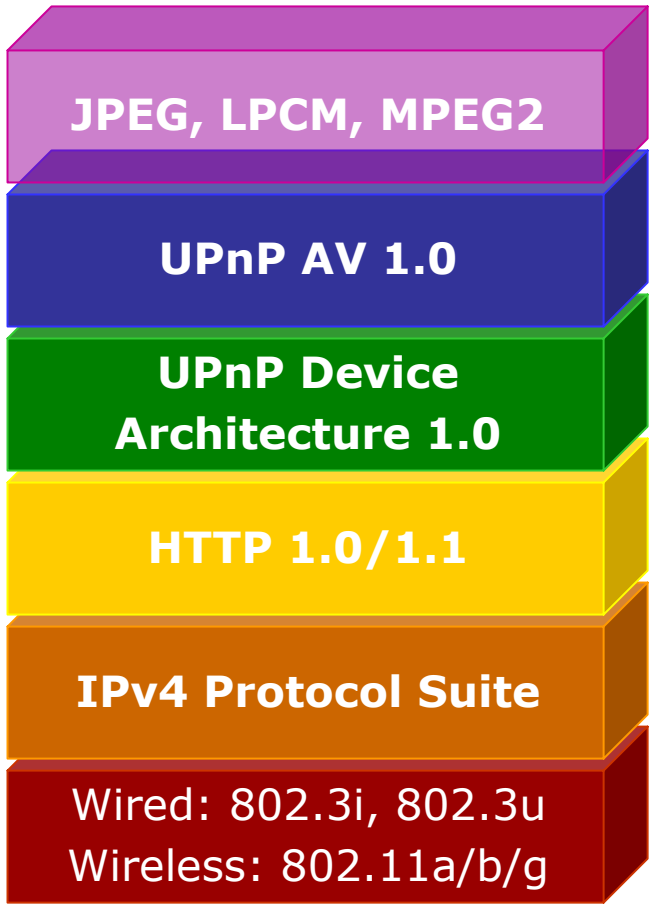
- HTTP is the baseline transport for media streaming or transfer
- HTTP must be supported by all digital home devices that source or render media content
- RTP is optional



DLNA Interoperability Guidelines

Device Discovery & Control

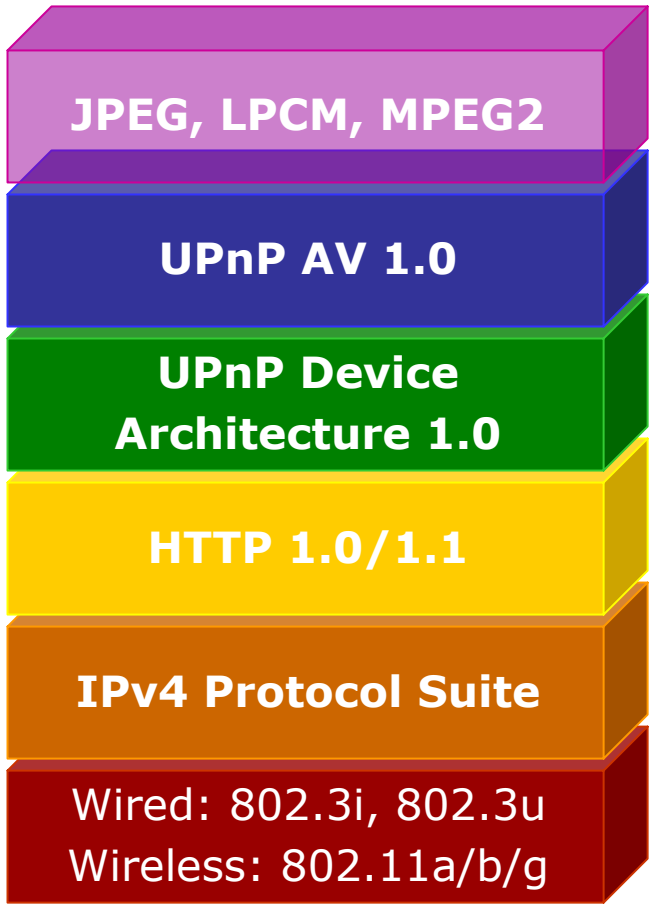
- UPnP Device Architecture 1.0
  - Device and service discovery through Auto-IP and DHCP



DLNA Interoperability Guidelines

Media Management

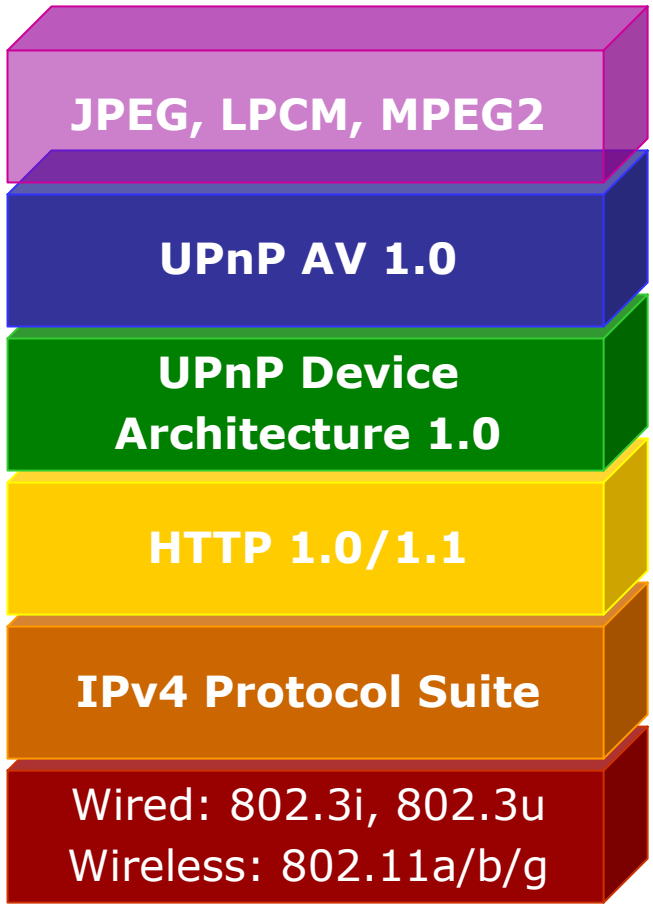
- UPnP AV 1.0 Device and service descriptions
  - Examples:
    - MediaServer
    - MediaRenderer
    - RenderingControl
    - ContentDirectory



DLNA Interoperability Guidelines

Media Formats

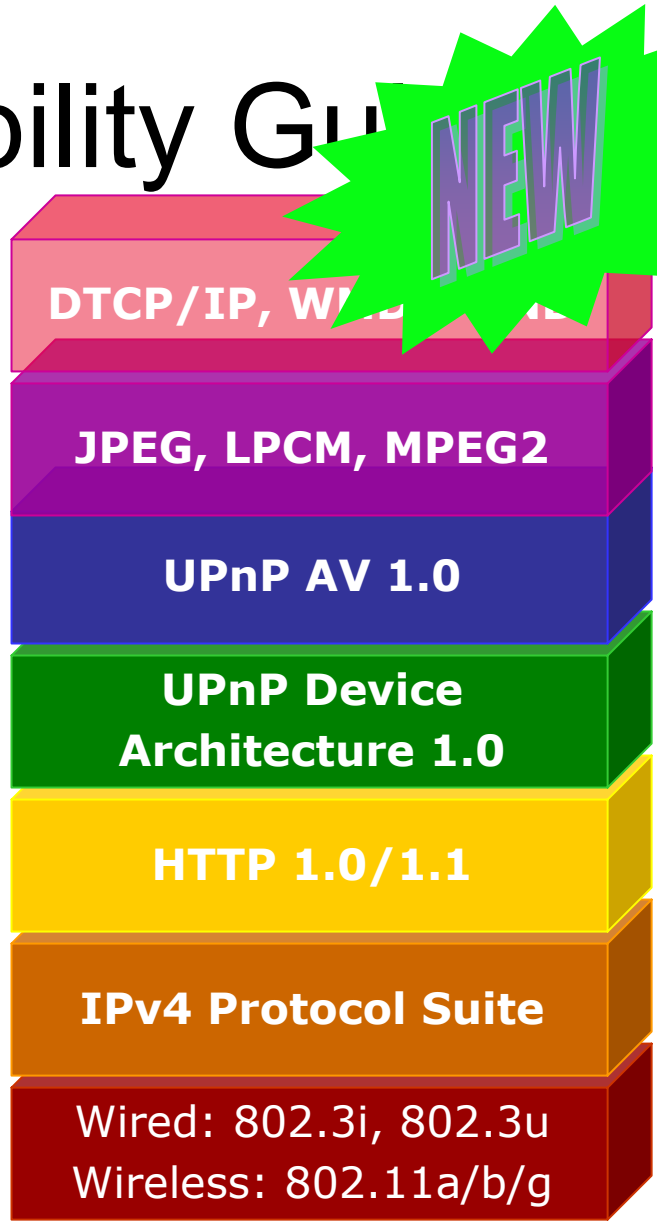
- Required formats establish an interoperability baseline
- Mandatory and optional formats for transport and rendering
- Content in an optional format must be transcoded to the corresponding required format, if necessary for content interchange between devices



DLNA Interoperability Gu[illegible]s

Link Protection

- DTCP/IP Required to establish an interoperability baseline
- WMDRM-ND optional to provide access to additional content

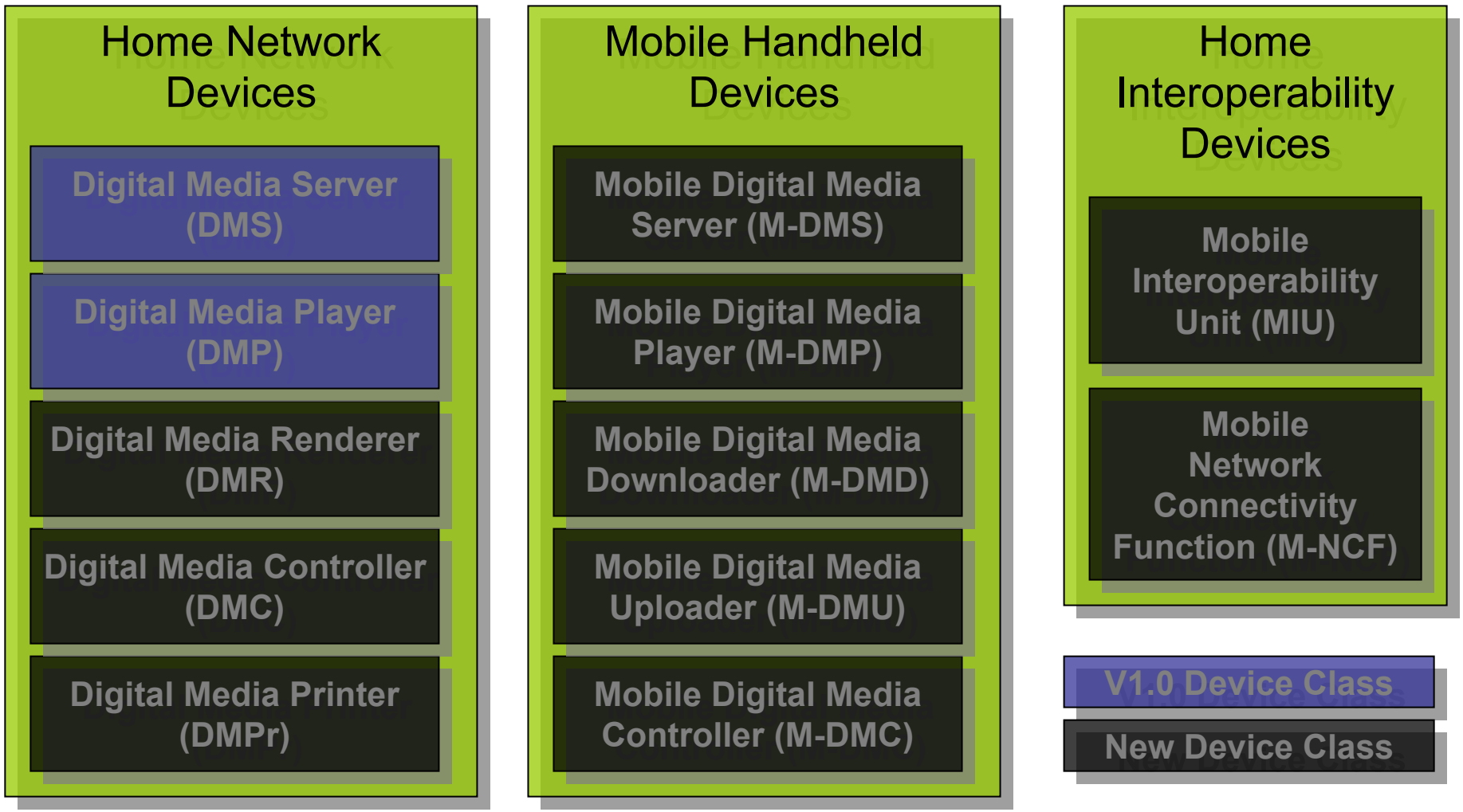


DLNA Link Protection Guidelines

- DTCP/IP required
  - Defines link protection technology for the secure handling of commercial content
    - Establishes a Secure Authenticated Channel (SAC)
    - Generates an ephemeral session key that updates periodically
    - Supports streaming only, with limited copy permissions:
      - Copy one time
      - Never copy
      - Copy restriction right not asserted

Applications of the DLNA Interoperability Platform

DLNA Device Classes



New Device Capabilities

- Capabilities exist in an underlying device class
  - Capabilities cannot exist independently
- Upload / Download Controllers
  - +UP+ - Upload Controller
  - +DN+ - Download Controller
- Push Controller
  - +PU+ - Supports 2 Box Push with DMR
- Printer Controllers
  - +PR1+ - Printer Controller + Image Content Source
  - +PR2+ - Printer Controller (interacts with External Image Content Source such as DMS)
- DLNA Product Capability Terms:
  - FIND(s), FIND(s) (for printer), FIND(s) (3box) SEND(s) (to player, to storage, to printer), GET(s), PLAY(s), STORE(s), PRINT(s)

2 & 3 Box Pull System Usages

2 Box Pull

Digital Media Server
(DMS or M-DMS)
SENDs (to player)

Control

Content

Digital Media Player
(DMP or M-DMP)
PLAYs, FINDs

3 Box Pull

Digital Media Server
(DMS or M-DMS)
SENDs (to player)

Content

Control

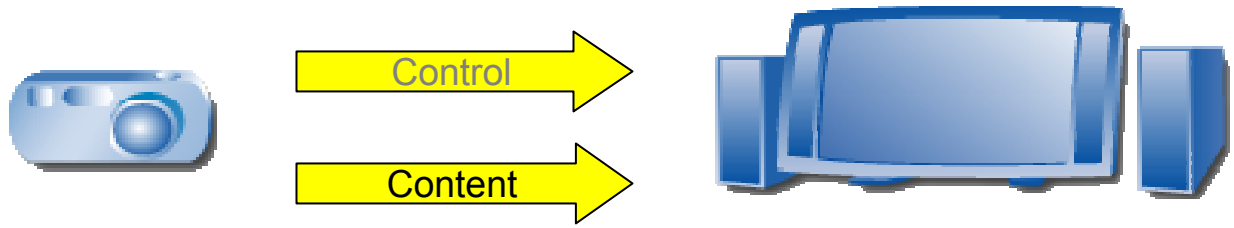
Control

Digital Media Renderer
(DMR) - PLAYs

Digital MediaController
(DMC or M-DMC) – FINDs ('3box', "control point")

2 Box Push System Usage

2 Box Push

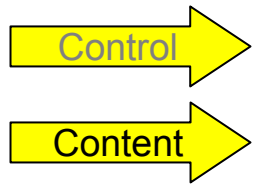


Push Controller
(+PU+)
SENDs (to player)

Digital Media Renderer
(DMR)
PLAYs

Upload & Download System Usages

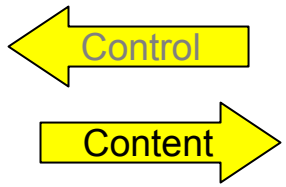
Upload

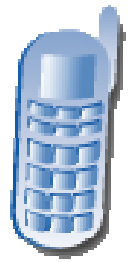


Upload Controller
(+UP+) or M-DMU
SENDs (to storage)

Digital Media Server
(DMS or M-DMS)
STOREs

Download





Digital Media Server
(DMS or M-DMS)
SENDs (to player, to storage)

Download Controller
(+DN+) or M-DMD
GETs

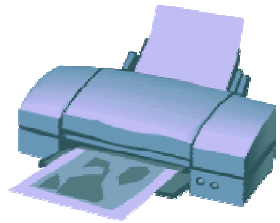
2 & 3 Box Printing System Usages

2 Box Print

Printer Controller
(+PR1+)
SENDs (to printer)

Control

Content



Digital Media Printer
(DMPr)
PRINTs

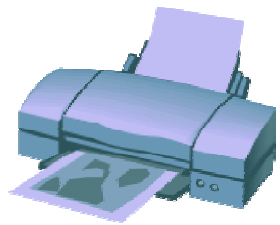
3 Box Print

Digital Media Server
(DMS or M-DMS)
SENDs (to printer)

Content

Control

Control



Digital Media Printer
(DMPr)
PRINTs

Printer Controller
(+PR2+)
FINDs ('3box', photos to print)

Complimentary Initiatives

- DLNA
  - www.dlna.org
- UPnP
  - www.upnp.org
- Marlin Developer Community
  - Defines DRM system in an open standard setting
  - www.marlin-community.com
  - http://www.marlin-community.com/images/wp/MarlinOverviewPaper.pdf
- Coral Consortium
  - Defines DRM interoperability framework
  - www.coral-interop.org
  - http://www.coral-interop.org/main/faqs/Coral.Overview.pdf
- Open IPTV Forum
  - Defines interoperability services from head-end to residential premises
  - http://www.openiptvforum.org/

Summary

Ultimate Challenge and Goal

- Consumer digital AV product choice should be a price, design, feature, function, brand choice, not a technology choice
  - Utility of products and access to content should not be constrained by the specific vendor or the technologies that are or are not incorporated
- Consumer content choice should be a personal, emotional choice, not a technology choice
  - Access to content from digital AV products should not be constrained by where or how you purchased the content or by the devices you own or who manufactured them
- The rights of all stakeholders in the content-to-device value chain must be protected
  - Consumer's should get what they pay for by participating in a healthy ecosystem comprised of broad and diverse product, service and content offerings driven and sustained by growing business opportunity

Backup

DLNA Certified Products

- Sony Corporation TVs
  - BRAVIA KDL-46X100
  - BRAVIA KDL-40X100
  - BRAVIA KDL-40J500
  - BRAVIA KDL-40J300
  - BRAVIA KDL-32J300
  - BRAVIA KDL-32J500
  - BRAVIA KDL-26J300
  - BRAVIA KDL-20J300
- Sony VAIO PCs
  - All of them, world wide
- Audio products
  - NetJuke NAS-M7HD
  - MUSIC BAR CPF-IX001
- Digital Cameras
  - Cyber-shot DSC-G1

Questions ?