
# High-bandwidth Digital Content Protection

## *Repeater Implementations*

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# Use of This Information

These slides are provided as a general, high level, overview of various ways to implement HDCP Repeaters.

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By using this information, the user understands that the information may be incomplete and may not represent the latest HDCP License Agreement or HDCP Specification requirements and therefore in the event of a conflict, the HDCP License Agreement and/or HDCP Specification’s information will govern.

# HDCP Highlights

- HDCP is a render only technology
  - Once content is protected by HDCP; it must remain so until rendered for presentation
  - HDCP Protected Content can be passed through HDCP Repeaters from one HDCP Protected Interface to one or more HDCP Protected Interfaces
- HDCP Protected Content can be passed through a mixed tree
  - HDCP 1.x Protected Content can be passed to HDCP 2.2 Protected Interfaces
  - HDCP 2.x Protected Content can be passed to HDCP 1.x Protected Interfaces as long as it is Type 0 Content
- HDCP has no Approved Outputs; other than HDCP
- HDCP Protected Content may never be passed over analog or other non-DCP Approved interfaces

# HDCP Devices and Generic Function

## HDCP Source

HDCP Protected Interface

Point where content is first protected by HDCP

## HDCP Repeater

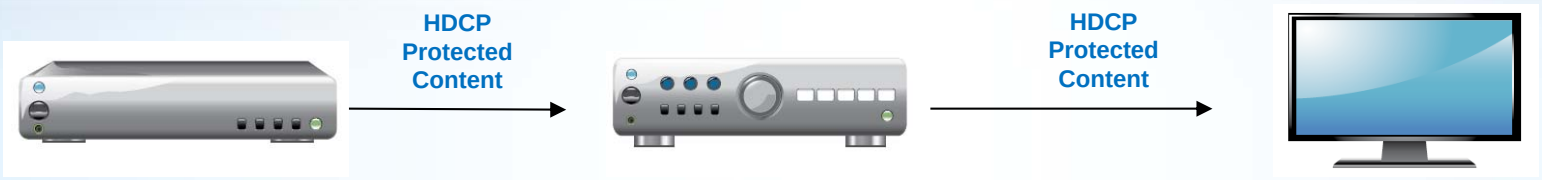
HDCP Protected Interface

HDCP Content is decrypted, and then re-encrypted; possibly into another interface or HDCP Version

## HDCP Sink

Point where content is rendered for final presentation

# HDCP 2.2 – “Content Type 1” Scenarios




**The HDCP Source encrypts the content in HDCP 2.2; sets Content Type 1**

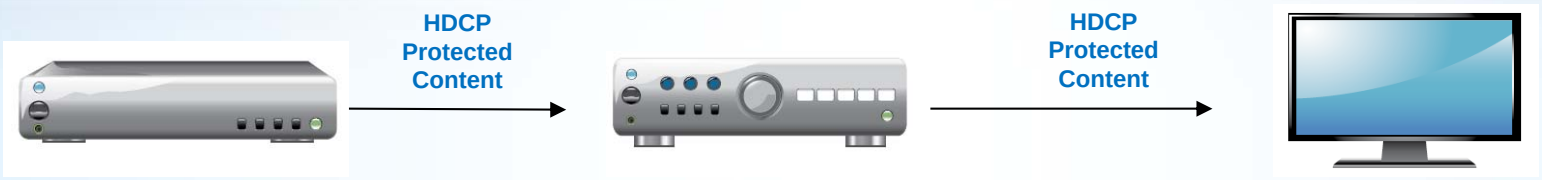
**After decrypting the content; the HDCP Repeater may:**

- **Re-encrypt on the same HDCP Protected Interface (HDMI->HDMI)**
- **Re-encrypt onto another HDCP Protected Interface (HDMI->HDBaseT)**
- **Re-encrypt onto the same (or higher) HDCP Version (HDCP 2.2->HDCP 2.2)**

**The HDCP Repeater may NOT:**

- **Re-encrypt onto a lower HDCP version (HDCP 2.2->HDCP 2.0 or 1.x)**
- **Output the content to ANY non-HDCP Protected Interface; including:**
  - **Other Content Protection (DTCP, MacroVision, etc.)**
  - **Any analog interface (component, composite, etc.)**

# HDCP 2.2 – “Content Type 0” Scenarios




**The HDCP Source encrypts the content in HDCP 2.2; sets Content Type 0**

**After decrypting the content; the HDCP Repeater may:**

- **Re-encrypt on the same HDCP Protected Interface (HDMI->HDMI)**
- **Re-encrypt onto another HDCP Protected Interface (HDMI->HDBaseT)**
- **Re-encrypt onto the same (or higher) HDCP Version (HDCP 2.2->HDCP 2.2)**
- **Re-encrypt onto a lower HDCP Version (HDCP 2.2->HDCP 2.0 or 1.x)**

**The HDCP Repeater may NOT:**

- **Output the content to ANY non-HDCP Protected Interface; including:**
  - **Other Content Protection (DTCP, MacroVision, etc.)**
  - **Any analog interface (component, composite, etc.)**

# HDCP 1.x Scenarios


The HDCP Source encrypts the content in HDCP 1.x

After decrypting the content; the HDCP Repeater may:

- Re-encrypt on the same HDCP Protected Interface (HDMI->HDMI)
- Re-encrypt onto another HDCP Protected Interface (HDMI->HDBaseT)
- Re-encrypt onto the same (or higher) HDCP Version (HDCP 1.x->HDCP 2.2)
- Re-encrypt onto a lower HDCP Version (HDCP 1.4->HDCP 1.3)

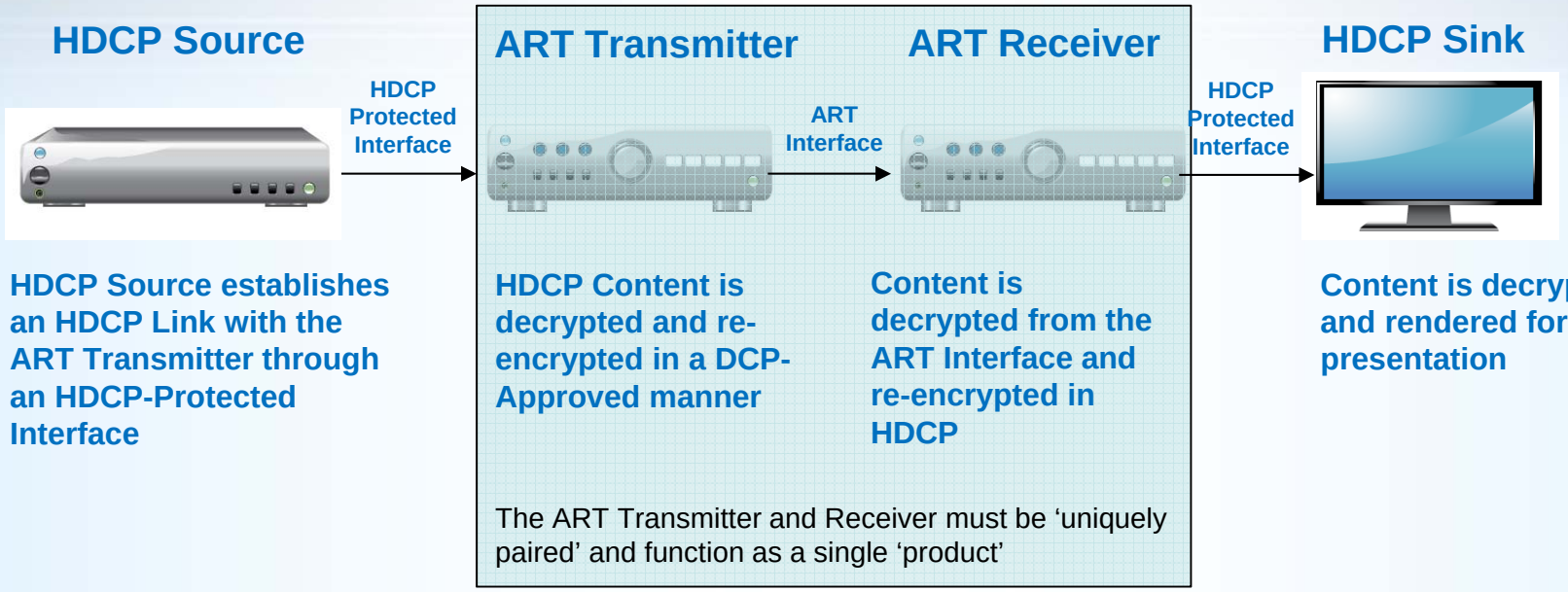
The HDCP Repeater may NOT:

- Output the content to ANY non-HDCP Protected Interface; including:
  - Other Content Protection (DTCP, MacroVision, etc.)
  - Any analog interface (component, composite, etc.)

# HDCP Approved Interfaces

- Listed on the DCP Website (www.digital-cp.com/hdcp-specifications)
  - HDMI
  - DisplayPort
  - HDBaseT (uses Cat 5/6 cabling)
  - Miracast
- Authorized Retransmission Technologies approved by DCP
  - Listed in HDCP License Agreement
  - 1-1 pairing of devices; operates as a ‘Single Licensed Product’
- HDCP ‘Tunneling’
  - HDCP content is not decrypted; it is simply re-packetized and transmitted
  - Not tied to a specific ‘Interface’
  - Not considered an HDCP Device as there is no HDCP Decryption

# HDCP Approved Retransmission Technology (ART)




*DCP is no longer accepting submissions for new ARTs

# HDCP Tunneling

| HDCP Source | Tunnel Entrance | Tunnel Exit | HDCP Sink |
|---|---|---|---|
|  |  |  |  |
| HDCP Source establishes an HDCP Link with the HDCP Sink through the 'tunnel' | HDCP Content is NOT decrypted; it is reformatted into the 'Tunnel Interface' | 'Tunnel Interface' is converted back to the original HDCP Protected Interface; content is NOT re-encrypted as it was not previously decrypted | Content is decrypted and rendered for presentation |