High-bandwidth Digital Content Protection System

Mapping HDCP to WirelessHD

Revision 2.0

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Notice

Acknowledgement

SiBeam, Inc. has contributed to the development of this specification.

Intellectual Property

Implementation of this specification requires a license from the Digital Content Protection LLC.

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Revision History

1 Introduction 5
1.1 Scope 5
1.2 Definitions 5
1.3 Overview 8
1.4 Terminology 9
1.5 References 9

2 Authentication Protocol 10
2.1 Overview 10
2.2 Authentication and Key Exchange 11
2.2.1 Pairing 14
2.3 Locality Check 15
2.4 Session Key Exchange 16
2.5 Authentication with Repeaters 17
2.6 Link Synchronization 21
2.7 Authentication Failures 21
2.8 Key Derivation 22
2.9 HDCP Transmitter State Diagram 22
2.9.1 Main HDCP Transmitter Function 26
2.10 HDCP Receiver State Diagram 28
2.11 HDCP Repeater State Diagrams 29
2.11.1 Propagation of Topology Errors and Receiver Connected / Disconnected Indication 30
2.11.2 HDCP Repeater Downstream State Diagram 31
2.11.3 HDCP Repeater Upstream State Diagram 34
2.12 Converters 37
2.12.1 HDCP 2 – HDCP 1.x Converters 37
2.12.2 HDCP 1.x – HDCP 2 Converters 38
2.13 Session Key Validity 38
2.14 Random Number Generation 39

3 HDCP Encryption 40
3.1 Description 40
3.2 AV Stream 40
3.3 Abbreviations 40
3.4 HDCP Cipher 40
3.5 Uniqueness of k_s and r_{iv} 42

4 Authentication Protocol Messages 44
4.1 HDCP Control / Status Stream in WirelessHD 44
4.2 Message Format 44
4.2.1 AKE_Init (Transmitter to Receiver) 44
4.2.2 AKE_Send_Cert (Receiver to Transmitter) 45
4.2.3 AKE_No_Stored_km (Transmitter to Receiver) 45
4.2.4 AKE_Stored_km (Transmitter to Receiver) 45
4.2.5 AKE_Send_rrx (Receiver to Transmitter) 45
4.2.6 AKE_Send_H_prime (Receiver to Transmitter) 45
4.2.7 AKE_Send_Pairing_Info (Receiver to Transmitter) 46
4.2.8 LC_Init (Transmitter to Receiver) 46
4.2.9 RTT_Ready (Receiver ready for RTT challenge) 46
4.2.10 RTT_Challenge (Transmitter to Receiver) 46
4.2.11 RTT_Response (Receiver to Transmitter) 46
4.2.12 SKE_Send_Eks (Transmitter to Receiver) 47
4.2.13 RepeaterAuth_Send_ReceiverID_List (Receiver to Transmitter) 47

5 Renewability 48

5.1 SRM Size and Scalability....49
5.2 Updating SRMs....50

Appendix A. Confidentiality and Integrity of Values....52

Appendix B. DCP LLC Public Key....54

Appendix C. Bibliography (Informative)....55

Appendix D. Test Vectors....56

1 Introduction

1.1 Scope

This specification describes a WirelessHD mapping of the High-bandwidth Digital Content Protection (HDCP) system, Revision 2.00. This specification is to be applied on implementations of the WirelessHD™ interface as explained in subsequent chapters.

In an HDCP System, two or more HDCP Devices are interconnected through an HDCP-protected Interface. The Audiovisual Content flows from the Upstream Content Control Function into the HDCP System at the most upstream HDCP Transmitter. From there the Audiovisual Content encrypted by the HDCP System, referred to as HDCP Content, flows through a tree-shaped topology of HDCP Receivers over HDCP-protected Interfaces. This specification describes a content protection mechanism for: (1) authentication of HDCP Receivers to their immediate upstream connection (i.e., an HDCP Transmitter), (2) revocation of HDCP Receivers that are determined by the Digital Content Protection, LLC, to be invalid, and (3) HDCP Encryption of Audiovisual Content over the HDCP-protected Interfaces between HDCP Transmitters and their downstream HDCP Receivers. HDCP Receivers may render the HDCP Content in audio and visual form for human consumption. HDCP Receivers may be HDCP Repeaters that serve as downstream HDCP Transmitters emitting the HDCP Content further downstream to one or more additional HDCP Receivers.

Unless otherwise specified, the term "HDCP Receiver" is also used to refer to the upstream HDCP-protected interface port of an HDCP Repeater. Similarly, the term "HDCP Transmitter" is also used to refer to the downstream HDCP-protected interface port of an HDCP Repeater

Except when specified otherwise, HDCP 2.0-compliant Devices must interoperate with other HDCP 2.0-compliant Devices connected to their HDCP-protected Interface Ports using the same protocol. HDCP Transmitters must support HDCP Repeaters.

The state machines in this specification define the required behavior of HDCP Devices. The link-visible behavior of HDCP Devices implementing the specified state machines must be identical, even if implementations differ from the descriptions. The behavior of HDCP Devices implementing the specified state machines must also be identical from the perspective of an entity outside of the HDCP System.

Implementations must include all elements of the content protection system described herein, unless the element is specifically identified as informative or optional. Adopters must also ensure that implementations satisfy the robustness and compliance rules described in the technology license. Additionally, HDCP Transmitters may be subject to additional robustness and compliance rules associated with other content protection technologies.

Device discovery and association, and link setup and teardown, is outside the scope of this specification.

1.2 Definitions

The following terminology, as used throughout this specification, is defined as herein:

Audiovisual Content. Audiovisual works (as defined in the United States Copyright Act as in effect on January 1, 1978), text and graphic images, are referred to as *AudioVisual Content.*

Authorized Device. An HDCP Device that is permitted access to HDCP Content is referred to as an *Authorized Device*. An HDCP Transmitter may test if a connected HDCP Receiver is an Authorized Device by successfully completing the following stages of the authentication protocol – Authentication and Key Exchange (AKE) and Locality check. If the authentication protocol

successfully results in establishing authentication, then the other device is considered by the HDCP Transmitter to be an Authorized Device.

Device Key Set. An HDCP Receiver has a Device Key Set, which consists of its corresponding Device Secret Keys along with the associated Public Key Certificate.

Device Secret Keys. For an HDCP Transmitter, Device Secret Key consists of the secret global constant. For an HDCP Receiver, Device Secret Keys consists of the secret global constant and the RSA private key. The Device Secret Keys are to be protected from exposure outside of the HDCP Device.

downstream. The term, *downstream*, is used as an adjective to refer to being towards the sink of the HDCP Content stream. For example, when an HDCP Transmitter and an HDCP Receiver are connected over an HDCP-protected Interface, the HDCP Receiver can be referred to as the *downstream* HDCP Device in this connection. For another example, on an HDCP Repeater, the HDCP-protected Interface Port(s) which can emit HDCP Content can be referred to as its *downstream* HDCP-protected Interface Port(s). See also, *upstream*.

Global Constant. A 128-bit random, secret constant provided only to HDCP Adopters and used during HDCP Content encryption or decryption

HDCP 1.x. *HDCP 1.x* refers to, specifically, the variant of HDCP described by Revision 1.00 (referred to as HDCP 1.0), Revision 1.10 (referred to as HDCP 1.1), Revision 1.20 (referred to as HDCP 1.2) and Revision 1.30 (referred to as HDCP 1.3) along with their associated errata, if applicable.

HDCP 1.x-compliant Device. An HDCP Device that is designed in adherence to HDCP 1.x, defined above, is referred to as an *HDCP 1.x-compliant Device*.

HDCP 2. *HDCP 2* refers to, specifically, the variant of HDCP mapping for all HDCP protected interfaces described by Revision 2.00 and higher versions along with their associated errata, if applicable.

HDCP 2.0. *HDCP 2.0* refers to, specifically, the variant of HDCP mapping described by Revision 2.00 of this specification along with its associated errata, if applicable.

HDCP 2.0-compliant Device. An HDCP Device that is designed in adherence to HDCP 2.0 is referred to as an *HDCP 2.0-compliant Device*.

HDCP Content. *HDCP Content* consists of Audiovisual Content that is protected by the HDCP System. *HDCP Content* includes the Audiovisual Content in encrypted form as it is transferred from an HDCP Transmitter to an HDCP Receiver over an HDCP-protected Interface, as well as any translations of the same content, or portions thereof. For avoidance of doubt, Audiovisual Content that is never encrypted by the HDCP System is not *HDCP Content*.

HDCP Device. Any device that contains one or more HDCP-protected Interface Port and is designed in adherence to HDCP is referred to as an *HDCP Device*.

HDCP Encryption. *HDCP Encryption* is the encryption technology of HDCP when applied to the protection of HDCP Content in an HDCP System.

HDCP Receiver. An HDCP Device that can receive and decrypt HDCP Content through one or more of its HDCP-protected Interface Ports is referred to as an *HDCP Receiver*.

HDCP Repeater. An HDCP Device that can receive and decrypt HDCP Content through one or more of its HDCP-protected Interface Ports, and can also re-encrypt and emit said HDCP Content

through one or more of its HDCP-protected Interface Ports, is referred to as an *HDCP Repeater*. An *HDCP Repeater* may also be referred to as either an HDCP Receiver or an HDCP Transmitter when referring to either the upstream side or the downstream side, respectively.

HDCP System. An *HDCP System* consists of an HDCP Transmitter, zero or more HDCP Repeaters and one or more HDCP Receivers connected through their HDCP-protected interfaces in a tree topology; whereas the said HDCP Transmitter is the HDCP Device most upstream, and receives the Audiovisual Content from one or more Upstream Content Control Functions. All HDCP Devices connected to other HDCP Devices in an *HDCP System* over HDCP-protected Interfaces are part of the *HDCP System*.

HDCP Transmitter. An HDCP Device that can encrypt and emit HDCP Content through one or more of its HDCP-protected Interface Ports is referred to as an *HDCP Transmitter*.

HDCP. *HDCP* is an acronym for High-bandwidth Digital Content Protection. This term refers to this content protection system as described by any revision of this specification and its errata.

HDCP-protected Interface Port. A logical connection point on an HDCP Device that supports an HDCP-protected Interface is referred to as an *HDCP-protected Interface Port*. A single connection can be made over an HDCP-protected interface port.

HDCP-protected Interface. An interface for which HDCP applies is described as an *HDCP-protected Interface*.

Public Key Certificate. Each HDCP Receiver is issued a Public Key Certificate signed by DCP LLC, and contains the Receiver ID and RSA public key corresponding to the HDCP Receiver.

RX_Connected. An indication to the HDCP Transmitter that an active receiver has been connected to it. The format of the indication or the method used by the HDCP Transmitter to connect to or disconnect from a receiver is outside the scope of this specification.

RX_Disconnected. An indication to the HDCP Transmitter that the receiver has been disconnected from it. The format of the indication or the method used by the HDCP Transmitter to connect to or disconnect from a receiver is outside the scope of this specification.

Receiver ID. A 40-bit value that uniquely identifies the HDCP Receiver. It has the same format as an HDCP 1.x KSV i.e. it contains 20 ones and 20 zeroes.

Upstream Content Control Function. The HDCP Transmitter most upstream in the HDCP System receives Audiovisual Content to be protected from the *Upstream Content Control Function*. An instance of the *Upstream Content Control Function* transmits a content stream to the HDCP Transmitter. The *Upstream Content Control Function* is not part of the HDCP System, and the methods used, if any, by the *Upstream Content Control Function* to determine for itself the HDCP System is correctly authenticated or permitted to receive the Audiovisual Content, or to transfer the Audiovisual Content to the HDCP System, are beyond the scope of this specification. On a personal computer platform, an example of an *Upstream Content Control Function* may be software designed to emit Audiovisual Content to a display or other presentation device that requires HDCP.

upstream. The term, *upstream*, is used as an adjective to refer to being towards the source of the HDCP Content stream. For example, when an HDCP Transmitter and an HDCP Receiver are connected over an HDCP-protected Interface, the HDCP Transmitter can be referred to as the *upstream* HDCP Device in this connection. For another example, on an HDCP Repeater, the HDCP-protected Interface Port(s) which can receive HDCP Content can be referred to as its *upstream* HDCP-protected Interface Port(s). See also, *downstream*.

1.3 Overview

HDCP is designed to protect the transmission of Audiovisual Content between an HDCP Transmitter and an HDCP Receiver. The HDCP Transmitter may support simultaneous connections to HDCP Receivers through one or more of its HDCP-protected interface ports. The system also allows for HDCP Repeaters that support downstream HDCP-protected Interface Ports. The HDCP System places the following constraints on the number of HDCP Devices and levels of HDCP Repeaters in the topology.

1. Up to four levels of HDCP Repeaters and as many as 32 total HDCP Devices, including HDCP Repeaters, are allowed to be connected to an HDCP-protected Interface port; and

2. An instance of an Upstream Content Control Function transmits a content stream to the HDCP Transmitter. For every such content stream received and encrypted by the HDCP System, the HDCP Transmitter is allowed to transmit the generated HDCP Content stream to up to four levels of HDCP Repeaters and as many as 32 total HDCP Devices, including HDCP Repeaters.

Figure 1.1 illustrates an example connection topology for HDCP Devices.

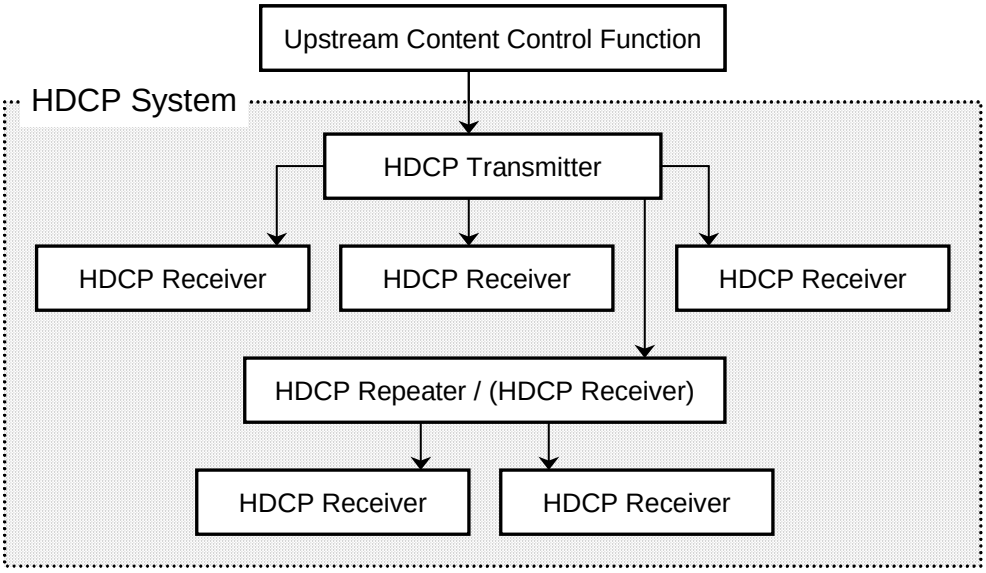


Figure 1.1. Sample Connection Topology of an HDCP System

There are three elements of the content protection system. Each element plays a specific role in the system. First, there is the authentication protocol, through which the HDCP Transmitter verifies that a given HDCP Receiver is licensed to receive HDCP Content. The authentication protocol is implemented between the HDCP Transmitter and its corresponding downstream HDCP Receiver. With the legitimacy of the HDCP Receiver determined, encrypted HDCP Content is transmitted between the two devices based on shared secrets established during the authentication protocol. This prevents eavesdropping devices from utilizing the content. Finally, in the event that legitimate devices are compromised to permit unauthorized use of HDCP Content, renewability allows an HDCP Transmitter to identify such compromised devices and prevent the transmission of HDCP Content.

This document contains chapters describing in detail the requirements of each of these elements. In addition, a chapter is devoted to describing the cipher structure that is used in the encryption of HDCP Content.

1.4 Terminology

Throughout this specification, names that appear in italic refer to values that are exchanged during the HDCP cryptographic protocol. C-style notation is used throughout the state diagrams and protocol diagrams, although the logic functions AND, OR, and XOR are written out where a textual description would be more clear.

This specification uses the big-endian notation to represent bit strings so that the most significant bit in the representation is stored in the left-most bit position. The concatenation operator '||' combines two values into one. For eight-bit values *a* and *b*, the result of (*a* || *b*) is a 16-bit value, with the value *a* in the most significant eight bits and *b* in the least significant eight bits.

1.5 References

[1]. Digital Content Protection (DCP) LLC, High-bandwidth Digital Content Protection System, Revision 1.3, December 21, 2006.

[2]. Digital Content Protection (DCP) LLC, HDCP Specification 1.3 – Amendment for DisplayPort, Revision 1.0, December 19, 2006.

[3]. WirelessHD Specification, Revision 1.1.

[4]. National Institute of Standards and Technology (NIST), *Advanced Encryption Standard (AES)*, FIPS Publication 197, November 26, 2001.

[5]. RSA Laboratories, *RSA Cryptography Standard*, PKCS #1 v2.1, June 14, 2002.

[6]. National Institute of Standards and Technology (NIST), *Secure Hash Standard (SHS)*, FIPS Publication 180-2, August 1, 2002.

[7]. Internet Engineering Task Force (IETF), *HMAC: Keyed-Hashing for Message Authentication*, Request for Comments (RFC) 2104, February 1997.

[8]. National Institute of Standards and Technology (NIST), Recommendation for Random Number Generation Using Deterministic Random Bit Generators, Special Publication 800-90, March 2007.

2 Authentication Protocol

2.1 Overview

The HDCP Authentication protocol is an exchange between an HDCP Transmitter and an HDCP Receiver that affirms to the HDCP Transmitter that the HDCP Receiver is authorized to receive HDCP Content. It is comprised of the following stages

- Authentication and Key Exchange (AKE) – The HDCP Receiver's public key certificate is verified by the HDCP Transmitter. A master key k_m is exchanged.
- Locality Check – The HDCP Transmitter enforces locality on the content by requiring that the Round Trip Time (RTT) between a pair of messages is not more than 1 ms.
- Session Key Exchange (SKE) – The HDCP Transmitter exchanges session key k_s with the HDCP Receiver.
- Authentication with Repeaters – The step is performed by the HDCP Transmitter only with HDCP Repeaters. In this step, the repeater assembles downstream topology information and forwards it to the upstream HDCP Transmitter.

Successful completion of AKE and locality check stages affirms to the HDCP Transmitter that the HDCP Receiver is authorized to receive HDCP Content. At the end of the authentication protocol, a communication path is established between the HDCP Transmitter and HDCP Receiver that only Authorized Devices can access.

All HDCP Devices contain a 128-bit secret global constant denoted by lc_{128}. All HDCP Devices share the same global constant. lc_{128} is provided only to HDCP Adopters.

The HDCP Transmitter contains the 3072-bit RSA public key of DCP LLC denoted by $kpub_{dcp}$.

The HDCP Receiver is issued 1024-bit RSA public and private keys. The public key is stored in a Public Key Certificate issued by DCP LLC, denoted by $cert_{rx}$. Table 2.1 gives the fields contained in the certificate. All values are stored in big-endian format.

Name	Size (bits)	Bit position	Function
Receiver ID	40	4175:4136	Unique receiver identifier. It has the same format as an HDCP 1.x KSV i.e. it contains 20 ones and 20 zeroes
Receiver Public Key	1048	4135:3088	Unique RSA public key of HDCP Receiver denoted by $kpub_{rx}$. The first 1024 bits is the big-endian representation of the modulus n and the trailing 24 bits is the big-endian representation of the public exponent e
Reserved	16	3087:3072	Reserved for future definition. Must be 0x0000
DCP LLC Signature	3072	3071:0	A cryptographic signature calculated over all preceding fields of the certificate. RSASSA-PKCS1-v1_5 is the signature scheme used as defined by PKCS #1 V2.1: RSA Cryptography Standard. SHA-256 is the underlying hash function

Table 2.1. Public Key Certificate of HDCP Receiver

The secret RSA private key is denoted by $kpriv_{rx}$. The computation time of RSA private key operation can be reduced by using the Chinese Remainder Theorem (CRT) technique. Therefore, it is recommended that HDCP Receivers use the CRT technique for private key computations.

2.2 Authentication and Key Exchange

Authentication and Key Exchange (AKE) is the first step in the authentication protocol. Figure 2.1 and Figure 2.2 illustrates the AKE. The HDCP Transmitter (*Device A*) can initiate authentication at any time, even before a previous authentication exchange has completed. The HDCP Transmitter initiates a new HDCP Session by sending a new r_{tx} as part of the authentication initiation message, AKE_Init. Message formats are defined in Section 4.2.

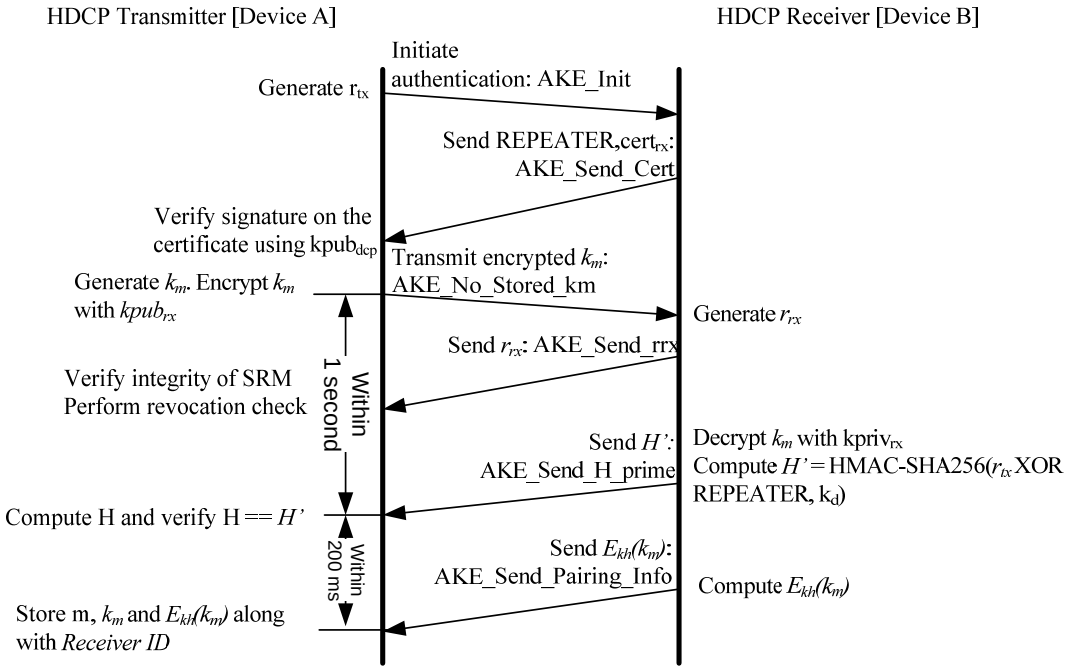


Figure 2.1. Authentication and Key Exchange (Without Stored k_m)

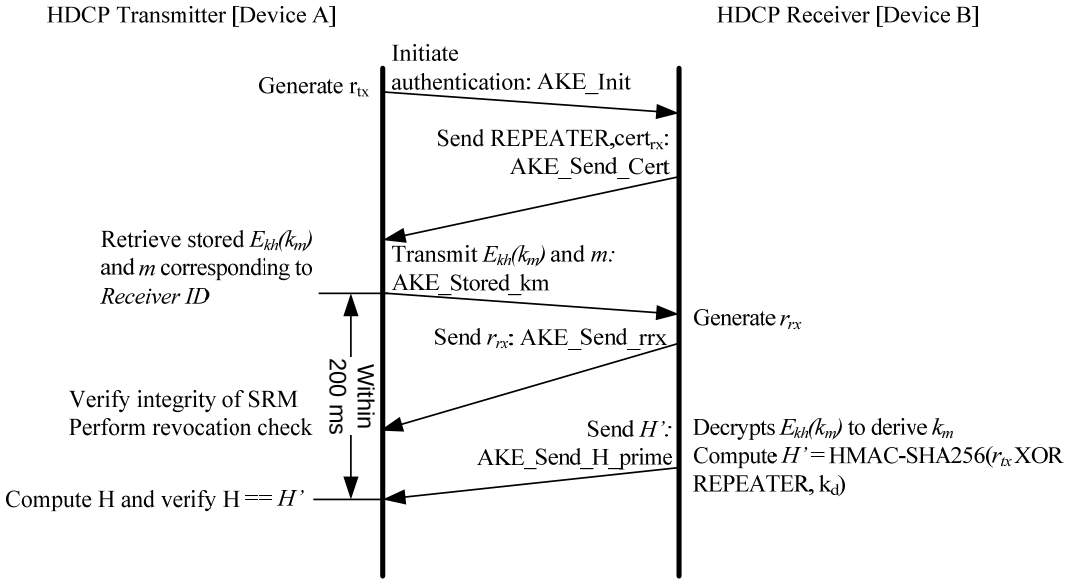


Figure 2.2. Authentication and Key Exchange (With Stored k_m)

The HDCP Transmitter

- Initiates authentication by sending the initiation message, AKE_Init, containing a 64-bit pseudo-random value (r_{tx}).

- Receives AKE_Send_Cert from the receiver containing REPEATER and $cert_{rx}$ values. REPEATER indicates whether the connected receiver is an HDCP Repeater

- Extracts *Receiver ID* from $cert_{rx}$

    - If the HDCP Transmitter does not have a 128-bit master key k_m stored corresponding to the *Receiver ID* (See Section 2.2.1)

        - Verifies the signature on the certificate using $kpub_{dcp}$. Failure of signature verification constitutes an authentication failure and the HDCP Transmitter aborts the authentication protocol (See Section 2.7 on handling authentication failures).

        - Generates a pseudo-random 128-bit master key k_m. Encrypts k_m with $kpub_{rx}$ ($E_{kpub}(km)$) and sends AKE_No_Stored_km message to the receiver containing the 1024-bit $E_{kpub}(km)$. RSAES-OAEP encryption scheme must be used as defined by PKCS #1 V2.1: RSA Cryptography Standard. SHA-256 is the underlying hash function. The mask generation function used is MGF1 which uses SHA-256 as its underlying hash function.

        - Verifies integrity of the System Renewability Message (SRM). It does this by checking the signature of the SRM using $kpub_{dcp}$. Failure of this integrity check constitutes an authentication failure and causes the HDCP Transmitter to abort authentication protocol (See Section 2.7 on handling authentication failures).

          The top-level HDCP Transmitter checks to see if the *Receiver ID* of the connected device is found in the revocation list. If the *Receiver ID* of the connected HDCP Device is found in the revocation list, authentication fails and the authentication protocol is aborted (See Section 2.7 on handling authentication failures). SRM integrity check and revocation check are performed only by the top-level HDCP Transmitter.

        - Receives AKE_Send_rrx message from the receiver containing the 64-bit pseudo-random value (r_{rx}).

        - Performs key derivation as explained in Section 2.8 to generate 256-bit k_d. $k_d = dkey_0 \parallel dkey_1$, where $dkey_0$ and $dkey_1$ are derived keys generated when ctr = 0 and ctr = 1 respectively. $dkey_0$ and $dkey_1$ are in big-endian order.

        - Computes 256-bit H = HMAC-SHA256(r_{tx} XOR REPEATER, k_d) where HMAC-SHA256 is computed over r_{tx} XOR REPEATER and the key used for HMAC is k_d. REPEATER is XORed with the least significant byte of r_{tx}.

        - Receives AKE_Send_H_prime message from the receiver containing the 256-bit *H'*. This message must be received within one second after sending $E_{kpub}(km)$ (AKE_No_Stored_km) to the receiver. Authentication fails and the authentication protocol is aborted if the message is not received within one second or there is a mismatch

between H and *H'* (See Section 2.7 on handling authentication failures).

- If the HDCP Transmitter has a 128-bit master key k_m stored corresponding to the *Receiver ID* (See Section 2.2.1)
  - Sends AKE_Stored_km message to the receiver with the 128-bit $E_{kh}(k_m)$ and the 128-bit *m* corresponding to the *Receiver ID* of the HDCP Receiver
  - Verifies integrity of the System Renewability Message (SRM). It does this by checking the signature of the SRM using $kpub_{dcp}$. Failure of this integrity check constitutes an authentication failure and causes the HDCP Transmitter to abort the authentication protocol.

    The top-level HDCP Transmitter checks to see if the *Receiver ID* of the connected device is found in the revocation list. If the *Receiver ID* of the connected HDCP Device is found in the revocation list, authentication fails and the authentication protocol is aborted.
  - Receives AKE_Send_rrx message from the receiver containing the 64-bit pseudo-random value (r_{rx}) from the receiver.
  - Performs key derivation as explained in Section 2.8 to generate 256-bit k_d. $k_d = dkey_0 \parallel dkey_1$, where $dkey_0$ and $dkey_1$ are derived keys generated when ctr = 0 and ctr = 1 respectively. $dkey_0$ and $dkey_1$ are in big-endian order.
  - Computes 256-bit H = HMAC-SHA256(r_{tx} XOR REPEATER, k_d) where HMAC-SHA256 is computed over r_{tx} XOR REPEATER and the key used for HMAC is k_d. REPEATER is XORed with the least significant byte of r_{tx}.
  - Receives AKE_Send_H_prime message from the receiver containing the 256-bit *H'*. This message must be received within 200 ms after sending the AKE_Stored_km message to the receiver. Authentication fails and the authentication protocol is aborted if the message is not received within 200 ms or there is a mismatch between H and *H'* (See Section 2.7 on handling authentication failures).

The HDCP Receiver

- Sends AKE_Send_Cert message in response to AKE_Init
- Generates and sends 64-bit r_{rx} as part of the AKE_Send_rrx message immediately after receiving either AKE_No_Stored_km or AKE_Stored_km message from the transmitter. r_{rx} must be generated only after either AKE_No_Stored_km or AKE_Stored_km message is received from the transmitter.
  - If AKE_No_Stored_km is received, the HDCP Receiver
    - Decrypts k_m with $kpriv_{rx}$ using RSAES-OAEP decryption scheme.
    - Performs key derivation as explained in Section 2.8 to generate 256-bit k_d. $k_d = dkey_0 \parallel dkey_1$, where $dkey_0$ and $dkey_1$ are derived keys

generated when ctr = 0 and ctr = 1 respectively. $dkey_0$ and $dkey_1$ are in big-endian order.

- Computes *H'* = HMAC-SHA256(r_{tx} XOR REPEATER, k_d). Sends AKE_Send_H_prime message immediately after computation of *H'* to ensure that the message is received by the transmitter within the specified one second timeout at the transmitter.

o If AKE_Stored_km is received, the HDCP Receiver

- Computes 128-bit k_h = SHA-256($kpriv_{rx}$)[127:0]
- Decrypts $E_{kh}(k_m)$ using AES with the received *m* as input and k_h as key in to the AES module as illustrated in Figure 2.3 to derive k_m.
- Performs key derivation as explained in Section 2.8 to generate 256-bit k_d. $k_d = dkey_0 \| dkey_1$, where $dkey_0$ and $dkey_1$ are derived keys generated when ctr = 0 and ctr = 1 respectively. $dkey_0$ and $dkey_1$ are in big-endian order.
- Computes *H'* = HMAC-SHA256(r_{tx} XOR REPEATER , k_d). Sends AKE_Send_H_prime message immediately after computation of *H'* to ensure that the message is received by the transmitter within the specified 200 ms timeout at the transmitter.

On a decryption failure of k_m with $kpriv_{rx}$, the HDCP Receiver does not send *H'* and simply lets the timeout occur on the HDCP Transmitter.

2.2.1 Pairing

To speed up the AKE process, pairing must be implemented between the HDCP Transmitter and HDCP Receiver in parallel with AKE. When AKE_No_Stored_km message is received from the transmitter, it is an indication to the receiver that the transmitter does not have k_m stored corresponding to the receiver. In this case, after computing *H'*, the HDCP Receiver

- Computes 128-bit k_h = SHA-256($kpriv_{rx}$)[127:0].
- Generates 128-bit $E_{kh}(k_m)$ by encrypting k_m with k_h using AES as illustrated in Figure 2.3.
- Sends AKE_Send_Pairing_Info to the transmitter containing the 128-bit $E_{kh}(k_m)$.

On receiving AKE_Send_Pairing_Info message, the HDCP Transmitter

- Persistently stores *m* (which is r_{tx} appended with 64 0s), k_m and $E_{kh}(k_m)$ along with *Receiver ID*. k_m and $E_{kh}(k_m)$ must be stored securely.

If AKE_Send_Pairing_Info is not received by the HDCP Transmitter within 200 ms of the reception of AKE_Send_H_prime, authentication fails and the authentication protocol is aborted (See Section 2.7 on handling authentication failures).

Note: The HDCP Transmitter must store in its non-volatile storage *m*, k_m and $E_{kh}(k_m)$ along with corresponding *Receiver ID*s of all HDCP Receivers with which pairing was implemented by the HDCP Transmitter.

Figure 2.3 illustrates the encryption of k_m with k_h.

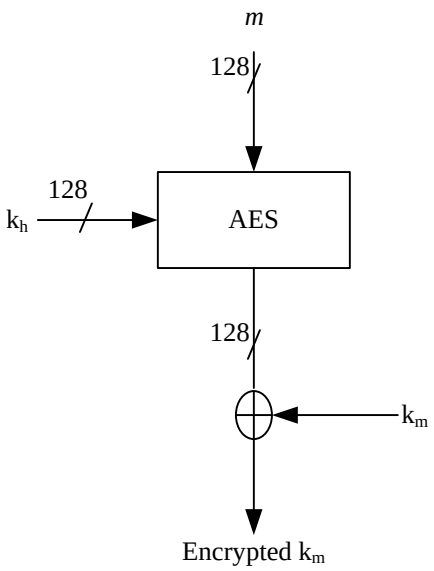


Figure 2.3. $E_{kh}(k_m)$ Computation

128-bit *m* is constructed by appending 64 0s to r_{tx}. r_{tx} is in big-endian order.

2.3 Locality Check

Locality check is performed after AKE and pairing. The HDCP Transmitter initiates locality check by sending a 64-bit pseudo-random nonce r_n to the downstream receiver. The HDCP Transmitter

- Initiates locality check by sending LC_Init message containing a 64-bit pseudo-random nonce r_n to the HDCP Receiver.
- Computes 256-bit L = HMAC-SHA256(r_n , k_d XOR r_{rx}) where HMAC-SHA256 is computed over r_n and the key used for HMAC is k_d XOR r_{rx}, where r_{rx} is XORed with the least-significant 64-bits of k_d.
- Sends an RTT_Challenge message containing the least significant 128-bits of L.
- Sets its watchdog timer to 1 ms. Locality check fails if the watchdog timer expires before RTT_Response message is received.

On receiving RTT_Response message the HDCP Transmitter compares the received value with the most significant 128-bits of L and locality check fails if there is a mismatch. An HDCP Repeater initiates locality check on all its downstream HDCP-protected interface ports by sending unique r_n values to the connected HDCP Devices.

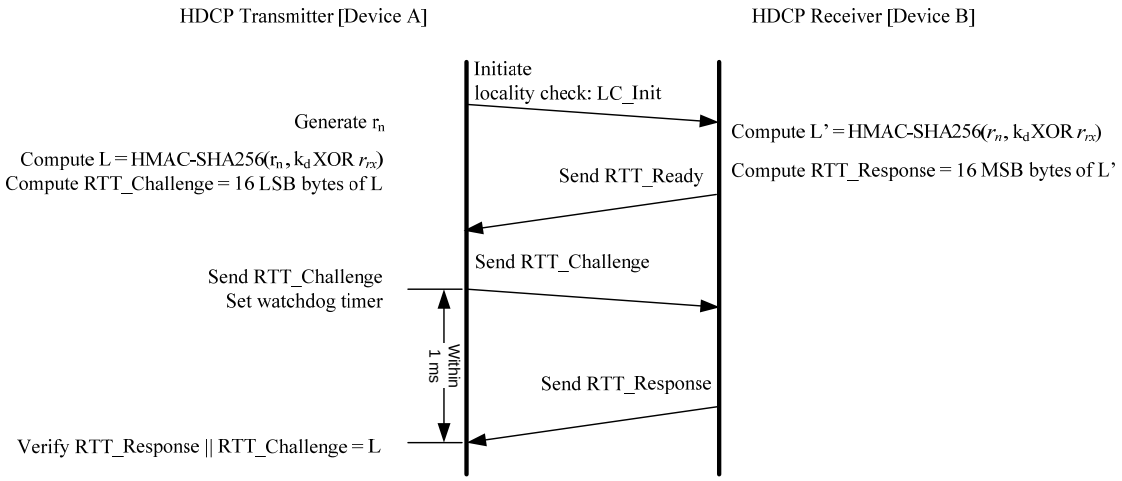


Figure 2.4. Locality Check between HDCP Transmitter and HDCP Receiver

An HDCP Receiver

- Computes 256-bit L' = HMAC-SHA256(r_n, k_d XOR r_{rx})
- Sends RTT_Ready message to the transmitter when completed L' calculation and is ready for the RTT Challenge.
- On receiving the RTT_Challenge message from the transmitter with the correct 128 LSB bits of L', sends an RTT_Response message containing the most significant 128-bits of L'.

In the case of a locality check failure due to expiration of the watchdog timer at the HDCP Transmitter, locality check must be reattempted by the HDCP Transmitter 1023 additional times (for a total of 1024 trials) with the transmission of an LC_Init message containing a new r_n. Failure of locality check due to timeout for 1024 trials results in an authentication failure and the authentication protocol is aborted (See Section 2.7 on handling authentication failures). A locality check failure due to mismatch of the 128-bit value received in the RTT_Response message with the most significant 128-bits of L also results in an authentication failure and the authentication protocol is aborted.

2.4 Session Key Exchange

Successful completion of AKE and locality check stages affirms to HDCP Transmitter that the HDCP Receiver is authorized to receive HDCP Content. Session Key Exchange (SKE) is initiated by the HDCP Transmitter after a successful locality check and after the bandwidth reservation process has been completed, as described in WirelessHD 1.0a, Section 7.7.1. The HDCP Transmitter sends encrypted session key to the HDCP Receiver and enables HDCP Encryption 200 ms after sending encrypted session key (SKE_Send_Eks message). Content encrypted with the session key k_s starts to flow between the HDCP Transmitter and HDCP Receiver. HDCP Encryption must be enabled only after successful completion of AKE, locality check and SKE stages.

HDCP allows for multiple simultaneous streams within a given HDCP session. Each stream is identified by StreamIndex present in each WirelessHD MAC packet header. The HDCP session key is not specific to a particular stream. An HDCP Session begins when STREAM_START_NOTIFY (WirelessHD 1.0a spec Section 10,4,4,3) is transmitted and ends when DISCONNECT_NOTIFY (WirelessHD 1.0a spec Section 10.4.4.4) is transmitted. Within a session, there can be multiple streams. The same session key can be used by the HDCP Transmitter to encrypt different streams with different StreamIndex values. The HDCP session

must be terminated when Secure Packet Counter (40-bit parameter), present in WirelessHD MAC packet header rolls back to zero. Note that under normal conditions this is a very long time; at 200ms per 7-sub-packet packet, this is over one year.

During SKE, the HDCP Transmitter

- Generates a pseudo-random 128-bit session key k_s and 64-bit pseudo-random number r_{iv}.
- Performs key derivation as explained in Section 2.8 to generate 128-bit $dkey_2$ where $dkey_2$ is the derived key when ctr =2.
- Computes 128-bit $E_{dkey}(k_s) = k_s$ XOR ($dkey_2$ XOR r_{rx}), where r_{rx} is XORed with the least-significant 64-bits of $dkey_2$.
- Sends SKE_Send_Eks message containing $E_{dkey}(k_s)$, r_{iv} to the HDCP Receiver.

On receiving SKE_Send_Eks message, the HDCP Receiver

- Performs key derivation as explained in Section 2.8 to generate 128-bit $dkey_2$ where $dkey_2$ is the derived key when ctr =2.
- Computes $k_s = E_{dkey}(k_s)$ XOR ($dkey_2$ XOR r_{rx})

2.5 Authentication with Repeaters

Figure 2.5 illustrates authentication with repeaters. The HDCP Transmitter executes authentication with repeaters after session key exchange and only when REPEATER is 'true', indicating that the connected HDCP Receiver is an HDCP Repeater. Authentication with repeaters is implemented in parallel with the flow of encrypted content and Link Synchronization. The Link Synchronization process is explained in Section 2.6. The authentication with repeaters stage assembles a list of all downstream *Receiver ID*s connected to the HDCP Repeater through a permitted connection tree, enabling revocation support upstream.

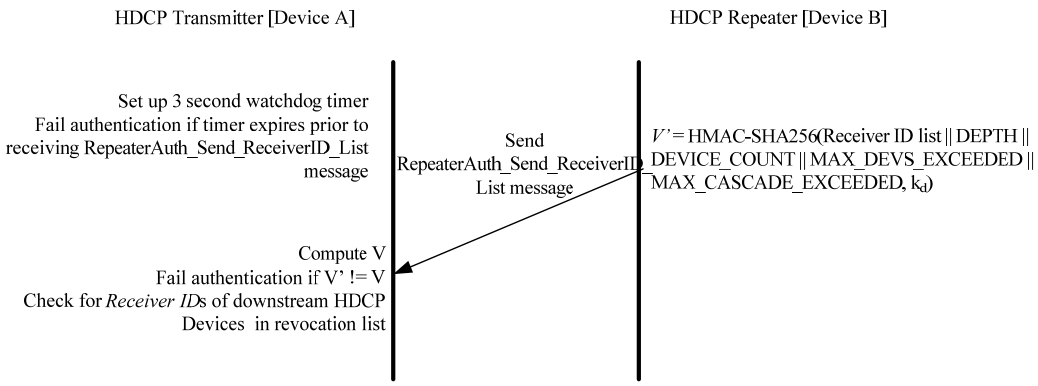


Figure 2.5. Authentication with Repeaters

HDCP Repeaters assemble the list of all connected downstream HDCP Receivers as the downstream HDCP-protected Interface Ports of the HDCP Repeater successfully complete the Authentication and Key Exchange and Locality check stages with connected HDCP Receivers. The list is represented by a contiguous set of bytes, with each *Receiver ID* occupying five bytes stored in big-endian order. The total length of the Receiver ID list is five bytes times the total number of connected and active downstream HDCP Devices, including downstream HDCP Repeaters. An HDCP-protected Interface Port with no active device connected adds nothing to the list. Also, the *Receiver ID* of the HDCP Repeater itself at any level is not included in its own Receiver ID list. An HDCP-protected Interface Port connected to an HDCP Receiver that is not an

HDCP Repeater adds the *Receiver ID* of the connected HDCP Receiver to the list. HDCP-protected Interface Ports that have an HDCP Repeater connected add the Receiver ID list received from the connected downstream HDCP Repeater, plus the *Receiver ID* of the connected downstream HDCP Repeater itself.

In order to add the Receiver ID list of the connected HDCP Repeater, it is necessary for the HDCP Repeater to verify the integrity of the list by computing *V* and checking this value against *V'* received as part of the RepeaterAuth_Send_ReceiverID_List message from the connected downstream HDCP Repeater. If *V* does not equal *V'*, the downstream Receiver ID list integrity check fails, and the HDCP Repeater must not send the RepeaterAuth_Send_ReceiverID_List message to the upstream HDCP Transmitter. Upstream HDCP Transmitters will detect this failure by the expiration of a watchdog timer set in the HDCP Transmitter. On expiration of the watchdog timer, authentication fails, the authentication protocol must be aborted and HDCP Encryption must be disabled (See Section 2.7 on handling authentication failures).

When the HDCP Repeater has assembled the complete list of connected HDCP Devices' *Receiver ID*s, it computes the 256-bit verification value *V'*.

V' = HMAC-SHA256(Receiver ID list || DEPTH || DEVICE_COUNT || MAX_DEVS_EXCEEDED || MAX_CASCADE_EXCEEDED, k_d)

HMAC-SHA256 is computed over the concatenation of Receiver ID list, DEPTH, DEVICE_COUNT, MAX_DEVS_EXCEEDED and MAX_CASCADE_EXCEEDED where Receiver ID list is formed by appending downstream *Receiver ID*s in big-endian order. The key used for HMAC is k_d. When the Receiver ID list, *V'*, DEPTH and DEVICE_COUNT are available, the HDCP Repeater sends RepeaterAuth_Send_ReceiverID_List message to the upstream HDCP Transmitter.

The HDCP Transmitter, having determined that REPEATER received earlier in the protocol is 'true', sets a three-second watchdog timer. When the RepeaterAuth_Send_ReceiverID_List message is received, the HDCP Transmitter verifies the integrity of the Receiver ID list by computing *V* and comparing this value to *V'*. If *V* is not equal to *V'*, authentication fails, the authentication protocol is aborted and HDCP Encryption is disabled (See Section 2.7 on handling authentication failures).

If the RepeaterAuth_Send_ReceiverID_List message is not received by the HDCP Transmitter within a maximum-permitted time of three seconds after transmitting SKE_Send_Eks message, authentication of the HDCP Repeater fails. With this failure, the HDCP Transmitter disables HDCP Encryption and aborts the authentication protocol with the HDCP Repeater (See Section 2.7 on handling authentication failures).

The HDCP Repeater propagates topology information upward through the connection tree to the HDCP Transmitter. An HDCP Repeater reports the topology status variables DEVICE_COUNT and DEPTH. The DEVICE_COUNT for an HDCP Repeater is equal to the total number of connected downstream HDCP Receivers and HDCP Repeaters. The value is calculated as the sum of the number of directly connected downstream HDCP Receivers and HDCP Repeaters plus the sum of the DEVICE_COUNT received from all connected HDCP Repeaters. The DEPTH status for an HDCP Repeater is equal to the maximum number of connection levels below any of the downstream HDCP-protected Interface Ports. The value is calculated as the maximum DEPTH reported from downstream HDCP Repeaters plus one (accounting for the connected downstream HDCP Repeater).

In Figure 2.6, R1 has zero downstream HDCP Devices and reports a value of zero for both the DEPTH and the DEVICE_COUNT.

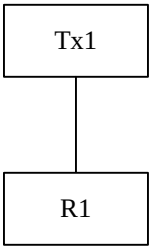


Figure 2.6. DEPTH and DEVICE_COUNT for HDCP Repeater

In Figure 2.7, R1 has three downstream HDCP Receivers connected to it. It reports a DEPTH of one and a DEVICE_COUNT of three.

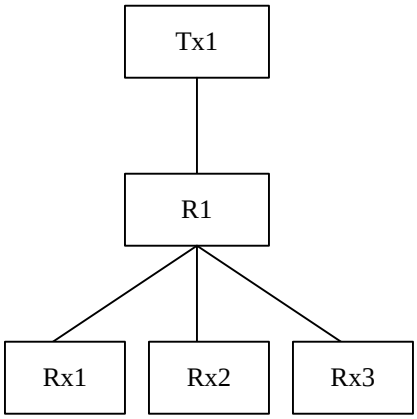


Figure 2.7. DEPTH and DEVICE_COUNT for HDCP Repeater

In Figure 2.8, R1 reports a DEPTH of two and a DEVICE_COUNT of four.

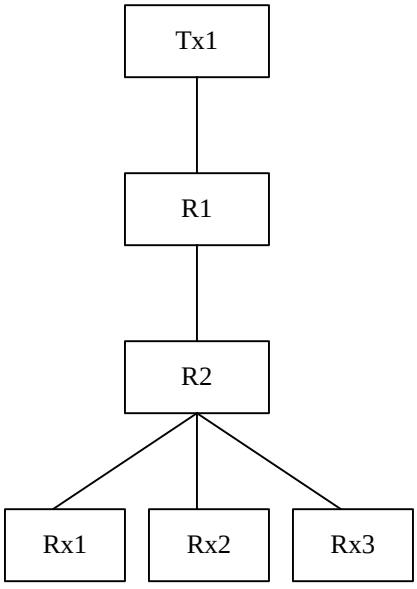


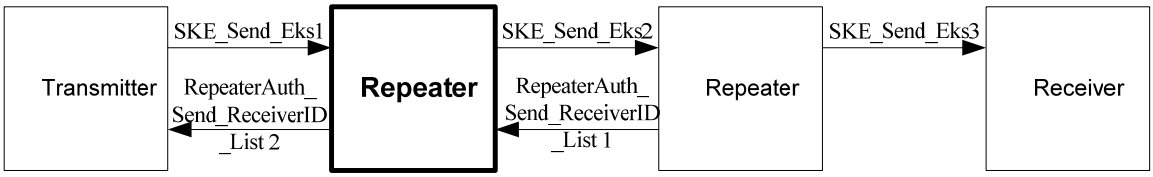
Figure 2.8. DEPTH and DEVICE_COUNT for HDCP Repeater

HDCP Repeaters must be capable of supporting DEVICE_COUNT values less than or equal to 31 and DEPTH values less than or equal to 4. If the computed DEVICE_COUNT for an HDCP Repeater exceeds 31, the error is referred to as MAX_DEVS_EXCEEDED error. The repeater sets MAX_DEVS_EXCEEDED = 'true' in the RepeaterAuth_Send_ReceiverID_List message. If the computed DEPTH for an HDCP Repeater exceeds four, the error is referred to as MAX_CASCADE_EXCEEDED error. The repeater sets MAX_CASCADE_EXCEEDED = 'true' in the RepeaterAuth_Send_ReceiverID_List message. When an HDCP Repeater receives a MAX_DEVS_EXCEEDED or a MAX_CASCADE_EXCEEDED error from a downstream HDCP Repeater, it must propagate the error to the upstream HDCP Transmitter and must not transmit *V'* and Receiver ID list.

Authentication fails if the topology maximums are exceeded. HDCP Encryption is disabled and the authentication protocol is aborted. The top-level HDCP Transmitter, having already performed SRM integrity check during AKE, proceeds to see if the *Receiver ID* of any downstream device is found in the current revocation list, and, if present, authentication fails, HDCP Encryption is disabled and authentication protocol is aborted (See Section 2.7 on handling authentication failures).

In HDCP topologies that mix HDCP 1.x and HDCP 2.0 devices, maximums for DEVICE_COUNT and DEPTH apply downstream of the device according to version of HDCP. For example DEVICE_COUNT and DEPTH limits for HDCP 2.0 (31 devices per stream, depth of 4) would apply downstream of a HDCP 2.0 based repeater even when HDCP 1.x devices are downstream of the HDCP 2.0 repeater. If limits are exceeded, then authentication fails. Note that HDCP 2.0-compliant devices only have to support HDCP 2.0 DEVICE_COUNT and DEPTH maximums.

An HDCP 2.0-compliant repeater device must comply with the timings specified below.



From	To	Max Delay	Conditions and Comments
SKE_Send_Eks1 Session key received from Upstream HDCP Transmitter	SKE_Send_Eks2 k_s generated by HDCP Repeater transmitted downstream	100 ms	Downstream propagation time.
SKE_Send_Eks3 k_s transmitted to all downstream HDCP-protected Interface Ports	RepeaterAuth_Send_ReceiverID_List1 *Receiver ID*s and topology information transmitted upstream	200 ms	Upstream propagation time when no downstream HDCP Repeaters are attached (no downstream Receiver ID lists to process)
RepeaterAuth_Send_ReceiverID_List 1	RepeaterAuth_Send_ReceiverID_List2	200 ms	Upstream propagation time when one or more HDCP Repeaters are attached. From latest downstream RepeaterAuth_Send_ReceiverID_List message.

Downstream *Receiver ID*s and topology information received	*Receiver ID*s and topology information transmitted upstream		(downstream Receiver ID lists must be processed)
SKE_Send_Eks1 Upstream HDCP Transmitter transmits k_s	RepeaterAuth_Send_ReceiverID_List2 Upstream HDCP Transmitter receives RepeaterAuth_Send_ReceiverID_List message	1.2 seconds	For the Maximum of four repeater levels, 4 * (100 ms + 200 ms)

Table 2–2. HDCP Repeater Protocol Timing Requirements

Table 2–2 specifies HDCP Repeater timing requirements that bound the worst-case propagation time for the Receiver ID list. A maximum delay of three seconds has been provided to receive the RepeaterAuth_Send_ReceiverID_List message by the upstream transmitter to account for authentication delays due to the presence of downstream receivers that have not been paired with the upstream HDCP Repeater. Note that because each HDCP Repeater does not know the number of downstream HDCP Repeaters, it must use the same three-second timeout used by the upstream HDCP Transmitter for receiving the RepeaterAuth_Send_ReceiverID_List message.

2.6 Link Synchronization

After successful completion of SKE, HDCP Encryption is enabled and encrypted content starts to flow between the HDCP Transmitter and the HDCP Receiver. The HDCP Transmitter uses the STREAM_START_NOTIFY message to indicate that HDCP 2.0 will be used for that StreamIndex. The HDCP Receiver uses the StreamIndex in the MAC header and the CP Header Present bit to identify data that has HDCP Encryption enabled and that the sub-packet payload is encrypted. (Refer to [3] for details about StreamIndex and CP Header Present bit). The CP Header Present bit must be set to one in the sub-packets if HDCP Encryption is enabled for the sub-packet payload and must be set to zero if HDCP Encryption is disabled for the sub-packet payload. Once encrypted content starts to flow, a periodic Link Synchronization is performed to maintain cipher synchronization between the HDCP Transmitter and the HDCP Receiver.

The HDCP Transmitter must ensure that it supports both protected and non-protected video streams to HDCP Receiver. For example supporting non-protected menu video. This can be done either at MAC sub-packet level for a given StreamIndex (CP can be disabled for duration of sub-packet) or a separate StreamIndex can be configured and sent in a separate MAC frame.

Link Synchronization is achieved every time a MAC packet header is transmitted, by the inclusion of the Secure Packet Counter in the MAC header and the CP Header Present bit is set to one in the MAC sub-packet header. The HDCP Receiver updates its *inputCtr* (as explained in Section 3.4) corresponding to the Secure Packet Counter value received from the transmitter and local count of 128-bit video blocks for AES cipher.

2.7 Authentication Failures

On an authentication failure at the HDCP Transmitter during the authentication protocol, the protocol must be aborted, if HDCP Encryption is enabled, it must be immediately disabled. Authentication must be reattempted at least once by the top-level HDCP Transmitter by the transmission of a new r_{tx} as part of the AKE_Init message. An exception to this rule is in the case of authentication failure due to failure of SRM integrity check or if the *Receiver ID* of an connected downstream HDCP Device is in the revocation list. Authentication need not be re-attempted in these cases. The HDCP Repeater initiates re-authentication on its downstream HDCP-

protected interface ports only when it receives a re-authentication request i.e. a new r_{tx} value as part of the AKE_Init message, from upstream.

2.8 Key Derivation

Key derivation is illustrated in Figure 2.9.

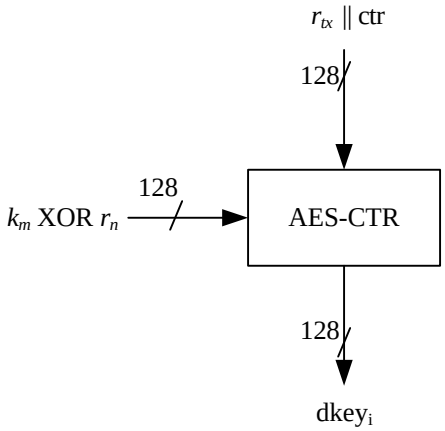


Figure 2.9. Key Derivation

r_{tx} and ctr are in big-endian order. ctr is a 64-bit counter and is initialized to 0 at the beginning of the HDCP Session i.e. after r_{tx} is sent or received. It is incremented by one after every derived key computation. dkey$_i$ is the 128-bit derived key when ctr = i. ctr must never be reused during an HDCP Session.

r_n is initialized to 0 during AKE i.e. during the generation of dkey$_0$ and dkey$_1$. It is set to a pseudo-random value during locality check as explained in Section 2.3. The pseudo-random r_n is XORed with the least-significant 64-bits of k_m during generation of dkey$_2$.

2.9 HDCP Transmitter State Diagram

As explained in Section 1.3, the HDCP Transmitter may support simultaneous connections to HDCP Receivers through one or more of its HDCP-protected interface ports. The HDCP Transmitter state diagram is implemented independently on each HDCP-protected interface port. The HDCP Transmitter can be considered to have two separate functions – a main HDCP Transmitter function and several HDCP Transmitter sub-functions. Each sub-function is associated with a specific HDCP-protected interface port on the transmitter and implements the HDCP Transmitter state diagram on the port. The main transmitter function ensures that the constraints on

the HDCP System are met. This is explained further in Section 2.9.1.

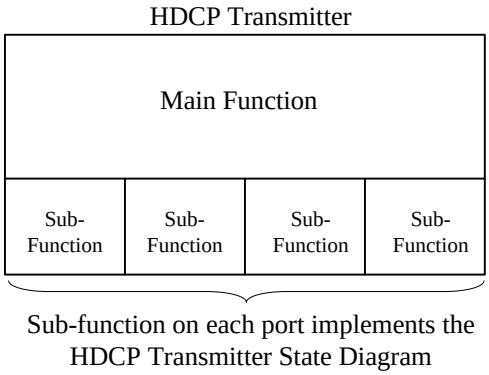


Figure 2.10. HDCP Transmitter Functions

The HDCP Transmitter Link State Diagram and HDCP Transmitter Authentication Protocol State Diagram (Figure 2.11 and Figure 2.12) illustrate the operation states of the authentication protocol for an HDCP Transmitter that is not an HDCP Repeater. For HDCP Repeaters, the downstream (HDCP Transmitter) side is covered in Section 2.11.2.

Transmitter's decision to begin authentication is dependent on events such as detection of an HDCP Receiver, availability of premium content or other implementation dependent details in the transmitter. In the event of authentication failure, an HDCP Receiver must be prepared to process subsequent authentication attempts. The HDCP Transmitter may cease to attempt authentication for transmitter-specific reasons, which include receiving a RX_Disconnected or after a certain number of authentication re-attempts by the transmitter.

The transmitter must not initiate authentication unless the setup and discovery part of chapter 7.3 of WirelessHD specification determines that the receiver is HDCP-capable. Chapter 7.3 of WirelessHD specification also indicate to the HDCP transmitter the connect/disconnect status of the HDCP Receiver.

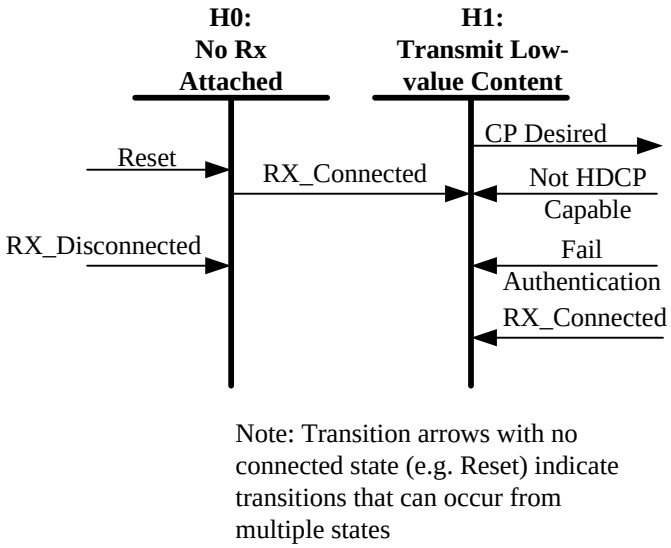


Figure 2.11. HDCP Transmitter Link State Diagram

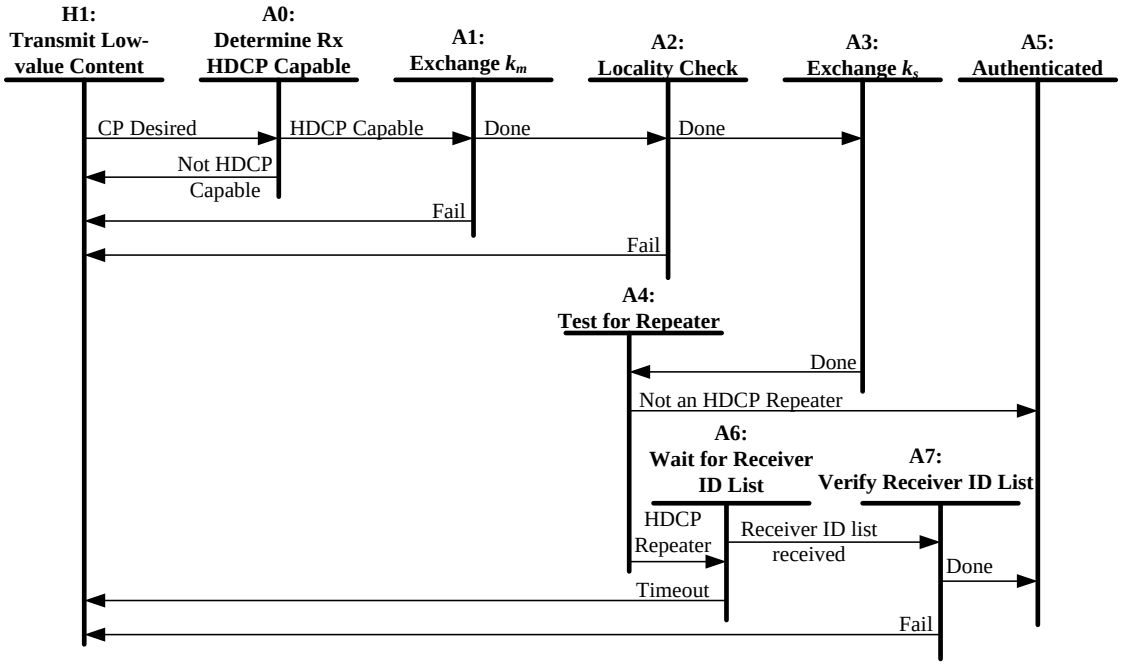


Figure 2.12. HDCP Transmitter Authentication Protocol State Diagram

Transition Any State:H0. Reset conditions at the HDCP Transmitter or disconnect of all HDCP capable receivers cause the HDCP Transmitter to enter the No Receiver Attached state.

Transition H0:H1. The detection of a sink device (through RX_Connected) indicates to the transmitter that a sink device is connected and ready to display the received content. When the receiver is no longer active, the transmitter is notified through RX_Disconnected.

State H1: Transmit Low-value Content. In this state the transmitter should begin sending an unencrypted signal with HDCP Encryption disabled. The transmitted signal can be a low value content or informative on-screen display. This will ensure that a valid video signal is displayed to the user before and during authentication. At any time a receiver connected indication received from the connected HDCP Repeater causes the transmitter to transition in to this state.

Transition H1:A0. If content protection is desired by the Upstream Content Control Function, then the HDCP Transmitter should immediately attempt to determine whether the receiver is HDCP capable.

State A0: Determine Rx HDCP Capable. The transmitter determines that the receiver is HDCP capable as part of the setup and discovery procedures described in Chapter 7.3 in the WirelessHD specification.. Since state A0 is reached when content protection is desired by the Upstream Content Control Function, authentication must be started immediately by the transmitter if the receiver is HDCP capable. A valid video screen is displayed to the user with encryption disabled during this time.

Transition A0:H1. If the receiver is not HDCP capable, the transmitter continues to transmit low value content or informative on-screen display.

Transition A0:A1. If the receiver is HDCP capable, the transmitter initiates the authentication protocol.

State A1: Exchange k_m. In this state, the HDCP Transmitter initiates authentication by sending AKE_Init message containing r_{tx} to the HDCP Receiver. It receives AKE_Send_Cert from the receiver containing REPEATER and $cert_{rx}$.

If the HDCP Transmitter does not have k_m stored corresponding to the *Receiver ID*, it generates $E_{kpub}(km)$ and sends $E_{kpub}(km)$ as part of the AKE_No_Stored_km message to the receiver after verification of signature on $cert_{rx}$. It performs integrity check on the SRM and checks to see whether the *Receiver ID* of the connected HDCP Device is in the revocation list. It receives AKE_Send_rrx message containing r_{rx} from the receiver. It computes H, receives AKE_Send_H_prime message from the receiver containing *H'* within one second after sending AKE_No_Stored_km to the receiver and compares *H'* against H.

If the HDCP Transmitter has k_m stored corresponding to the *Receiver ID*, it sends AKE_Stored_km message containing $E_{kh}(k_m)$ and *m* to the receiver, performs integrity check on the SRM, checks to see whether the *Receiver ID* of the connected HDCP Device is in the revocation list and receives r_{rx} as part of AKE_Send_rrx message from the receiver. It computes H, receives AKE_Send_H_prime message from the receiver containing *H'* within 200 ms after sending AKE_Stored_km to the receiver and compares *H'* against H.

If the HDCP Transmitter does not have a k_m stored corresponding to the *Receiver ID*, it implements pairing with the HDCP Receiver as explained in Section 2.2.1.

Transition A1:H1. This transition occurs on failure of signature verification on $cert_{rx}$, failure of SRM integrity check, if *Receiver ID* of the connected HDCP Device is in the revocation list or if there is a mismatch between H and *H'*. This transition also occurs if AKE_Send_H_prime message is not received within one second after sending AKE_No_Stored_km or within 200 ms after sending AKE_Stored_km to the receiver.

Transition A1:A2. The HDCP Transmitter implements locality check after successful completion of AKE and pairing.

State A2: Locality Check. In this state, the HDCP Transmitter initiates locality check by sending LC_Init message containing r_n to the HDCP Receiver, computes L, sends RTT_Challenge message and sets it watchdog timer to 1 ms. On receiving RTT_Response message from the receiver, it compares the 128-bit value received in the RTT_Response message with the most significant 128-bits of L.

Transition A2:H1. This transition occurs on 1024 consecutive locality check failures due to expiration of the watchdog timer at the HDCP Transmitter. A locality check failure due to mismatch of the value contained in the RTT_Response message and the most significant 128-bits of L also causes this transition.

Transition A2:A3. The HDCP Transmitter implements SKE after successful completion of locality check.

State A3: Exchange k_s. The HDCP Transmitter sends encrypted session key, $E_{dkey}(k_s)$, and r_{iv} to the HDCP Receiver as part of the SKE_Send_Eks message. It enables HDCP Encryption 200 ms after sending encrypted session key. HDCP Encryption must be enabled only after successful completion of AKE, locality check and SKE stages.

Transition A3:A4. This transition occurs after completion of SKE.

State A4: Test for Repeater. The HDCP Transmitter evaluates the REPEATER value that was received in State A1.

Transition A4:A5. REPEATER is 'false' (the HDCP Receiver is not an HDCP Repeater).

State A5: Authenticated. At this time, and at no prior time, the HDCP Transmitter has completed the authentication protocol.

A periodic Link Synchronization is performed to maintain cipher synchronization between the HDCP Transmitter and the HDCP Receiver.

Transition A4:A6. REPEATER is 'true' (the HDCP Receiver is an HDCP Repeater).

State A6: Wait for Receiver ID List. The HDCP Transmitter sets up a three-second watchdog timer after sending SKE_Send_Eks.

Transition A6:H1. The watchdog timer expires before the RepeaterAuth_Send_ReceiverID_List is received.

Transition A6:A7. RepeaterAuth_Send_ReceiverID_List message is received.

State A7: Verify Receiver ID List. The watchdog timer is cleared. If both MAX_DEVS_EXCEEDED and MAX_CASCADE_EXCEEDED are not 'true', computes *V*, and verifies *V* == *V'*. The *Receiver ID*s from the Receiver ID list are compared against the current revocation list.

Transition A7:H1. This transition is made if *V* != *V'* or if any of the *Receiver ID*s in the Receiver ID list are found in the current revocation list. A MAX_CASCADE_EXCEEDED or MAX_DEVS_EXCEEDED error also causes this transition.

Transition A7:A5. This transition occurs if *V* == *V'*, none of the reported *Receiver ID*s are in the current revocation list, and the downstream topology does not exceed specified maximums.

Note: Since authentication with repeaters is implemented in parallel with the flow of encrypted content and Link Synchronization, the link synchronization process (i.e. State A5) must be implemented asynchronously from the rest of the state diagram. The transition into State A5 must occur from any state for which encryption is currently enabled. Also, the transition from state A5 returns to the appropriate state to allow for undisrupted operation.

The HDCP Transmitter may support simultaneous connections to HDCP Receivers through its HDCP-protected interface ports. It may share the same session key and r_{iv} across all its HDCP-protected interface ports, as explained in Section 3.5. However, the HDCP Transmitter must ensure that each connected HDCP Receiver receives distinct k_m and r_{tx} values.

2.9.1 Main HDCP Transmitter Function

The HDCP System places the following constraints on the number of HDCP Devices and levels of HDCP Repeaters in the topology.

1. Up to four levels of HDCP Repeaters and as many as 32 total HDCP Devices, including HDCP Repeaters, are allowed to be connected to an HDCP-protected Interface port; and

2. An instance of an Upstream Content Control Function transmits a content stream to the HDCP Transmitter. For every such content stream received and encrypted by the HDCP System, the HDCP Transmitter is allowed to transmit the generated HDCP Content stream to up to four levels of HDCP Repeaters and as many as 32 total HDCP Devices, including HDCP Repeaters.

The first constraint is met by implementing the authentication protocol independently on each HDCP-protected interface port and verifying that the DEPTH and DEVICE_COUNT read from the connected repeater are less than or equal to 4 and 31 respectively (HDCP Transmitter sub-function). To meet the second constraint, the HDCP Transmitter (that is not an HDCP Repeater)

performs an additional step after all its HDCP-protected interface ports have reached the terminal states of the authentication protocol i.e. State H0 (unconnected), State H1 (inactive or unauthenticated) and State A5 (authenticated). This is the main HDCP Transmitter function. For each of its HDCP-protected interface ports connected to an HDCP Repeater or HDCP Receiver that have reached the authenticated state, State A5 and that will transmit the content stream received from a specific instance of the Upstream Content Control Function, the HDCP Transmitter computes the total number of HDCP Devices connected to each HDCP-protected interface port by incrementing the DEVICE_COUNT on those ports by one (to account for the connected HDCP Repeater or HDCP Receiver), where the transmitter sets the DEVICE_COUNT to 0 on a port with a connected HDCP Receiver that is not an HDCP Repeater.

Total_Port_Device_Count = DEVICE_COUNT + 1, where DEVICE_COUNT = 0 on a port with a connected HDCP Receiver that is not an HDCP Repeater

It then computes the total number of HDCP Devices connected to the HDCP Transmitter as follows

Total_Transmitter_Device_Count = $Total\_Port\_Device\_Count_1$ + ….. + $Total\_Port\_Device\_Count_n$, where n is the total number of HDCP-protected interface ports on the transmitter.

If the computed Total_Transmitter_Device_Count exceeds 32, the top-level HDCP Transmitter disables encryption and aborts the HDCP Session on all its HDCP-protected interface ports. The state diagram (Figure 2.13) and the description below relates to the main HDCP Transmitter function.

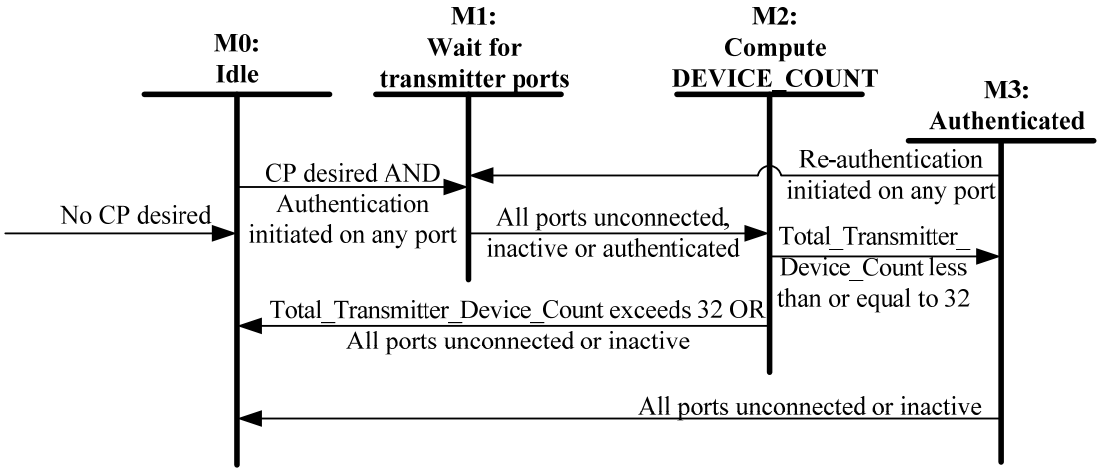


Figure 2.13. Main HDCP Transmitter Function State Diagram

Transition Any State:M0. The HDCP Transmitter transitions in to the Idle state when content protection is not desired by the Upstream Content Control Function. HDCP Encryption is disabled in this state.

Transition M0:M1. The transition occurs when content protection is desired by the Upstream Content Control Function and authentication has been initiated by the HDCP Transmitter on any of its HDCP-protected Interface ports by transmission of an AKE_Init message.

State M1: Wait for transmitter ports. In this state the transmitter waits for all its HDCP-protected interface ports to transition to the unconnected (State H0), inactive (State H1) or authenticated state (State A5).

Transition M1:M2. This transition occurs when all ports have transitioned to the unconnected, inactive or authenticated states.

State M2: Compute DEVICE_COUNT. The HDCP Transmitter computes the total number of HDCP Devices connected to it i.e. the Total_Transmitter_Device_Count.

Transition M2:M0. This transition occurs if the computed Total_Transmitter_Device_Count exceeds 32 or all transmitter ports have transitioned to unconnected or inactive state.

Transition M2:M3. This transition occurs if the computed Total_Transmitter_Device_Count for the HDCP Transmitter is less than or equal to 32.

State M3: Authenticated. At this time, and at no time prior, the HDCP Transmitter makes available to the Upstream Content Control Function upon request, information that indicates that the HDCP System is fully engaged and able to deliver HDCP Content, which means (a) HDCP Encryption is operational on each downstream HDCP-protected Interface Port connected to an HDCP Receiver, (b) processing of valid received SRMs, if any, has occurred, as defined in this Specification, and (c) there are no HDCP Receivers on HDCP-protected Interface Ports, or downstream, with *Receiver ID*s in the current revocation list.

Transition M3:M1. This transition occurs when re-authentication has been initiated by the HDCP Transmitter on any of its HDCP-protected Interface ports by transmission of an AKE_Init message.

2.10 HDCP Receiver State Diagram

The operation states of the authentication protocol for an HDCP Receiver that is not an HDCP Repeater are illustrated in Figure 2.14. For HDCP Repeaters, the upstream (HDCP Receiver) side is covered in Section 2.11.3.

The HDCP Receiver must be ready to re-authenticate with the HDCP Transmitter at any point in time. In particular, the only indication to the HDCP Receiver of a re-authentication attempt by the HDCP Transmitter is the reception of an r_{tx} as part of the AKE_Init message from the HDCP Transmitter.

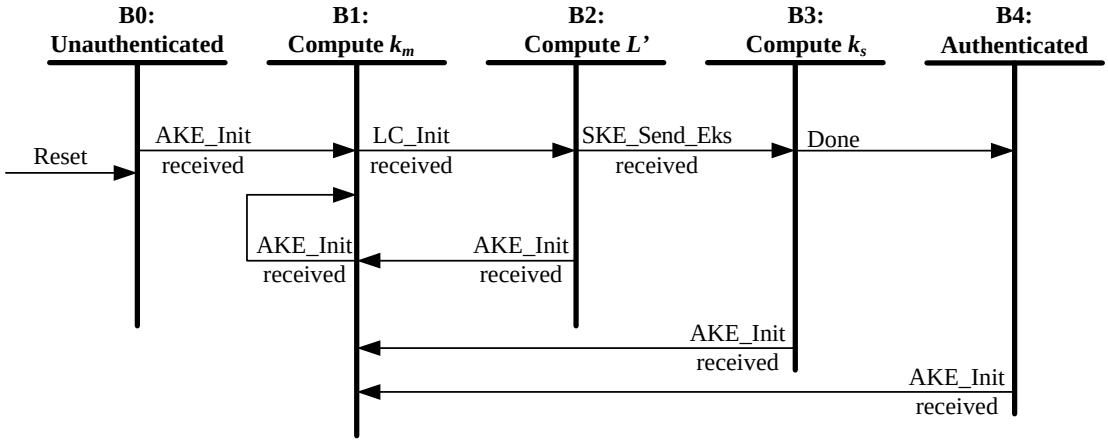


Figure 2.14. HDCP Receiver Authentication Protocol State Diagram

Transition Any State:B0. Reset conditions at the HDCP Receiver cause the HDCP Receiver to enter the unauthenticated state.

State B0: Unauthenticated. The HDCP Receiver is awaiting the reception of r_{tx} from the HDCP Transmitter to trigger the authentication protocol.

Transition B0:B1. r_{tx} is received as part of the AKE_Init message from the HDCP Transmitter.

State B1: Compute k_m. In this state, the HDCP Receiver sends AKE_Send_Cert message in response to AKE_Init, generates and sends r_{rx} as part of AKE_Send_rrx message. If AKE_No_Stored_km is received, it decrypts k_m with $kpriv_{rx,}$ calculates *H'*. It sends AKE_Send_H_prime message immediately after computation of *H'* to ensure that the message is received by the transmitter within the specified one second timeout at the transmitter

If AKE_Stored_km is received, the HDCP Receiver decrypts $E_{kh}(k_m)$ to derive k_m and calculates *H'*. It sends AKE_Send_H_prime message immediately after computation of *H'* to ensure that the message is received by the transmitter within the specified 200 ms timeout at the transmitter

If AKE_No_Stored_km is received, this is an indication to the HDCP Receiver that the HDCP Transmitter does not contain a k_m stored corresponding to its *Receiver ID*. It implements pairing with the HDCP Transmitter as explained in Section 2.2.1.

Transition B1: B1. Should the HDCP Transmitter send an AKE_Init while the HDCP Receiver is in State B1, the HDCP Receiver abandons intermediate results and restarts computation of k_m.

Transition B1: B2. The transition occurs when r_n is received as part of LC_Init message from the transmitter.

State B2: Compute *L'*. The HDCP Receiver computes *L'* required during locality check and sends RTT_Response message after receiving the RTT_Challenge message from the transmitter.

Transition B2: B1. Should the HDCP Transmitter send an AKE_Init while the HDCP Receiver is in State B2, the HDCP Receiver abandons intermediate results and restarts computation of k_m.

Transition B2: B3. The transition occurs when SKE_Send_Eks message is received from the transmitter.

State B3: Compute k_s. The HDCP Receiver decrypts $E_{dkey}(k_s)$ to derive k_s.

Transition B3: B1. Should the HDCP Transmitter send an AKE_Init while the HDCP Receiver is in State B3, the HDCP Receiver abandons intermediate results and restarts computation of k_m.

Transition B3: B4. Successful computation of k_s transitions the receiver into the authenticated state.

State B4: Authenticated. The HDCP Receiver has completed the authentication protocol. Periodically, it updates its *inputCtr* corresponding to the stream (as indicated by the StreamIndex in the MAC header) using the Secure Packet Counter value received from the transmitter.

Transition B4: B1. Should the HDCP Transmitter send an AKE_Init while the HDCP Receiver is in State B4, the HDCP Receiver abandons intermediate results and restarts computation of k_m.

2.11 HDCP Repeater State Diagrams

The HDCP Repeater has one HDCP-protected Interface connection to an upstream HDCP Transmitter and one or more HDCP-protected Interface connections to downstream HDCP Receivers. The state diagram for each downstream connection (Figure 2.16 and Figure 2.17) is substantially the same as that for the host HDCP Transmitter (Section 2.9), with two exceptions. First, the HDCP Repeater is not required to check for downstream Receiver IDs in a revocation list. Second, the HDCP Repeater initiates authentication downstream when it receives an authentication request from upstream, rather than at detection of an HDCP Receiver on the downstream HDCP-protected Interface Port.

The HDCP Repeater signals the detection of an active downstream HDCP Receiver to the upstream HDCP Transmitter by propagating the RX_Connected to the upstream HDCP Transmitter. Whenever authentication is initiated by the upstream HDCP Transmitter by sending AKE_Init, the HDCP Repeater immediately initiates authentication on all its downstream HDCP-protected interface ports. Similarly, when re-authentication is attempted by the upstream transmitter by sending a new r_{tx}, the HDCP Repeater immediately initiates re-authentication on all its downstream ports.

The HDCP Repeater must generate unique k_m values for HDCP Devices connected to each of its downstream HDCP-protected interface ports.

If an HDCP Repeater has no active downstream HDCP devices, it must authenticate as an HDCP Receiver with REPEATER set to 'false' if it wishes to receive HDCP Content, but must not pass HDCP Content to downstream devices.

2.11.1 Propagation of Topology Errors and Receiver Connected / Disconnected Indication

MAX_DEVS_EXCEEDED and MAX_CASCADE_EXCEEDED: HDCP Repeaters must be capable of supporting DEVICE_COUNT values less than or equal to 31 and DEPTH values less than or equal to 4. If the computed DEVICE_COUNT for an HDCP Repeater exceeds 31, the error is referred to as MAX_DEVS_EXCEEDED error. The repeater sets MAX_DEVS_EXCEEDED = 'true' in the RepeaterAuth_Send_ReceiverID_List message. If the computed DEPTH for an HDCP Repeater exceeds four, the error is referred to as MAX_CASCADE_EXCEEDED error. The repeater sets MAX_CASCADE_EXCEEDED = 'true' in the RepeaterAuth_Send_ReceiverID_List message. When an HDCP Repeater receives a MAX_DEVS_EXCEEDED or a MAX_CASCADE_EXCEEDED error from a downstream HDCP Repeater, it must propagate the error to the upstream HDCP Transmitter and must not transmit *V'* and Receiver ID list.

RX_Disconnected. When an authenticated HDCP Receiver connected to the downstream HDCP Repeater connection is disconnected, the resulting RX_Disconnected must not be propagated by the repeater to the upstream HDCP Transmitter when HDCP Content is flowing. The disconnected indication must be propagated to the upstream HDCP Transmitter once the flow of HDCP Content stops or if there are no more authenticated HDCP Receivers connected to the HDCP Repeater.

RX_Connected when HDCP Receiver is Re-connected. When an authenticated HDCP Receiver is disconnected and reconnected to the downstream port of the HDCP Repeater i.e. the downstream port of the repeater detects the same Receiver ID, and there were no intervening re-authentication requests from the upstream HDCP Transmitter during the time the HDCP Receiver was disconnected, the HDCP Repeater need not propagate the RX_Connected to the upstream HDCP Transmitter. The HDCP Repeater may initiate authentication, complete the authentication protocol with the connected HDCP Receiver and enable HDCP Encryption.

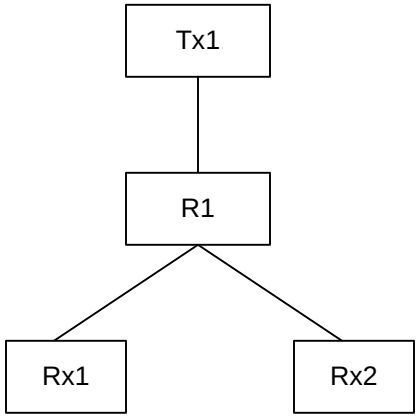
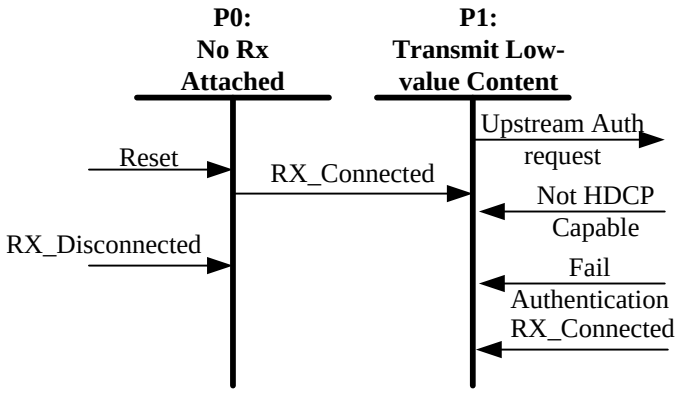


Figure 2.15. HDCP Receiver Reconnect

In Figure 2.15, Rx1 and Rx2 are authenticated HDCP Receivers connected to HDCP Repeater R1. When Rx2 is disconnected and reconnected and there were no intervening re-authentication requests from Tx1, R1 may authenticate Rx2 without propagating the RX_Connected to Tx1.

2.11.2 HDCP Repeater Downstream State Diagram

In this state diagram and its following description, the downstream (HDCP Transmitter) side refers to the HDCP Transmitter functionality within the HDCP Repeater for its corresponding downstream HDCP-protected Interface Port.



Note: Transition arrows with no connected state (e.g. Reset) indicate transitions that can occur from multiple states

Figure 2.16. HDCP Repeater Downstream Link State Diagram

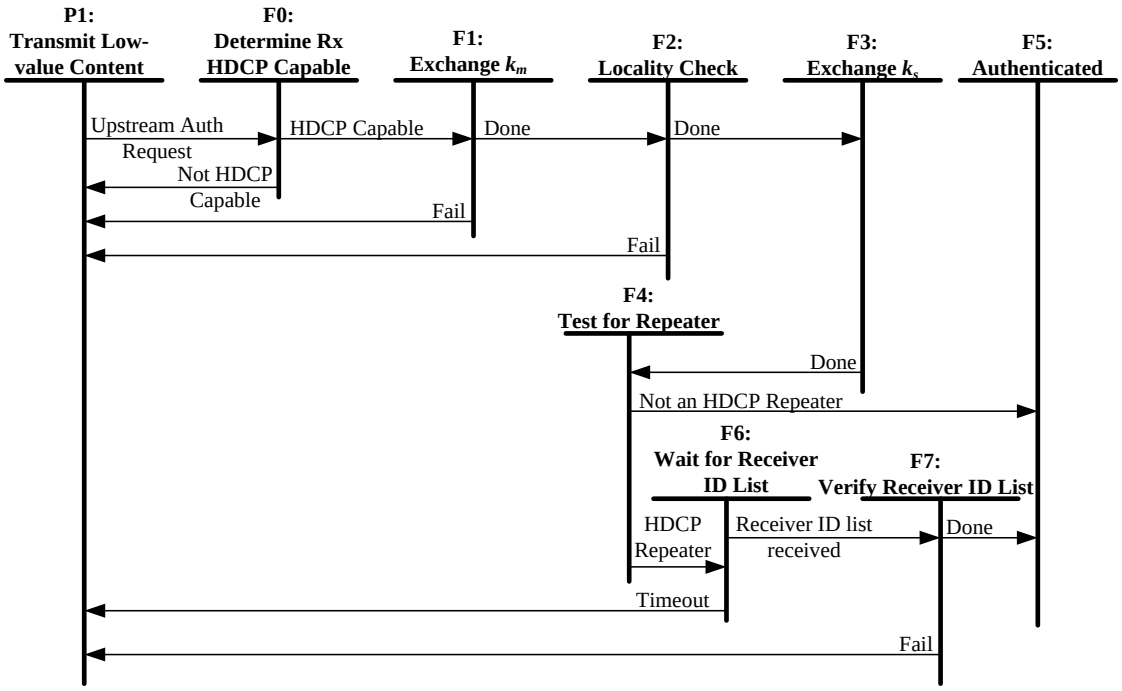


Figure 2.17. HDCP Repeater Downstream Authentication Protocol State Diagram

Transition Any State:P0. Reset conditions at the HDCP Repeater or disconnect of all HDCP capable receivers cause the HDCP Repeater to enter the No Receiver Attached state. A RX_Disconnected received from the connected downstream HDCP Repeater also causes this transition.

Transition P0:P1. The detection of a sink device (through RX_Connected) indicates that the receiver is available and active (ready to display received content). When the receiver is no longer active, the downstream (HDCP Transmitter) side is notified through RX_Disconnected.

State P1: Transmit low-value content. In this state the downstream side should begin sending the unencrypted video signal received from the upstream HDCP Transmitter with HDCP Encryption disabled. At any time a RX_Connected received from the connected HDCP Repeater causes the downstream side to transition in to this state. From this state, the downstream side initiates authentication only when an Upstream Authentication Request is received i.e. the upstream side receives AKE_Init from the upstream HDCP Transmitter.

Note: As explained in Section 2.11.1, if a previously authenticated HDCP Receiver is re-connected and there were no intervening re-authentication requests from the upstream HDCP Transmitter during the time the HDCP Receiver was disconnected, the downstream side may initiate authentication with the HDCP Receiver without waiting for an Upstream Authentication Request.

Transition P1:F0. Upon an Upstream Authentication Request, the downstream side should immediately attempt to determine whether the receiver is HDCP capable.

State F0: Determine Rx HDCP Capable. The downstream side determines that the receiver is HDCP capable as part of the setup and discovery procedures defined in Chapter 7.3 of the WirelessHD specification. Since state F0 is reached upon an Upstream Authentication Request, authentication must be started immediately by the downstream side if the receiver is HDCP capable. A valid video screen is displayed to the user with encryption disabled during this time.

Transition F0:P1. If the receiver is not HDCP capable, the downstream side continues to transmit low value content or informative on-screen display received from the upstream HDCP Transmitter.

Transition F0:F1. If the receiver is HDCP capable, the downstream side initiates the authentication protocol.

State F1: Exchange k_m. In this state, the downstream side initiates authentication by sending AKE_Init message containing r_{tx} to the HDCP Receiver. It receives AKE_Send_Cert from the receiver containing REPEATER and $cert_{rx}$.

If the downstream side does not have k_m stored corresponding to the *Receiver ID*, it generates $E_{kpub}(km)$ and sends $E_{kpub}(km)$ as part of the AKE_No_Stored_km message to the receiver after verification of signature on $cert_{rx}$. It receives AKE_Send_rrx message containing r_{rx} from the receiver. It computes H, receives AKE_Send_H_prime message from the receiver containing *H'* within one second after sending AKE_No_Stored_km to the receiver and compares *H'* against H.

If the downstream side has k_m stored corresponding to the *Receiver ID*, it sends AKE_Stored_km message containing $E_{kh}(k_m)$ and m to the receiver and receives r_{rx} as part of AKE_Send_rrx message from the receiver. It computes H, receives AKE_Send_H_prime message from the receiver containing *H'* within 200 ms after sending AKE_Stored_km to the receiver and compares *H'* against H.

If the downstream side does not have a k_m stored corresponding to the *Receiver ID*, it implements pairing with the HDCP Receiver as explained in Section 2.2.1.

Transition F1:P1. This transition occurs on failure of signature verification on $cert_{rx}$ or if there is a mismatch between H and *H'*. This transition also occurs if AKE_Send_H_prime message is not received within one second after sending AKE_No_Stored_km or within 200 ms after sending AKE_Stored_km to the receiver.

Transition F1:F2. The downstream side implements locality check after successful completion of AKE and pairing.

State F2: Locality Check. In this state, the downstream side initiates locality check by sending LC_Init message containing r_n to the HDCP Receiver, computes L, sends RTT_Challenge message and sets it watchdog timer to 1 ms. On receiving RTT_Response message from the receiver, it compares the 128-bit value received in the RTT_Response message with the most significant 128-bits of L.

Transition F2:P1. This transition occurs on 1024 consecutive locality check failures due to expiration of the watchdog timer at the downstream side. A locality check failure due to mismatch of the value contained in the RTT_Response message and the most significant 128-bits of L also causes this transition.

Transition F2:F3. The downstream side implements SKE after successful completion of locality check.

State F3: Exchange k_s. The downstream side sends encrypted session key, $E_{dkey}(k_s)$, and r_{iv} to the HDCP Receiver as part of the SKE_Send_Eks message. It enables HDCP Encryption 200 ms after sending encrypted session key. HDCP Encryption must be enabled only after successful completion of AKE, locality check and SKE stages.

Transition F3:F4. This transition occurs after completion of SKE.

State F4: Test for Repeater. The downstream side evaluates the REPEATER value that was received in State F1.

Transition F4:F5. REPEATER is 'false' (the HDCP Receiver is not an HDCP Repeater).

State F5: Authenticated. At this time, and at no prior time, the downstream side has completed the authentication protocol and is fully operational, able to deliver HDCP Content.

A periodic Link Synchronization is performed to maintain cipher synchronization between the downstream side and the HDCP Receiver.

Transition F4:F6. REPEATER is 'true' (the HDCP Receiver is an HDCP Repeater).

State F6: Wait for Receiver ID List. The downstream side sets up a three-second watchdog timer after sending SKE_Send_Eks.

Transition F6:P1. The watchdog timer expires before the RepeaterAuth_Send_ReceiverID_List is received.

Transition F6:F7. RepeaterAuth_Send_ReceiverID_List message is received.

State F7: Verify Receiver ID List. The watchdog timer is cleared. If both MAX_DEVS_EXCEEDED and MAX_CASCADE_EXCEEDED are not 'true', computes *V*, and verifies *V* == *V'*. The *Receiver ID*s from this port are added to the Receiver ID list for this HDCP Repeater. The upstream HDCP Transmitter must be informed if topology maximums are exceeded

Transition F7:P1. This transition is made if *V* != *V'*. A MAX_CASCADE_EXCEEDED or MAX_DEVS_EXCEEDED error also causes this transition.

Transition F7:F5. This transition is made if *V* == *V'*, the downstream topology does not exceed specified maximums.

Note: Since authentication with repeaters is implemented in parallel with the flow of encrypted content and Link Synchronization, the link synchronization process (i.e. State F5) must be implemented asynchronously from the rest of the state diagram. The transition into State F5 must occur from any state for which encryption is currently enabled. Also, the transition from state F5 returns to the appropriate state to allow for undisrupted operation.

2.11.3 HDCP Repeater Upstream State Diagram

The HDCP Repeater upstream state diagram, illustrated in Figure 2.18, makes reference to states of the HDCP Repeater downstream state diagram. In this state diagram and its following description, the upstream (HDCP Receiver) side refers to the HDCP Receiver functionality within the HDCP Repeater for its corresponding upstream HDCP-protected Interface Port.

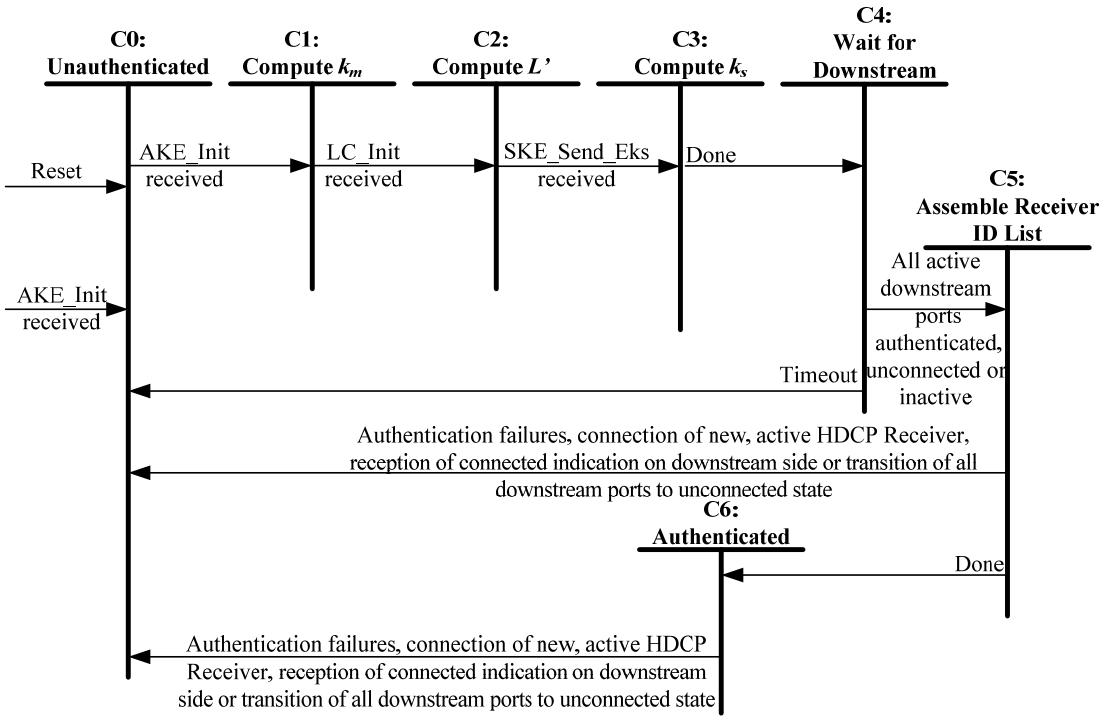


Figure 2.18. HDCP Repeater Upstream Authentication Protocol State Diagram

Transitions Any State:C0. Reset conditions at the HDCP Repeater cause the HDCP Repeater to enter the unauthenticated state. Re-authentication is forced any time AKE_Init is received from the connected HDCP Transmitter, with a transition through the unauthenticated state.

State C0: Unauthenticated. The device is idle, awaiting the reception of r_{tx} from the HDCP Transmitter to trigger the authentication protocol.

When the upstream side becomes unauthenticated due to any downstream HDCP-protected interface port transitioning to the unauthenticated state as a result of authentication failures, connection of a new, active HDCP Receiver on any downstream HDCP-protected interface port that previously did not have an active HDCP Receiver connected or reception of a RX_Connected on the downstream side from the connected HDCP Repeater, it propagates the RX_Connected to the upstream HDCP Transmitter. Authentication failures are indicated by Transition F1:P1, Transition F2:P1, Transition F6:P1 and Transition F7:P1.

If a previously authenticated HDCP Receiver connected to the downstream HDCP-protected interface port is re-connected and there were no intervening re-authentication requests from the upstream HDCP Transmitter during the time the HDCP Receiver was disconnected, the upstream side need not transition to the unauthenticated state. The downstream side may authenticate the connected HDCP Receiver, as explained in Section 2.11.1.
When all downstream HDCP-protected interface ports transition to the unconnected state, the upstream becomes unauthenticated and propagates the resulting RX_Disconnected to the upstream HDCP Transmitter.

Transition C0:C1. r_{tx} is received as part of the AKE_Init message from the HDCP Transmitter.

State C1: Compute k_m. In this state, the upstream (HDCP Receiver) side sends AKE_Send_Cert message in response to AKE_Init, generates and sends r_{rx} as part of AKE_Send_rrx message. If AKE_No_Stored_km is received, it decrypts k_m with $kpriv_{rx,}$ calculates *H'*. It sends

AKE_Send_H_prime immediately after computation of *H'* to ensure that the message is received by the transmitter within the specified one second timeout at the transmitter

If AKE_Stored_km is received, the upstream side decrypts $E_{kh}(k_m)$ to derive k_m and calculates *H'*. It sends AKE_Send_H_prime message immediately after computation of *H'* to ensure that the message is received by the transmitter within the specified 200 ms timeout at the transmitter

If AKE_No_Stored_km is received, this is an indication to the upstream side that the HDCP Transmitter does not contain a k_m stored corresponding to its *Receiver ID*. It implements pairing with the HDCP Transmitter as explained in Section 2.2.1.

Transition C1:C2. The transition occurs when r_n is received as part of LC_Init message from the transmitter.

State C2: Compute *L'*. The upstream side computes *L'* required during locality check and sends RTT_Response message after receiving the RTT_Challenge message from the transmitter.

Transition C2: C3. The transition occurs when SKE_Send_Eks message is received from the transmitter.

State C3: Compute k_s. The upstream side decrypts $E_{dkey}(k_s)$ to derive k_s.

Transition C3: C4. Successful computation of k_s causes this transition.

State C4: Wait for Downstream. The upstream state machine waits for all downstream HDCP-protected Interface Ports of the HDCP Repeater to enter the unconnected (State P0), inactive or unauthenticated (State P1), or the authenticated state (State F5).

Transition C4:C0. The watchdog timer expires before all downstream HDCP-protected Interface Ports enter the authenticated, unconnected or inactive state.

Transition C4:C5. All downstream HDCP-protected Interface Ports with connected HDCP Receivers have reached the state of authenticated, unconnected or inactive state.

State C5: Assemble Receiver ID List. The upstream side assembles the list of all connected downstream topology HDCP Devices as the downstream HDCP-protected Interface Ports reach terminal states of the authentication protocol. An HDCP-protected Interface Port that advances to State P0, the unconnected state, or P1, the inactive state, does not add to the list. A downstream HDCP-protected Interface Port that arrives in State F5 that has an HDCP Receiver that is not an HDCP Repeater connected, adds the *Receiver ID* of the connected HDCP Receiver to the list. Downstream HDCP-protected Interface Ports that arrive in State F5 that have an HDCP Repeater connected will cause the Receiver ID list read from the connected HDCP Repeater, plus the *Receiver ID* of the connected HDCP Repeater itself, to be added to the list.

When the Receiver ID list for all downstream HDCP Receivers has been assembled, the upstream side computes DEPTH, DEVICE_COUNT and the upstream *V'* and sends RepeaterAuth_Send_ReceiverID_List message to the upstream HDCP Transmitter. In the case of a MAX_DEVS_EXCEEDED or a MAX_CASCADE_EXCEEDED error, it does not transmit *V'* and Receiver ID list. When an HDCP Repeater receives a MAX_DEVS_EXCEEDED or MAX_CASCADE_EXCEEDED error from a downstream HDCP Repeater, it is required to inform the upstream HDCP Transmitter.

Transition C5:C0. All authentication failures on the downstream side, connection of a new, active HDCP Receiver on the downstream HDCP-protected interface port that previously did not have an active downstream HDCP Receiver connected, reception of a RX_Connected on the downstream side from the connected HDCP Repeater or transition of all downstream ports to the unconnected

state cause this transition. This transition also occurs when topology maximums are exceeded. Authentication failures are indicated by Transition F1:P1, Transition F2:P1, Transition F6:P1 and Transition F7:P1.

If a previously authenticated HDCP Receiver connected to the downstream HDCP-protected interface port is re-connected and there were no intervening re-authentication requests from the upstream HDCP Transmitter during the time the HDCP Receiver was disconnected, the upstream side need not transition to the unauthenticated state. The downstream side may authenticate the connected HDCP Receiver, as explained in Section 2.11.1.

Transition C5:C6. RepeaterAuth_Send_ReceiverID_List message has been sent to the upstream HDCP Transmitter and topology maximums are not exceeded.

State C6: Authenticated. The upstream side has completed the authentication protocol. Periodically, it updates its *inputCtr* corresponding to the stream (as indicated by the StreamIndex in the MAC header) using the Secure Packet Counter value received from the transmitter.

Transition C6:C0. All authentication failures on the downstream side, connection of a new, active HDCP Receiver on the downstream HDCP-protected interface port that previously did not have an active downstream HDCP Receiver connected, reception of a RX_Connected on the downstream side from the connected HDCP Repeater or transition of all downstream ports to the unconnected state cause this transition. Authentication failures are indicated by Transition F1:P1, Transition F2:P1, Transition F6:P1 and Transition F7:P1.

If a previously authenticated HDCP Receiver connected to the downstream HDCP-protected interface port is re-connected and there were no intervening re-authentication requests from the upstream HDCP Transmitter during the time the HDCP Receiver was disconnected, the upstream side need not transition to the unauthenticated state. The downstream side may authenticate the connected HDCP Receiver, as explained in Section 2.11.1.

Note: Since authentication with repeaters is implemented in parallel with the flow of encrypted content and Link Synchronization, the link synchronization process (i.e. State C6) must be implemented asynchronously from the rest of the state diagram. The transition into State C6 must occur from any state for which encryption is currently enabled. Also, the transition from state C6 returns to the appropriate state to allow for undisrupted operation.

2.12 Converters

2.12.1 HDCP 2 – HDCP 1.x Converters

HDCP 2 – HDCP 1.x converters are HDCP Repeaters with an HDCP 2 compliant interface port on the upstream (HDCP Receiver) side and one or more HDCP 1.x compliant interface ports on the downstream (HDCP Transmitter) side.

The HDCP 1.x compliant downstream side implements the state diagram explained in the corresponding HDCP 1.x specification (See Section 1.5).

Note: Locality check is not implemented in the downstream HDCP-protected interface ports.

The HDCP 2 compliant upstream side implements the state diagram as explained in Section 2.11.3 with these modifications.

- **State C5: Assemble Receiver ID List**. The upstream side assembles the list of all connected downstream topology HDCP Devices as the downstream HDCP-protected Interface Ports reach terminal states of the authentication protocol. An HDCP-protected Interface Port that advances to the unconnected state or the inactive state does not add to the

list. A downstream HDCP-protected Interface Port that arrives in an authenticated state that has an HDCP Receiver that is not an HDCP Repeater connected, adds the *Bksv* of the connected HDCP Receiver to the Receiver ID list. Downstream HDCP-protected Interface Ports that arrive in an authenticated state that have an HDCP Repeater connected will cause the KSV list read from the connected HDCP Repeater, plus the *Bksv* of the connected HDCP Repeater itself, to be added to the list. KSVs are used in place of *Receiver ID*s and are added to the Receiver ID list in big-endian order

When the Receiver ID list (comprising KSVs of connected downstream HDCP 1.x Receivers, where the KSVs are added to the list in big-endian order) for all downstream HDCP Receivers has been assembled, the upstream side computes DEPTH, DEVICE_COUNT and the upstream *V'* and sends RepeaterAuth_Send_ReceiverID_List message to the upstream HDCP Transmitter. In the case of a MAX_DEVS_EXCEEDED or a MAX_CASCADE_EXCEEDED error, it does not transmit *V'* and Receiver ID list. When an HDCP Repeater receives a MAX_DEVS_EXCEEDED or MAX_CASCADE_EXCEEDED error from a downstream HDCP Repeater, it is required to inform the upstream HDCP Transmitter.

2.12.2 HDCP 1.x – HDCP 2 Converters

HDCP 1.x – HDCP 2 converters are HDCP Repeaters with an HDCP 1.x compliant interface port on the upstream (HDCP Receiver) side and one or more HDCP 2 compliant interface ports on the downstream (HDCP Transmitter) side.

The HDCP 1.x compliant upstream side implements the state diagram explained in the corresponding HDCP 1.x specification (See Section 1.5). When any downstream HDCP-protected interface port transitions to the unauthenticated state as a result of authentication failures or connection of a new, active HDCP Receiver, the upstream side becomes unauthenticated.

The HDCP 2 compliant downstream side implements the state diagram as explained in Section 2.11.2 with these modifications.

- **State F7: Verify Receiver ID List**. The watchdog timer is cleared. If both MAX_DEVS_EXCEEDED and MAX_CASCADE_EXCEEDED are not 'true', computes *V*, and verifies *V* == *V'*. The *Receiver ID*s from this port are used in place of KSVs and are added to the KSV list for this HDCP Repeater. KSV list is constructed by appending *Receiver ID*s in little-endian order. The upstream HDCP Transmitter must be informed if topology maximums are exceeded.

If authentication with repeaters is implemented in parallel with the flow of encrypted content and Link Synchronization, the link synchronization process (i.e. State F5) must be implemented asynchronously from the rest of the state diagram.

2.13 Session Key Validity

When HDCP Encryption is disabled, the transmitter and receiver ceases to perform HDCP Encryption (Section 3.4) and stops incrementing the *inputCtr*.

If HDCP Encryption was disabled, from its enabled state, due to the detection of RX_Connected, RX_Disconnected or authentication failures, the session key expires. The most upstream HDCP Transmitter initiates re-authentication by the transmission of a new r_{tx}. In all other cases, where HDCP Encryption was disabled, from its enabled state, while the link was still active and authenticated (for e.g., HDCP Encryption may be briefly disabled during transmission of low value content), the session key does not expire. The HDCP Transmitter maintains the encryption parameters (associated with the corresponding StreamIndex) used during the HDCP Session i.e. *inputCtr* value after the last HDCP Encryption operation (after which HDCP Encryption was disabled), k_s and r_{iv}. When re-enabled, HDCP

Encryption is applied seamlessly, without requiring re-authentication, by using the same encryption parameters.

If HDCP Encryption was disabled, from its enabled state, the HDCP Receiver maintains k_s and r_{iv} used during the HDCP Session. If encryption was re-enabled, without intervening re-authentication requests from the transmitter, the HDCP Receiver uses the same k_s and r_{iv}. It updates its *inputCtr* corresponding to the stream as described in Section 2.6 on Link Synchronization.

2.14 Random Number Generation

Random number generation is required both in the HDCP Transmitter logic and in the HDCP Receiver logic. Counter mode based deterministic random bit generator using AES-128 block cipher specified in NIST SP 800-90 is the recommended random number generator. The minimum entropy requirement for random values that are not used as secret key material (i.e. r_{tx}, r_{rx} , r_{iv}, r_n) is 40 random bits out of 64-bits. This means that a reasonable level of variability or entropy is established if out of 1,000,000 random (r_{tx}, r_{rx}, r_{iv} or r_n) values collected after the first authentication attempt (i.e. after power-up cycles on the HDCP Transmitter or HDCP Receiver logic), the probability of there being any duplicates in this list of 1,000,000 random values is less than 50%.

For randomly generated secret key material (k_m, k_s) the minimum entropy requirement is 128-bits of entropy (i.e. the probability of there being any duplicates in the list of 2^64 secret values (k_m or k_s) collected after power-up and first authentication attempt on the HDCP Transmitter logic is less than 50%).

A list of possible entropy sources that may be used for generation of random values used as secret key material include

- a true Random Number Generator or analog noise source, even if a poor (biased) one
- a pseudo-random number generator (PRNG), seeded by a true RNG with the required entropy, where the state is stored in non-volatile memory after each use. The state must be kept secret. Flash memory or even disk is usable for this purpose as long as it is secure from tampering.

A list of possible entropy sources that may be used for generation of random values not used as secret key material include

- timers, network statistics, error correction information, radio/cable television signals, disk seek times, etc.
- a reliable (not manipulatable by the user) calendar and time-of-day clock. For example, some broadcast content sources may give reliable date and time information.

3 HDCP Encryption

3.1 Description

Figure 3.1 shows how HDCP fits in to the WirelessHD protocol stack. The link consists of two constituent links: a unidirectional high-speed stream transporting the AV content, and a lower-speed bidirectional link used for control / status.

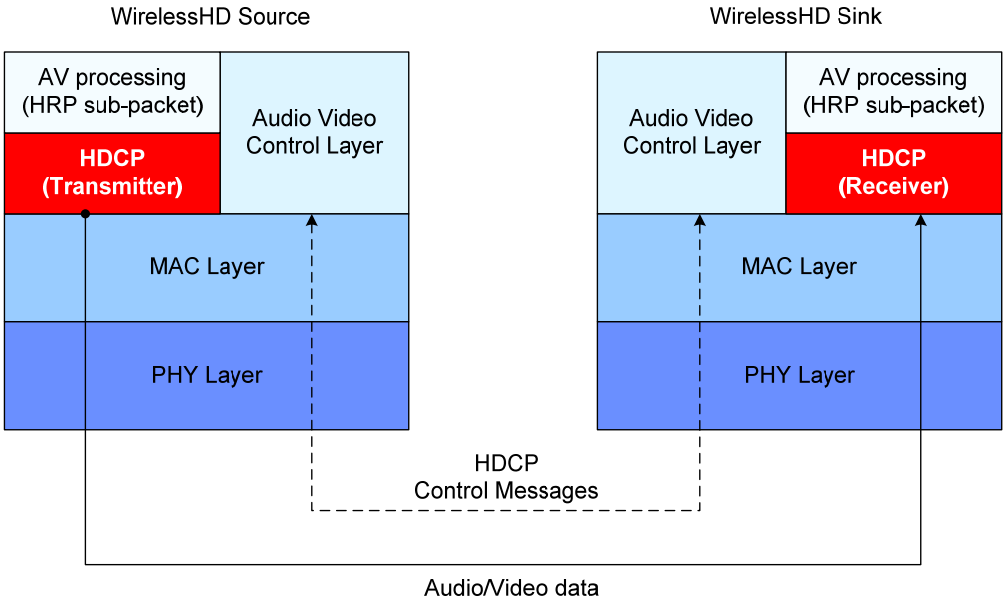


Figure 3.1. WirelessHD with HDCP Block Diagram (Informative)

Video in the HDCP Transmitter is assumed to be a stream of uncompressed pixel samples, together with any associated audio or data streams, they are carried over the WirelessHD channel as HRP packetized streams specified in [3].

3.2 AV Stream

WirelessHD AV streams are packetized and carried in the sub-packet(s) payload. The HRP packet payload consists of sub-packets. Each sub-packet contains either Video, Audio or Data. Only the Audio and video sub-packets are subject to HDCP Encryption. Audio and video may be in compressed or uncompressed form

3.3 Abbreviations

byte – a digital word 8 bits in length.

uint – unsigned integer, an integral number of bytes in length.

bool – a parameter one byte in length. The parameter is ‘true’ if the least-significant bit is non-zero, and false otherwise.

3.4 HDCP Cipher

The HDCP Cipher consists of a 128-bit AES module that is operated in a Counter (CTR) mode as illustrated in Figure 3.2.

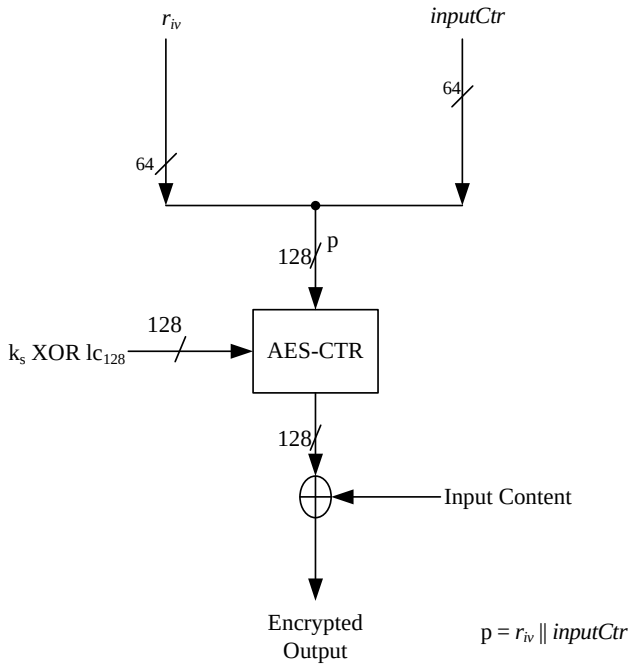


Figure 3.2. HDCP Cipher Structure

k_s is the 128-bit session key which is XORed with lc_{128}.

p = r_{iv}|| *inputCtr*. All values are in big-endian order.

To reduce errors inherent in the wireless link and bandwidth overhead, *inputCtr* is derived in both the HDCP Transmitter and HDCP Receiver.

inputCtr is a 64-bit counter. It is derived from the Secure Packet Counter by appending 24 0s to the 40-bit Secure Packet Counter. The Secure Packet Counter is transmitted to the HDCP Receiver in the MAC Header during Link Synchronization. Local values of inputCtr are incremented for each 128-bit block of AES data. The inputCtr value will be re-synchronized at the beginning of each MAC packet.

inputCtr[63:24] = Secure Packet Counter*; inputCtr*[23:0] = 0 – incremented locally for each 128-bit AES data block

During any given HDCP Session, there may be multiple simultaneous streams each identified by StreamIndex field. (Refer to [3] for details about StreamIndex. Each HRP MAC packet contains portion of one WirelessHD stream, which is identified by the StreamIndex field in the MAC header of the HRP packet. The StreamIndex value is distinct for each WirelessHD stream.

HDCP Encryption must be applied to HRP Sub-packet payloads ; HRP Headers and HRP sub-packet Headers must not be encrypted.

During HDCP Encryption, the key stream produced by the AES-CTR module is XORed with 128-bit (16 Byte) block of payload data to produce the 128-bit encrypted output. *inputCtr* associated with a WirelessHD stream is incremented by one following encryption of 128-bit block of payload data for that WirelessHD stream. The value of *inputCtr* must never be reused for a given set of encryption parameters associated with a StreamIndex i.e. k_s and r_{iv}.

The 16 Byte encryption block boundary must be aligned with the start of the each sub-packet payload (if present) in the HRP packet. If the last block in an encrypted sub-packet payload is less than 16 Bytes, only the encrypted payload bytes must be transmitted; i.e. the unused key stream bits produced by the AES-CTR module must be discarded, and not carried over to a subsequent sub-packet payload.

Bit ordering is such that the least significant byte of the 16 Byte (128-bit) key stream produced by AES-CTR module is XORed with the first byte in time in the 16 Byte payload data block.

3.5 Uniqueness of k_s and r_{iv}

HDCP Receivers and HDCP Repeaters with multiple inputs may share the same Public Key Certificates and Private Keys across all inputs. The HDCP Transmitter (including downstream side of HDCP Repeater) must negotiate distinct k_m with each directly connected downstream HDCP Device. While r_{tx} used during each HDCP Session is required to be fresh, transmitters with multiple downstream HDCP links must ensure that each link receives a distinct r_{tx} value.

As illustrated in Figure 3.3, HDCP Transmitters, including downstream side of HDCP Repeaters, with multiple downstream HDCP links may share the same k_s and r_{iv} across those links only if HDCP Content from the same HDCP Cipher module is transmitted to those links.

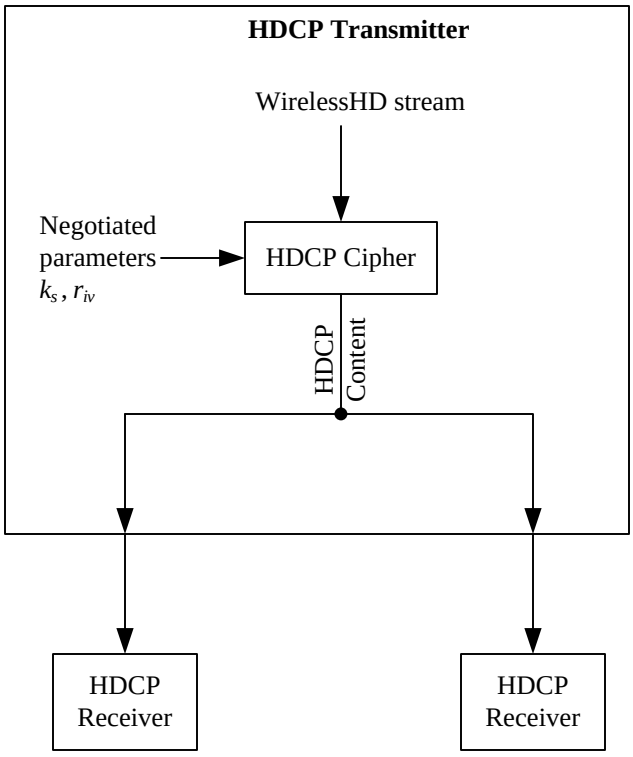


Figure 3.3. k_s and r_{iv} Shared across HDCP Links

As illustrated in Figure 3.4, HDCP Transmitters, including downstream side of HDCP Repeaters, with multiple downstream HDCP links must ensure that each link receives distinct k_s and r_{iv} values if HDCP Content from different HDCP Cipher modules is transmitted to those links.

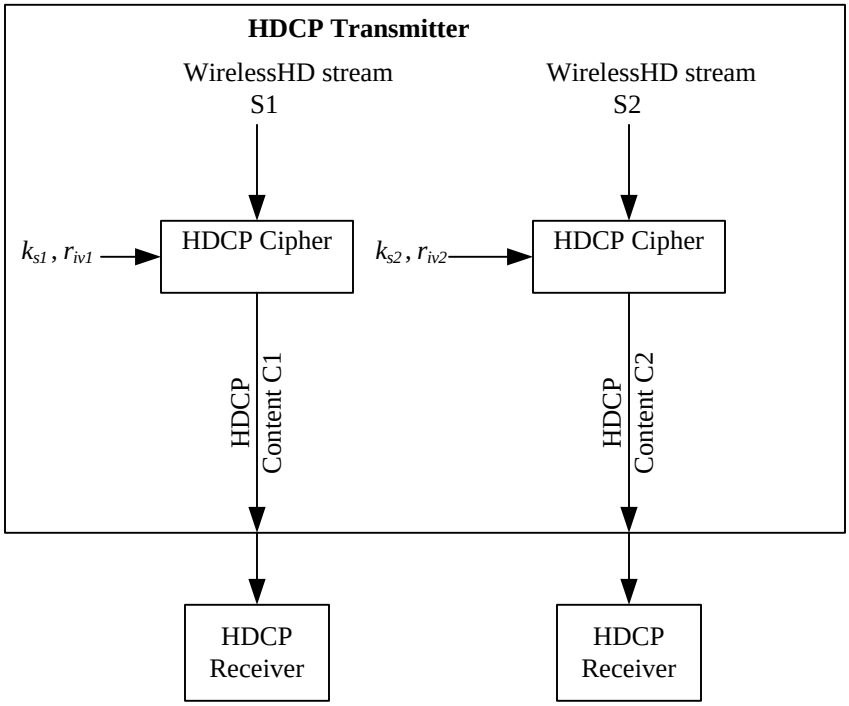


Figure 3.4. Unique k_s and r_{iv} across HDCP Links

4 Authentication Protocol Messages

4.1 HDCP Control / Status Stream in WirelessHD

WirelessHD specification provides a bidirectional control mechanism for passing HDCP authentication protocol messages between transmit and receive devices. Please refer to [3] for details

Each Control/Status message begins with a msg_id field. Valid values of msg_id are shown in Table 4.1.

Message Type	msg_id Value
Null message	1
AKE_Init	2
AKE_Send_Cert	3
AKE_No_Stored_km	4
AKE_Stored_km	5
AKE_Send_rrx	6
AKE_Send_H_prime	7
AKE_Send_Pairing_Info	8
LC_Init	9
RTT_Ready	10
RTT_Challenge	11
RTT_Response	12
SKE_Send_Eks	13
RepeaterAuth_Send_ReceiverID_List	14
Reserved	15-31

Table 4.1. Values for msg_id

A reliable, bidirectional packet protocol is used to transport messages used for the HDCP authentication protocol from the HDCP Transmitter to the HDCP Receiver, and vice versa.

Each packet must contain exactly one message. Each packet payload commences with a msg_id specifying the message type, followed by parameters specific to each message.

Note:

- The use of the Null message and Reserved values for msg_id are not defined in this specification.

4.2 Message Format

4.2.1 AKE_Init (Transmitter to Receiver)

Syntax	No. of Bytes	Identifier
AKE_Init {		
msg_id	1	uint
r_{tx}[63..0]	8	uint
}		

Table 4.2. AKE_Init Payload

4.2.2 AKE_Send_Cert (Receiver to Transmitter)

The HDCP Receiver sets REPEATER to 'true' if it is an HDCP Repeater and 'false' if it is an HDCP Receiver that is not an HDCP Repeater. When REPEATER = 'true', the HDCP Receiver supports downstream connections as permitted by the Digital Content Protection LLC license.

Syntax	No. of Bytes	Identifier
AKE_Send_Cert {		
msg_id	1	uint
REPEATER	1	bool
$cert_{rx}$[4175..0]	522	uint
}		

Table 4.3. AKE_Send_Cert Payload

4.2.3 AKE_No_Stored_km (Transmitter to Receiver)

Syntax	No. of Bytes	Identifier
AKE_No_Stored_km {		
msg_id	1	uint
$E_{kpub}\_k_m$[1023..0]	128	uint
}		

Table 4.4. AKE_No_Stored_km Payload

4.2.4 AKE_Stored_km (Transmitter to Receiver)

Syntax	No. of Bytes	Identifier
AKE_Stored_km{		
msg_id	1	uint
$E_{kh}\_k_m$[127..0]	16	uint
m[127..0]	16	uint
}		

Table 4.5. AKE_Stored_km Payload

4.2.5 AKE_Send_rrx (Receiver to Transmitter)

Syntax	No. of Bytes	Identifier
AKE_Send_rrx{		
msg_id	1	uint
r_{rx}[63..0]	8	uint
}		

Table 4.6. AKE_Send_rrx Payload

4.2.6 AKE_Send_H_prime (Receiver to Transmitter)

Syntax	No. of Bytes	Identifier
AK_Send_H_prime{		
msg_id	1	uint
H'[255..0]	32	uint
}		

Table 4.7. AKE_Send_H_prime Payload

4.2.7 AKE_Send_Pairing_Info (Receiver to Transmitter)

Syntax	No. of Bytes	Identifier
AKE_Send_Pairing_Info{		
msg_id	1	uint
$E_{kh}\_k_m$[127..0]	16	uint
}		

Table 4.8. AKE_Send_Pairing_Info Payload

4.2.8 LC_Init (Transmitter to Receiver)

Syntax	No. of Bytes	Identifier
LC_Init {		
msg_id	1	uint
r_n[63..0]	8	uint
}		

Table 4.9. LC_Init Payload

4.2.9 RTT_Ready (Receiver ready for RTT challenge)

Syntax	No. of Bytes	Identifier
RTT_Challenge{		
msg_id	1	uint
}		

Table 4.10. RTT_Ready

4.2.10 RTT_Challenge (Transmitter to Receiver)

Syntax	No. of Bytes	Identifier
RTT_Challenge{		
msg_id	1	uint
L[127..0]	16	uint
}		

Table 4.11. RTT_Challenge Payload

4.2.11 RTT_Response (Receiver to Transmitter)

Syntax	No. of Bytes	Identifier
RTT_Response{		
msg_id	1	uint
L'[255..128]	16	uint
}		

Table 4.12. RTT_Response Payload

4.2.12 SKE_Send_Eks (Transmitter to Receiver)

Syntax	No. of Bytes	Identifier
SKE_Send_Eks{		
msg_id	1	uint
$E_{dkey\_}k_s$[127..0]	16	uint
r_{iv}[63..0]	8	unit
}		

Table 4.13. SKE_Send_Eks Payload

4.2.13 RepeaterAuth_Send_ReceiverID_List (Receiver to Transmitter)

Receiver ID list is constructed by appending *Receiver ID*s in big-endian order.

Receiver ID list = *Receiver* ID_0 || *Receiver* ID_1 || … || *Receiver* ID_{n-1}, where n is the DEVICE_COUNT.

If the computed DEVICE_COUNT for an HDCP Repeater exceeds 31, the repeater sets MAX_DEVS_EXCEEDED = 'true'. If the computed DEPTH for an HDCP Repeater exceeds four, the repeater sets MAX_CASCADE_EXCEEDED = 'true'. If topology maximums are not exceeded, MAX_DEVS_EXCEEDED = 'false' and MAX_CASCADE_EXCEEDED = 'false'

Syntax	No. of Bytes	Identifier
RepeaterAuth_Send_ReceiverID_List{		
msg_id	1	uint
MAX_DEVS_EXCEEDED	1	bool
MAX_CASCADE_EXCEEDED	1	bool
if (MAX_DEVS_EXCEEDED != 1 &&		
MAX_CASCADE_EXCEEDED != 1) {		
DEVICE_COUNT	1	uint
DEPTH	1	uint
V´[255..0]	32	uint
for (j=0; j< DEVICE_COUNT; j++) {		
Receiver_ID$_j$[39..0]	5	uint
}		
}		
}		

Table 4.14. RepeaterAuth_Send_ReceiverID_List Payload

5 Renewability

It is contemplated that an authorized participant in the authentication protocol may become compromised so as to expose the RSA private keys it possesses for misuse by unauthorized parties. In consideration of this, each HDCP Receiver is issued a unique Receiver ID which is contained in $cert_{rx}$. Through a process defined in the HDCP Adopter's License, the Digital Content Protection LLC may determine that an HDCP Receiver's RSA private key, $kpriv_{rx,}$ has been compromised. If so, it places the corresponding Receiver ID on a revocation list that the HDCP Transmitter checks during authentication.

The HDCP Transmitter is required to manage system renewability messages (SRMs) carrying the Receiver ID revocation list. The validity of an SRM is established by verifying the integrity of its signature with the Digital Content Protection LLC public key, which is specified by the Digital Content Protection LLC.

For interoperability with HDCP 1.x, KSVs of revoked HDCP 1.x devices will be included in the HDCP 2 SRM, in addition to the HDCP 1.x SRM. Similarly, Receiver IDs of revoked HDCP 2 devices will be included in the HDCP 1.x SRM, in addition to the HDCP 2 SRM.

The SRMs are delivered with content and must be checked when available. The Receiver IDs must immediately be checked against the SRM when a new version of the SRM is received. Additionally, devices compliant with HDCP 2.0 and higher must be capable of storing at least 5kB of the SRM in their non-volatile memory. The process by which a device compliant with HDCP 2.0 or higher updates the SRM stored in its non-volatile storage when presented with a newer SRM version is explained in Section 5.2.

5.1 SRM Size and Scalability

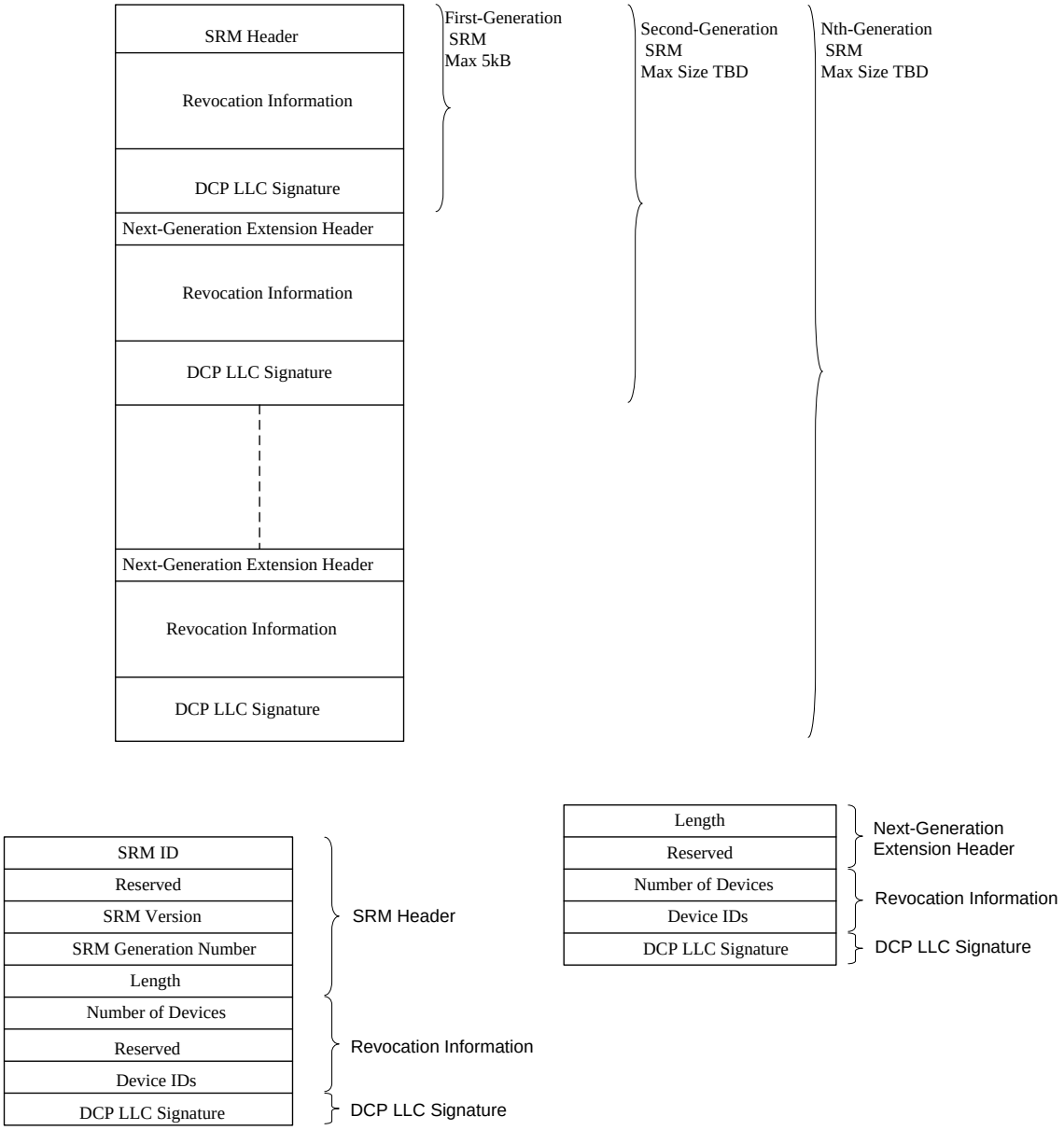


Figure 5.1. SRM Generational Format

As illustrated in Figure 5.1, the size of the First-Generation HDCP SRM will be limited to a maximum of 5kB. The actual size of the First-Generation SRM is 5116 bytes. For scalability of the SRM, the SRM format supports next-generation extensions. By supporting generations of SRMs, an HDCP SRM can, if required in future, grow beyond the 5kB limit to accommodate more Receiver IDs. Next-generation extensions are appended to the current-generation SRM in order to ensure backward compatibility with devices that support only previous-generation SRMs.

Table 5.1 gives the format of the HDCP 2 SRM. All values are stored in big endian format.

Name	Size (bits)	Function
SRM ID	4	A value of 0x9 signifies that the message is for HDCP2. All other values are reserved. SRMs with values other than 0x9 must be ignored.

HDCP2 Indicator	4	A value of 0x1 signifies that the message is for HDCP2
Reserved	8	Reserved for future definition. Must be 0x00
SRM Version	16	Sequentially increasing unique SRM numbers. Higher numbered SRMs are more recent
SRM Generation Number	8	Indicates the generation of the SRM. The generation number starts at 1 and increases sequentially
Length	24	Length in bytes and includes the combined size of this field (three bytes) and all following fields contained in the first-generation SRM i.e. size of this field, Number of Devices field, Reserved (22 bits) field, Device IDs field and Digital Content Protection LLC signature field (384 bytes) in the first-generation SRM
Number of Devices	10	Specifies the number (N1) of Receiver IDs / KSVs contained in the first-generation SRM
Reserved	22	Reserved for future definition. All bits set to 0
Device IDs	40 * N1 Max size for this field is 37760 (4720 bytes)	40-bit Receiver IDs / KSVs
DCP LLC Signature	3072	A cryptographic signature calculated over all preceding fields of the SRM. RSASSA-PKCS1-v1_5 is the signature scheme used as defined by PKCS #1 V2.1: RSA Cryptography Standard. SHA-256 is the underlying hash function

Table 5.1. System Renewability Message Format

Each subsequent next-generation extensions to the first-generation SRM will have the following fields.

Name	**Size (bits)**	**Function**
Length	16	Length in bytes and includes the combined size of this field (two bytes) and all following fields contained in this next-generation extension i.e. size of this field, Number of Devices field, Reserved (6 bits) field, Device IDs field and Digital Content Protection LLC signature field (384 bytes) in this next-generation SRM
Reserved	6	Reserved for future definition. All bits set to 0
Number of Devices	10	Specifies the number (N2) of Receiver IDs / KSVs contained in this next generation extension
Device IDs	40 * N2	40-bit Receiver IDs / KSVs
DCP LLC Signature	3072	A cryptographic signature calculated over all preceding fields of the SRM. RSASSA-PKCS1-v1_5 is the signature scheme used as defined by PKCS #1 V2.1: RSA Cryptography Standard. SHA-256 is the underlying hash function

Table 5.2. Next-generation extension format

5.2 Updating SRMs

The stored HDCP SRM must be updated when a newer version of the SRM is delivered with the content. The procedure for updating an SRM is as follows:

1. Verify that the version number of the new SRM is greater than the version number of the SRM currently stored in the device's non-volatile storage

2. If the version number of the new SRM is greater (implying that it is a more recent version), verify the signature on the new SRM

On successful signature verification, replace the current SRM in the device's non-volatile storage with the new SRM. If, for instance, the device supports only second-generation SRMs and the new SRM is a third-generation SRM, the device is not required to store the third-generation extension. Devices compliant with HDCP 2.0 or higher must be capable of storing at least 5kB (actual size is 5116 bytes) of the SRM (First-Generation SRM).

Appendix A. Confidentiality and Integrity of Values

Table A.1 identifies the requirements of confidentiality and integrity for values within the protocol. A *confidential* value must never be revealed. The *integrity* of many values in the system is protected by fail-safe mechanisms of the protocol. Values that are not protected in this manner require active measures beyond the protocol to ensure integrity. Such values are noted in the table as requiring integrity.

Value	Confidentiality Required[±]?	Integrity Required[±]?
lc_{128}	Yes	Yes
$kpub_{dcp}$	No	Yes
$cert_{rx}$	No	No
$kpub_{rx}$	No	Yes
Receiver ID	No	Yes
$kpriv_{rx}$	Yes	Yes
r_{tx}	No	Yes[*]
r_{iv}	No	Yes[*]
REPEATER	No	Yes
r_{rx}	No	Yes[**]
k_m	Yes	Yes[*]
k_d	Yes	Yes[*]
$dkey_i$	Yes	Yes[*]
H	Yes	Yes
H'	No	No
m	No	No
k_h	Yes	Yes
r_n	No	Yes[*]

[±] According to the robustness rules in the HDCP Adopter's License

[*] Only within the transmitter
[*] Only within the transmitter
[**] Only within the receiver

L	No	Yes
L'	No	No
k_s	Yes	Yes*
V	Yes	Yes
V'	No	No
Receiver ID list	No	Yes
DEPTH	No	Yes
DEVICE_COUNT	No	Yes
MAX_DEVS_EXCEEDED	No	Yes
MAX_CASCADE_EXCEEDED	No	Yes
inputCtr	No	Yes*
p	No	Yes*

Table A.1. Confidentiality and Integrity of Values

Appendix B. DCP LLC Public Key

Table B.1 gives the production DCP LLC public key.

Parameter	Value (hexadecimal)
Modulus n	B0E9 AA45 F129 BA0A 1CBE 1757 28EB 2B4E 8FD0 C06A AD79 980F 8D43 8D47 04B8 2BF4 1521 5619 0140 013B D091 9062 9E89 C227 8ECF B6DB CE3F 7210 5093 8C23 2983 7B80 64A7 59E8 6167 4CBC D858 B8F1 D4F8 2C37 9816 260E 4EF9 4EEE 24DE CCD1 4B4B C506 7AFB 4965 E6C0 0083 481E 8E42 2A53 A0F5 3729 2B5A F973 C59A A1B5 B574 7C06 DC7B 7CDC 6C6E 826B 4988 D41B 25E0 EED1 79BD 3985 FA4F 25EC 7019 23C1 B9A6 D97E 3EDA 48A9 58E3 1814 1E9F 307F 4CA8 AE53 2266 2BBE 24CB 4766 FC83 CF5C 2D1E 3AAB AB06 BE05 AA1A 9B2D B7A6 54F3 632B 97BF 93BE C1AF 2139 490C E931 90CC C2BB 3C02 C4E2 BDBD 2F84 639B D2DD 783E 90C6 C5AC 1677 2E69 6C77 FDED 8A4D 6A8C A3A9 256C 21FD B294 0C84 AA07 2926 46F7 9B3A 1987 E09F EB30 A8F5 64EB 07F1 E9DB F9AF 2C8B 697E 2E67 393F F3A6 E5CD DA24 9BA2 7872 F0A2 27C3 E025 B4A1 046A 5980 27B5 DAB4 B453 973B 2899 ACF4 9627 0F7F 300C 4AAF CB9E D871 2824 3EBC 3515 BE13 EBAF 4301 BD61 2454 349F 733E B510 9FC9 FC80 E84D E332 968F 8810 2325 F3D3 3E6E 6DBB DC29 66EB
Public Exponent e	03

Table B.1. DCP LLC Public Key

Appendix C. Bibliography (Informative)

These documents are not normatively referenced in this specification, but may provide useful supplementary information.

WirelessHD specification. See www.wirelessHD.org

Appendix D. Test Vectors

Facsimile Keys
Note: The facsimile keys provided must be used ONLY for test purposes.

All values are provided in big-endian order.

Table D.1 provides facsimile key information for transmitter T1.

	Value in Hex
Global Constant lc_{128}	93 ce 5a 56 a0 a1 f4 f7 3c 65 8a 1b d2 ae f0 f7

Table D.1

Table D.2 provides the facsimile public parameters associated with the DCP LLC key $kpub_{dcp}$. These parameters are used only for test purposes. They are not used in production devices or SRMs.

	Value in Hex
Modulus n	A2 C7 55 57 54 CB AA A7 7A 27 92 C3 1A 6D C2 31 CF 12 C2 24 BF 89 72 46 A4 8D 20 83 B2 DD 04 DA 7E 01 A9 19 EF 7E 8C 47 54 C8 59 72 5C 89 60 62 9F 39 D0 E4 80 CA A8 D4 1E 91 E3 0E 2C 77 55 6D 58 A8 9E 3E F2 DA 78 3E BA D1 05 37 07 F2 88 74 0C BC FB 68 A4 7A 27 AD 63 A5 1F 67 F1 45 85 16 49 8A E6 34 1C 6E 80 F5 FF 13 72 85 5D C1 DE 5F 01 86 55 86 71 E8 10 33 14 70 2A 5F 15 7B 5C 65 3C 46 3A 17 79 ED 54 6A A6 C9 DF EB 2A 81 2A 80 2A 46 A2 06 DB FD D5 F3 CF 74 BB 66 56 48 D7 7C 6A 03 14 1E 55 56 E4 B6 FA 38 2B 5D FB 87 9F 9E 78 21 87 C0 0C 63 3E 8D 0F E2 A7 19 10 9B 15 E1 11 87 49 33 49 B8 66 32 28 7C 87 F5 D2 2E C5 F3 66 2F 79 EF 40 5A D4 14 85 74 5F 06 43 50 CD DE 84 E7 3C 7D 8E 8A 49 CC 5A CF 73 A1 8A 13 FF 37 13 3D AD 57 D8 51 22 D6 32 1F C0 68 4C A0 5B DD 5F 78 C8 9F 2D 3A A2 B8 1E 4A E4 08 55 64 05 E6 94 FB EB 03 6A 0A BE 83 18 94 D4 B6 C3 F2 58 9C 7A 24 DD D1 3A B7 3A B0 BB E5 D1 28 AB AD 24 54 72 0E

	76 D2 89 32 EA 46 D3 78 D0 A9 67 78 C1 2D 18 B0 33 DE DB 27 CC B0 7C C9 A4 BD DF 2B 64 10 32 44 06 81 21 B3 BA CF 33 85 49 1E 86 4C BD F2 3D 34 EF D6 23 7A 9F 2C DA 84 F0 83 83 71 7D DA 6E 44 96 CD 1D 05 DE 30 F6 1E 2F 9C 99 9C 60 07
Public Exponent e	03

Table D.2

Table D.3 and Table D.4 provide the facsimile certificates ($cert_{rx}$) for receivers R1 and R2.

As provided in Table 2.1 of High-bandwidth Digital Content Protection System, Revision 2.0, Mapping HDCP to WirelessHD specification, the certificate format consists of 40-bit Receiver ID, followed by 1048-bit Receiver Public Key, 16-bit Reserved and 3072-bit Signature fields. All values are stored in big-endian format.

For example, in Table D.3, 0x745bb8bd04 is the Receiver ID which is followed by Receiver Public Key, Reserved and Signature fields.

	Value (Sequence of Hexadecimal bytes) for R1
Certificate ($cert_{rx}$)	74 5b b8 bd 04 bc 83 c7 95 78 f9 0c 91 4b 89 38 05 5a a4 ac 1f a8 03 93 82 79 75 af 66 22 de 43 80 8d cd 5d 90 b8 3c b3 d8 9e b0 0d 09 44 f4 3f 5f ab b9 c4 c9 96 ef 78 b5 8f 69 77 b4 7d 08 14 9c 81 a0 8f 04 1f a0 88 e1 20 c7 34 4a 49 35 65 99 cf 53 19 f0 c6 81 76 05 5c b9 de dd ab 3d b0 92 a1 23 4f 0c 71 30 42 78 f6 55 ae bd 36 25 8e 25 0d 4e 5e 8e 77 6a 60 e3 c1 e9 ee cd 2b 9e 18 63 97 d4 e6 75 01 00 01 00 00 1d 0a 61 ea ab f8 a8 2b 02 69 a1 34 fd 91 ac 2b f2 8f 34 8b d4 84 fa 62 bc 01 4a 4a a2 b2 14 bf b5 f4 df ac 80 93 0d 13 ec 9c e5 d8 34 70 51 9a 66 80 eb be cc 7e 45 f0 e6 39 63 84 c9 b9 8e 8c af 9c a9 d4 0e eb 9a 57 2a 17 41 ca 97 f3 19 96 b5 5d 0f 30 a3 84 e5 73 a2 ed 05 69 7a 22 ce 84 1f 3e 39 9e 28 76 c9 bc 89 5b 70 b1 7b f4 ed b6 74 12 ab 48 29 64 ce 6c 60 04 eb a9 7a a2 15 a6 58 9a ad 32 c7 53 39 e5 fe f0 37 a7 a0 c5 ff ec d9 b0 05 bb 25 13 a0 a4 c7 0b 2a 5d c6 8f 51 11 cb 36 ed 5c 17 7e 22 20 c3 eb 40 8c 67 bb 1c d2 47 b0 e0 bd e7 4c cd 5d d5 23 12 f8 3b 1d 91 3b f3 c7 60 ea 90 24 48 e5 92 21 6c f6 d9 5e 76 8d 2b 86 a6 7c 16 ae a8 36 08 a0 37 14 1a d7 03 e1 40 31 ca 6c 95 e0 10 b0 43 cf b7 e0 30 05 b9 ac b7 08 68 cd 7e 11 47 2a 03 3b eb 74 c8 19 62 8b 2f 11 91 b6 06 4f e0 2a 44 20 43 29 13 1f dd d0 4a 11 6c 0e 83 bf 22 62 3b eb ec d7 76 28 ba 64 88 42 c8 73 a7 9e 4a 69 3a b2 0c 4b

	3a d9 50 db 7c 51 ee 15 e0 6b 2c 63 a6 91 57 dd bf 17 47 23 ad 15 cb b9 91 18 0b 51 8f f9 1c 51 67 c1 0b 78 f5 d9 55 dc 48 e4 c0 83 a5 df 75 e2 dc 88 d2 c6 dd df 1f 37 90 35 f6 fd da e0 04 32 69 c1 af d9 f9 11 c5 aa 74 58 32 1c 71 aa a7 14 fb 23 17 22

Table D.3

	Value (Sequence of Hexadecimal bytes) for R2
Certificate ($cert_{rx}$)	8b a4 47 42 fb c9 1b 82 e2 76 7f 90 4f e9 12 33 7c 21 1f 7b 25 da 76 de ae 59 70 f7 c2 e7 e0 4a cf bd 5b ba 1c 36 4e e3 78 4c 92 6a 3c d8 c1 e9 51 a9 35 eb d8 e8 d5 3e 3b 1d 00 c1 16 16 d0 58 eb 2a 4b a0 76 9c d0 e4 b2 23 dc aa 37 07 e5 85 1a aa 13 55 01 4e ed 88 ca 3f fb c5 58 46 91 ec 35 99 08 1c a1 22 64 e8 3c 2e 70 df a9 10 14 81 46 a2 38 08 ef 1b d2 46 ee 38 0d 6d 92 d3 f2 02 e7 e4 29 ad 0d 01 00 01 00 00 91 18 81 a5 cd ab 78 50 ad 1d 3b 77 be 51 32 9f 04 e6 3e f7 01 39 f2 59 98 75 9d 29 12 33 39 b4 80 91 9d 6a ff 0d 5c 59 22 43 77 fc ed c2 40 9d e2 d1 4b ff 02 78 36 d3 ad cb a6 d3 d3 9d cc ff cb 3c a3 cb fd df cf e2 85 a8 bd a2 f6 60 06 b2 9b 53 c4 d6 22 bd 65 3c 6f 40 01 7c 2c 78 89 31 70 47 56 88 f5 56 33 f2 0a 91 27 b1 68 5f 84 98 1d 37 bd 69 11 6d 60 ca 01 44 be fa 92 1f ec 15 be 37 68 d1 dc cc 66 7c c4 8b 78 51 d9 81 df aa e2 70 2f 02 59 10 64 b2 93 6d 09 23 a9 7d 0a db 8a 34 53 ca e2 6a 6d 39 fb 25 5e 38 86 eb 4d a1 c1 ea bd ac 1d 14 46 ac 58 86 55 ec 40 9f dc 4f 80 f2 68 0c 81 a3 df 01 a0 62 44 9e 20 42 89 88 24 b2 6a 40 11 4b 96 33 ba 0d ae 49 98 4b 24 16 5f ff 85 86 4a 09 cd ce 30 f2 fa ff 74 28 40 97 a5 56 29 74 53 a2 34 e4 ee e0 45 b6 d8 a7 9b a0 1a 00 2d ff 8d 2f ed 70 15 c5 e0 11 bb c8 ef 5b 2c b3 12 0f be 88 7c 98 44 3c 65 45 bc 20 ac 07 e2 4c 74 2a b4 b1 0e 47 2a d6 20 19 ce 75 18 45 28 90 4f 84 42 81 37 ed 1d 0b 48 f7 53 e3 92 f2 eb df 7a 91 df e8 db b1 c4 fd fd c1 ad 4e cc be 11 e2 76 9b 78 2b b8 f4 0e 9d 05 d6 08 d0 76 2c e8 4d ee 3d 31 da c4 f7 01 12 8f 5d 94 e6 cb 15 fe 53 42 b2 51 8c 5d c7 64 de 14 8f af c1 af 36

Table D.4

Table D.5 and Table D.6 provide the private keys for receivers R1 and R2.

	Value in Hex for R1
p	dc 1a 02 b8 36 ed 3a e8 74 74 cd 72 28 4a ee 31 90 e4 d0 6a

	f9 f6 f8 d3 50 29 c2 84 97 98 10 5d ea 7b 88 fd 36 c5 04 99 ad ab 27 0a 5a 2a f9 18 7b 7d b0 c3 cb e3 5a c2 9a 10 f7 c9 9a 18 3e b5
q	db 42 e9 42 e3 2a 78 c9 6f 2b 7b 74 d6 9b ae b9 3d f4 e7 35 90 1c c4 5a b4 22 8c 3c 08 9b a5 29 64 57 29 b2 c4 80 f9 ee c6 94 30 3e d2 33 9f bb 6a 43 03 89 14 9b 8f 20 b8 60 1f 7f 30 3b 20 c1
d mod (p-1)	73 d1 a4 18 b7 9e 81 df 0c 58 e2 3a ee 04 ef ee 59 26 6e 9d bc 47 3f 8c 42 a4 96 dd 1a c0 43 ec 87 94 d5 f3 18 bc f7 bc be 6c 4f b0 dc dd bc 12 2b f9 69 e8 be 03 37 21 2b dd 3d e6 72 15 cb f9
d mod (q-1)	09 1d e6 1f 0e dd 04 3a b3 f1 a5 e7 7c c8 ea 61 ef 6e 90 72 8c b4 75 81 a3 fd cf c0 eb 46 b5 7e 5c 1a b7 b4 24 31 8c b2 dd f4 e9 70 a3 42 dc 40 69 b1 b1 a2 f0 85 6b 55 1b f5 7b 39 c9 a2 9b c1
q^-1 mod p	89 58 a5 a3 63 d9 a9 ee 0e 7e a1 c0 56 2d 59 fc f8 66 1c 26 48 21 9d e0 61 e4 a8 06 97 64 c7 01 77 47 11 8e a2 81 d2 00 dd 5a 1b 8f 7a 1b 2c 68 56 39 cf cd d3 6a ff 73 81 1d 91 3d 48 b4 43 4c

Table D.5

	Value in Hex for R2
p	ff 7d a0 6d 7d c4 eb 8e 60 e2 0b fd b9 00 11 58 55 28 37 b9 28 7a d4 ec c8 49 e3 37 63 37 8f 8d c2 22 75 00 d0 4b c0 a5 a4 97 ad 35 5b 69 2b 17 9f 7d 84 04 5b 61 7d 40 3c a5 ca f9 e7 51 17 e7
q	c9 82 22 32 71 88 06 bc a8 97 58 74 7c cd af 9e 9d 71 eb db c6 7c 24 91 8b da cf f5 6b a1 8e b5 09 87 ca 11 d2 70 f9 81 c7 dd aa a9 0c 1b 16 e7 c3 93 0b 35 80 ca 77 92 a3 f1 8c 6d d7 39 e4 eb
d mod (p-1)	42 5c e0 51 f0 6c 38 ff 57 9c ff 9e 5c f2 6e 8e f2 37 ab 19 b6 31 09 a3 a3 76 c5 c5 3a 49 51 49 72 16 bf 2b 81 ef 5b 4f eb 4b d6 9a d8 6e 9d d9 d9 fc a1 50 fc 67 7b 40 37 40 9d 53 82 49 27 1b
d mod (q-1)	5b 70 74 ea 25 00 8f e6 0e 2e d7 51 cc cc 5d 54 01 a8 0f 5a 24 80 72 eb a4 e5 ff 16 23 e8 24 e4 db d5 45 89 be cf cb 38 ec 24 17 6c 2c 75 22 78 bb 13 bf b3 60 a4 ff 8b 88 5f 74 d4 e7 24 7b 4f
q^-1 mod p	e8 0a 4a 20 24 17 0f ef 3b cb ee 39 49 4a 1f 50 35 e4 d9 4b 5b 2c 2a af f8 e4 1b 17 04 bf ca 7b fd b2 1d d6 1a bf 61 c4 46 7c 8d ce 74 39 7e 52 3a 6e 8a 3b a4 bf 07 da 86 07 eb 17 a2 26 54 9a

Table D.6

Table D.7 provides the global constant (lc_{128}) used for receivers R1 and R2. Note that the same global constant is used in T1, R1 and R2.

	Value in Hex for R1	**Value in Hex for R2**
Global	93 ce 5a 56 a0 a1 f4 f7 3c	93 ce 5a 56 a0 a1 f4 f7 3c

Constant lc_{128}	65 8a 1b d2 ae f0 f7	65 8a 1b d2 ae f0 f7

Table D.7

Authentication Protocol

Table D.8 provides test vectors generated during the authentication protocol between T1-R1 and T1-R2. The values provided in the table are as generated or received on the transmitter (T1) side.

	Value in Hex for R1	**Value in Hex for R2**
Authentication and Key Exchange (Without stored k_m)		
r_{tx}	18 fa e4 20 6a fb 51 49	f9 f1 30 a8 2d 5b e5 c3
REPEATER	0x01 (True)	0x00 (False)
Receiver ID (Extracted from certificate $cert_{rx}$)	74 5b b8 bd 04	8b a4 47 42 fb
Certificate signature verification	Hash: 59 45 4b d3 d7 25 7d b5 eb 94 9b 6e e9 72 9c 0f 3b 4b da d3 ac 69 9f b8 b9 2d d3 87 c0 f1 bb 16 Encoded Message EM: 00 01 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff	Hash: cb 3a b7 97 63 e7 be 7c 56 08 41 3c 32 8d 16 da 7f bc 98 f0 03 35 f6 e0 3c a1 ea e5 17 f3 47 37 Encoded Message EM: 00 01 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff

	ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff 00 30 31 30 0d 06 09 60 86 48 01 65 03 04 02 01 05 00 04 20 59 45 4b d3 d7 25 7d b5 eb 94 9b 6e e9 72 9c 0f 3b 4b da d3 ac 69 9f b8 b9 2d d3 87 c0 f1 bb 16	ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff 00 30 31 30 0d 06 09 60 86 48 01 65 03 04 02 01 05 00 04 20 cb 3a b7 97 63 e7 be 7c 56 08 41 3c 32 8d 16 da 7f bc 98 f0 03 35 f6 e0 3c a1 ea e5 17 f3 47 37
$kpub_{rx}$ (Extracted from certificate $cert_{rx}$)	n: bc 83 c7 95 78 f9 0c 91 4b 89 38 05 5a a4 ac 1f a8 03 93 82 79 75 af 66 22 de 43 80 8d cd 5d 90 b8 3c b3 d8 9e b0 0d 09 44 f4 3f 5f ab b9 c4 c9 96 ef 78 b5 8f 69 77 b4 7d 08 14 9c 81 a0 8f 04 1f a0 88 e1 20 c7 34 4a 49 35 65 99 cf 53	n: c9 1b 82 e2 76 7f 90 4f e9 12 33 7c 21 1f 7b 25 da 76 de ae 59 70 f7 c2 e7 e0 4a cf bd 5b ba 1c 36 4e e3 78 4c 92 6a 3c d8 c1 e9 51 a9 35 eb d8 e8 d5 3e 3b 1d 00 c1 16 16 d0 58 eb 2a 4b a0 76 9c d0 e4 b2 23 dc aa 37 07 e5 85 1a aa 13 55 01 4e ed 88 ca 3f fb c5 58 46 91 ec

	19 f0 c6 81 76 05 5c b9 de dd ab 3d b0 92 a1 23 4f 0c 71 30 42 78 f6 55 ae bd 36 25 8e 25 0d 4e 5e 8e 77 6a 60 e3 c1 e9 ee cd 2b 9e 18 63 97 d4 e6 75 e: 01 00 01	35 99 08 1c a1 22 64 e8 3c 2e 70 df a9 10 14 81 46 a2 38 08 ef 1b d2 46 ee 38 0d 6d 92 d3 f2 02 e7 e4 29 ad 0d e: 01 00 01
k_m	68 bc c5 1b a9 db 1b d0 fa f1 5e 9a d8 a5 af b9	ca 9f 83 95 70 d0 d0 f9 cf e4 eb 54 7e 09 fa 3b
$E_{kpub}(km)$	Seed: 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D 1E 1F lhash: e3 b0 c4 42 98 fc 1c 14 9a fb f4 c8 99 6f b9 24 27 ae 41 e4 64 9b 93 4c a4 95 99 1b 78 52 b8 55 $E_{kpub}(km)$: 75 d1 07 f6 9b 7f 1e bd 84 2a 33 e2 89 03 75 b1 27 3c c2 f1 da f8 76 94 9b e0 5e 35 a4 b3 32 a0 b5 ea 75 ef 6f 3a d8 31 3a dd c5 9b de a3 bb 00 39 29 48 93 76 2a e9 e1 b5 17 0c 64 6b d4 12 8f 9b e1 07 b5 a7 9e d6 fd 6e 28 c8 5b d0 c4 01 e7 69 f4 70 ab b8 91 2a 31 4b 86 fd 96 80 20 19 7b 73 ad 7e 78 ae e1 71 07 07 50 2d 3f 43 ff d4 50 4e d7 70 fe cf f2 25 82	Seed: 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D 1E 1F lhash: e3 b0 c4 42 98 fc 1c 14 9a fb f4 c8 99 6f b9 24 27 ae 41 e4 64 9b 93 4c a4 95 99 1b 78 52 b8 55 $E_{kpub}(km)$: 78 73 6b 24 d6 26 fd 11 36 b5 55 5a a8 be 46 9e 69 a1 ef 19 de d2 43 33 7b e7 e8 88 e2 8e d1 6f 95 b3 56 b7 a0 ac 62 26 57 03 69 03 f9 5c 8b 1d 6a d5 ab f9 8f 7a 71 51 d6 73 22 9a cd 51 7a 72 29 3f d3 fe fb bf f0 74 89 09 cb c9 cd 57 bb 4a 83 94 01 f1 9e 1f 97 e1 50 84 5c d8 b5 b0 e1 ab f1 15 19 63 29 4f 37 3b a1 ec 14 40 bf db 33 bb 46 da f8 3c a4 73 7e ba 97 2a 18 57 6b d6 f8 58

	ba 43 9e 61 d6 f5 02 84	
r_{rx}	3b a0 be de 0c 46 a9 91	e1 7a b0 fd 0f 54 40 52
$dkey_0$	89 9e a9 7a 52 a8 1a 15 a3 d0 08 74 b0 67 7d f4	83 02 a3 c7 57 2c c6 69 f7 0a e7 3f 84 bf 05 65
$dkey_1$	9a 80 a3 a3 1a dd 35 55 24 77 1e 66 8d 8f 5d 2d	8f eb 20 67 68 b0 36 8b c9 15 85 62 8f 5c 34 5b
k_d	89 9e a9 7a 52 a8 1a 15 a3 d0 08 74 b0 67 7d f4 9a 80 a3 a3 1a dd 35 55 24 77 1e 66 8d 8f 5d 2d	83 02 a3 c7 57 2c c6 69 f7 0a e7 3f 84 bf 05 65 8f eb 20 67 68 b0 36 8b c9 15 85 62 8f 5c 34 5b
H	c3 c0 39 2d c8 66 a2 c3 98 07 b4 bc 3c bb 7a d0 e6 1f 49 d5 e7 04 7e 9a ea 8c ac f9 d7 c8 cd 89	ee 6f 40 74 eb 1b d0 7b 35 15 b0 f8 28 6a b5 66 96 e9 39 2b d7 62 be d4 6a 92 d8 d0 a4 18 4d 42
H'	c3 c0 39 2d c8 66 a2 c3 98 07 b4 bc 3c bb 7a d0 e6 1f 49 d5 e7 04 7e 9a ea 8c ac f9 d7 c8 cd 89	ee 6f 40 74 eb 1b d0 7b 35 15 b0 f8 28 6a b5 66 96 e9 39 2b d7 62 be d4 6a 92 d8 d0 a4 18 4d 42
Pairing		
$E_{kh}(k_m)$	Hash of private = SHA256 hash on concatenation of p, q, d mod (p-1), d mod (q-1), q^-1 mod p i.e. SHA-256(p ||q||d mod (p-1)||d mod (q-1)||q^-1 mod p): 5d 7f 16 2f e1 33 c7 0c 44 b7 f2 95 0d 4b 32 05 34 c6 63 5c 41 11 dc cf c4 24 e1 e5 0c 42 73 7c k_h: 34 c6 63 5c 41 11 dc cf c4 24 e1 e5 0c 42 73 7c $E_{kh}(k_m)$: ce 82 f8 36 56 cb bb af 40 ba 83 17	Hash of private = SHA256 hash on concatenation of p, q, d mod (p-1), d mod (q-1), q^-1 mod p i.e. SHA-256(p ||q||d mod (p-1)||d mod (q-1)||q^-1 mod p): 36 85 b9 ee 44 60 49 13 95 e8 05 f0 43 ee 3e 25 ef 5d d8 39 05 34 ae 90 79 89 00 db 83 86 3f d2 k_h: ef 5d d8 39 05 34 ae 90 79 89 00 db 83 86 3f d2 $E_{kh}(k_m)$: 2e ec e5 58 e7 8f 1a 96 d3 bd 40 14 a6 7e 29 3a

	8c d3 a4 a6	
m	18 fa e4 20 6a fb 51 49 00 00 00 00 00 00 00 00	f9 f1 30 a8 2d 5b e5 c3 00 00 00 00 00 00 00 00
Locality Check		
r_n	32 75 3e a8 78 a6 38 1c	a0 fe 9b b8 20 60 58 ca
L	1b 57 26 de b5 65 1c 77 31 70 d0 09 4a 14 eb 0d 1f 1c ab a9 fe 84 fd d4 eb 17 52 e3 e8 d0 d6 36	19 16 b1 59 73 be e3 67 f0 56 50 51 44 0f 53 a2 df 53 8d ce e2 58 1f 65 f3 bf 03 0e 68 14 e0 e4
L'	1b 57 26 de b5 65 1c 77 31 70 d0 09 4a 14 eb 0d 1f 1c ab a9 fe 84 fd d4 eb 17 52 e3 e8 d0 d6 36	19 16 b1 59 73 be e3 67 f0 56 50 51 44 0f 53 a2 df 53 8d ce e2 58 1f 65 f3 bf 03 0e 68 14 e0 e4
Session Key Exchange		
k_s	f3 df 1d d9 57 96 12 3f 98 97 89 b4 21 e1 2d e1	f3 df 1d d9 57 96 12 3f 98 97 89 b4 21 e1 2d e1
r_{iv}	40 2b 6b 43 c5 e8 86 d8	9a 6d 11 00 a9 b7 6f 64
$dkey_2$	38 4d eb f3 5d b2 3b 70 dd 68 5d 03 ea 05 6f 75	56 04 d8 41 07 27 f6 5d 70 90 2d 00 e5 b4 29 97
$E_{dkey}(k_s)$	cb 92 f6 2a 0a 24 29 4f 7e 5f 6a 69 c7 a2 eb 05	a5 db c5 98 50 b1 e4 62 09 7d 14 49 cb 01 44 24
Authentication with Repeaters		
$Receiver\ ID_0$	35 79 6a 17 2e	N/A as R2 is not an HDCP Repeater
$Receiver\ ID_1$	47 8e 71 e2 0f	
$Receiver\ ID_2$	74 e8 53 97 a6	
Receiver ID list	35 79 6a 17 2e 47 8e 71 e2 0f 74 e8 53 97 a6	
DEPTH	0x01	
DEVICE_COUNT	0x03	
MAX_DEVS_EXCEEDED	0x00	
MAX_CASCADE_EXCEEDED	0x00	
V	cc d0 09 37 72 d3 c0 cc 4e 9b 8f da 04 1c 6b 66 0b 86 31 47 55 28 9e 9f 75 4f 28 5d 28 6f 32 cf	

V'	cc d0 09 37 72 d3 c0 cc 4e 9b 8f da 04 1c 6b 66 0b 86 31 47 55 28 9e 9f 75 4f 28 5d 28 6f 32 cf	

Table D.8

Stream Encryption

Provided below is the input stream to be encrypted at T1.

Packet 1 header	
	0038e02c
	00000000
	00000000
	00000000
	00000000
	11a40000
	002a3b00
	00000000
	0ffffff2
	0254c97e
	0032ff80
	006fec80
	fff00000
Secure packet counter (32 lsb)	2345678b
Secure packet counter cont'd	00000101
	00010000
	01000000
	00000000
	00000001
	00000000
	00000600
	00000000
	94ae1f51
Packet 1 audio subpacket	
Key (k_s XOR lc_{128}) 6011478ff737e6c8a4f203aff34fdd16	
r_{iv} 9a6d1100a9b76f64	
inputCtr 012345678b000000	
80 e0 00 00 9b 01 00 00 f0 19 00 00 9a 01 00 40 e0 19 00 00 99 01 00 80 d0 19 00 00 98 01 00 c0 c0 19 00 00 a3 01 00 00 70 1a 00 00 a2 01 00 40 60 1a 00 00 a1 01 00 80 50 1a 00 00 a0 01 00 c0 40 1a 00 00 ab 01 00 00 f0 1a 00 00 aa 01 00 40 e0 1a 00 00 a9 01 00 80 d0 1a 00 00 a8 01 00 c0 c0 1a 00 00 b3 01 00 00 70 1b 00 00 b2 01 00 40 60 1b 00 00 b1 01 00 80 50 1b 00 00 b0 01 00 c0 40 1b 00 00 bb 01 00 00 f0 1b 00 00 ba 01 00 40 e0 1b 00 00 b9 01 00 80 d0 1b 00 00 b8 01 00 c0 c0 1b 00 00 c3 01 00 00 70 1c 00 00 c2 01 00 40	

60 1c 00 00 c1 01 00 80 50 1c 00 00 c0 01 00 c0 40 1c 00 00 cb 01 00 00 f0 1c 00 00 ca 01 00 40 e0 1c 00 00 c9 01 00 80 d0 1c 00 00 c8 01 00 c0 c0 1c 00 00 d3 01 00 00 70 1d 00 00 d2 01 00 40 60 1d 00 00 d1 01 00 80 50 1d 00 00 d0 01 00 c0 40 1d 00 00 db 01 00 00 f0 1d 00 00 da 01 00 40 e0 1d 00 00 d9 01 00 80 d0 1d 00 00 d8 01 00 c0 c0 1d 00 00 e3 01 00 00 70 1e 00 00 e2 01 00 40 60 1e 00 00 e1 01 00 80 50 1e 00 00 e0 01 00 c0 40 1e 00 00 eb 01 00 00 f0 1e 00 00 ea 01 00 40 e0 1e 00 00 e9 01 00 80 d0 1e 00 00 e8 01 00 c0 c0 1e 00 00 f3 01 00 00 70 1f 00 00 f2 01 00 40 60 1f 00 00 f1 01 00 80 50 1f 00 00 f0 01 00 c0 40 1f 00 00 fb 01 00 00 f0 1f 00 00 fa 01 00 40 e0 1f 00 00 f9 01 00 80 d0 1f 00 00 f8 01 00 c0 c0 1f 00 00 03 02 00 00 70 20 00 00 02 02 00 40 60 20 00 00 01 02 00 80 50 20 00 00 00 02 00 c0 40 20 00 00 0b 02 00 00 f0 20 00 00 0a 02 00 40 e0 20 00 00 09 02 00 80 d0 20 00 00 08 02 00 c0 c0 20 00 00 13 02 00 00 70 21 00 00 12 02 00 40 60 21 00 00 11 02 00 80 50 21 00 00 10 02 00 c0 40 21 00 00 1b 02 00 00 f0 21 00 00 1a 02 00 40 e0 21 00 00 19 02 00 80 d0 21 00 00 18 02 00 c0 c0 21 00 00 23 02 00 00 70 22 00 00 22 02 00 40 60 22 00 00 21 02 00 80 50 22 00 00 20 02 00 c0 40 22 00 00 2b 02 00 00 f0 22 00 00 2a 02 00 40 e0 22 00 00 29 02 00 80 d0 22 00 00 28 02 00 c0 c0 22 00 00 33 02 00 00 70 23 00 00 32 02 00 40 60 23 00 00 31 02 00 80 50 23 00 00 30 02 00 c0 40 23 00 00 3b 02 00 00 f0 23 00 00 3a 02 00 40 e0 23 00 00 39 02 00 80 d0 23 00 00 38 02 00 c0 c0 23 00 00 43 02 00 00 70 24 00 00 42 02 00 40 60 24 00 00 41 02 00 80 50 24 00 00 40 02 00 c0 40 24 00 00 4b 02 00 00 f0 24 00 00 4a 02 00 40 e0 24 00 00 49 02 00 80 d0 24 00 00 48 02 00 c0 c0 24 00 00 53 02 00 00 70 25 00 00 52 02 00 40 60 25 00 00 51 02 00 80 50 25 00 00 50 02 00 c0 40 25 00 00 5b 02 00 00 f0 25 00 00 5a 02 00 40 e0 25 00 00 59 02 00 80 d0 25 00 00 58 02 00 c0 c0 25 00 00 63 02 00 00 70 26 00 00 62 02 00 40 60 26 00 00 61 02 00 80 50 26 00 00 60 02 00 c0 40 26 00 00 6b 02 00 00 f0 26 00 00 6a 02 00 40 e0 26 00 00 69 02 00 80 d0 26 00 00 68 02 00 c0 c0 26 00 00 73 02 00 00 70 27 00 00 72 02 00 40 60 27 00 00 71 02 00 80 50 27 00 00 70 02 00 c0 40 27 00 00
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Secure Packet Counter 32 lsb	2345678c
Secure Packet Counter cont'd	00000101
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	00000001
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	00000000
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r_{iv} 9a6d1100a9b76f64	
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c0 2d 00 00 e3 02 00 00 70 2e 00 00 e2 02 00 40 60 2e 00 00 e1 02 00 80 50 2e 00 00 e0 02 00 c0 40 2e 00 00 eb 02 00 00 f0 2e 00 00 ea 02 00 40 e0 2e 00 00 e9 02 00 80 d0 2e 00 00 e8 02 00 c0 c0 2e 00 00 f3 02 00 00 70 2f 00 00 f2 02 00 40 60 2f 00 00 f1 02 00 80 50 2f 00 00 f0 02 00 c0 40 2f 00 00 fb 02 00 00 f0 2f 00 00 fa 02 00 40 e0 2f 00 00 f9 02 00 80 d0 2f 00 00 f8 02 00 c0 c0 2f 00 00 03 03 00 00 70 30 00 00 02 03 00 40 60 30 00 00 01 03 00 80 50 30 00 00 00 03 00 c0 40 30 00 00 0b 03 00 00 f0 30 00 00 0a 03 00 40 e0 30 00 00 09 03 00 80 d0 30 00 00 08 03 00 c0 c0 30 00 00 13 03 00 00 70 31 00 00 12 03 00 40 60 31 00 00 11 03 00 80 50 31 00 00 10 03 00 c0 40 31 00 00 1b 03 00 00 f0 31 00 00 1a 03 00 40 e0 31 00 00 19 03 00 80 d0 31 00 00 18 03 00 c0 c0 31 00 00 23 03 00 00 70 32 00 00 22 03 00 40 60 32 00 00 21 03 00 80 50 32 00 00 20 03 00 c0 40 32 00 00 2b 03 00 00 f0 32 00 00 2a 03 00 40 e0 32 00 00 29 03 00 80 d0 32 00 00 28 03 00 c0 c0 32 00 00 33 03 00 00 70 33 00 00 32 03 00 40 60 33 00 00 31 03 00 80 50 33 00 00 30 03 00 c0 40 33 00 00 3b 03 00 00 f0 33 00 00 3a 03 00 40 e0 33 00 00 39 03 00 80 d0 33 00 00 38 03 00 c0 c0 33 00 00 43 03 00 00 70 34 00 00 42 03 00 40 60 34 00 00 41 03 00 80 50 34 00 00 40 03 00 c0 40 34 00 00 4b 03 00 00 f0 34 00 00 4a 03 00 40 e0 34 00 00 49 03 00 80 d0 34 00 00 48 03 00 c0 c0 34 00 00 53 03 00 00 70 35 00 00 52 03 00 40 60 35 00 00 51 03 00 80 50 35 00 00 50 03 00 c0 40 35 00 00
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03 df 80 03 6a 80 03 e1 80 03 69 90 03 e3 90 03
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03 eb e0 03 66 e0 03 eb e0 03 66 e0 03 eb e0 03
66 e0 03 eb e0 03 66 e0 03 eb e0 03 66 e0 03 eb
e0 03 66 e0 03 eb e0 03 66 e0 03 eb e0 03 66 e0
03 eb e0 03 66 e0 03 eb e0 03 66 e0 03 eb e0 03
66 e0 03 eb e0 03 66 e0 03 eb e0 03 66 e0 03 eb
e0 03 66 e0 03 eb e0 03 66 e0 03 eb e0 03 66 e0
03 eb e0 03 66 e0 03 eb e0 03 66 e0 03 eb e0 03
```

66 e0 03 eb a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f a0 0e 7f

Table D.9

The encrypted stream generated at transmitter T1 for receiver R2 is provided below.

Packet 1 audio subpacket
Key (k_s XOR lc_{128}) 6011478ff737e6c8a4f203aff34fdd16
r_{iv} 9a6d1100a9b76f64
inputCtr 012345678b000000
0e 9d 24 09 8e ef 24 8d a7 f0 8b fe 90 1b f6 19
ed b6 32 98 7e bf 4b 6e 92 df 39 f1 42 21 ec 11
2c 02 aa 55 bc 7a e8 0a 25 3e 53 61 7b 1c 74 2e
09 f4 fa 8c 10 98 44 c3 50 c7 60 d6 6f b9 5b c1
c7 f4 5f 0b b7 46 ec c8 2d 16 24 34 85 8e 45 65
52 36 49 15 07 df e6 f3 06 6d 59 e0 85 dd 0d d1
df 3d 57 96 97 4b a2 5c 51 af 12 18 4b 3a b3 c9
8a bd 8f 21 b1 45 47 a7 ec de cf 8c 42 fc cb 80
60 4c 7b 4b 3e 5e 87 e0 f3 9e 17 03 9f da 0b bf
8a 06 68 4c e8 4b ce e7 0b c4 a3 f7 d3 de 1c 18
47 6b a1 69 42 ab b6 c3 d7 2d 46 27 b1 e2 88 00
32 92 46 d5 55 0c 03 af ab 4d ce e1 05 75 51 6b
d3 76 7a 63 09 79 c9 e1 a0 49 db ec b4 ec 29 33
fc 9b 35 86 05 72 d5 8f cc 7e 0c 78 56 4f 6d e3
ec 61 82 fb ab 66 c0 93 f7 b0 dd 4b dc a8 96 a8
2d a3 e0 6b 8d 0b 12 a5 0e 29 26 54 5b dd 1b f2
3e 78 9e 99 0b 0a ed 4d 0e ec cd 32 99 ab 49 35
fb 92 0f 39 3f fb 0d aa dc 23 87 09 61 95 1c fb
b3 21 c1 9e a0 5a 65 9b 8c b8 19 fb 57 a3 ea c1
7b 15 0d 77 e8 1c 84 60 50 6e 53 d8 dd f1 4d 99
60 7d 04 3d a0 05 e6 65 78 b7 d7 1c 5f b7 1c 3a
39 d5 e3 67 72 16 e5 6c a7 02 92 b5 49 e4 1e 66
49 f7 37 fc 93 f9 fc 8a f4 68 d6 60 cf 33 fd 23
07 5e e9 58 0b 86 04 7e ac 3c c8 f3 f4 39 f9 16
1b 34 b9 85 2f 54 dc 05 d2 96 0a 25 52 71 ec b2
5b 38 86 be ea 4a f7 51 74 dd ee f9 36 b3 8f 14
a6 10 29 c0 b0 b7 d0 91 81 4c fd fb 29 79 9e ff
9b 1d f5 8b 58 11 06 b5 8d ce 66 73 55 fe 6f 6c
d2 89 22 28 86 99 f9 8a 8f da 6b 0a cb 0b 3c ed
6c 94 29 ed b6 0f 9a 3e e5 31 13 43 cd eb 3a 27
a2 d3 fd 98 cd 1a c0 df f3 06 59 9f 37 e4 3d d0
4b 6e 37 d7 2e 7f ab 67 2c ac d1 33 a4 0a f2 d4
d7 b3 c5 53 80 e7 0b 43 a5 26 a6 e1 b4 b6 63 05
b3 2a dc 9e e3 1f 8c 78 c8 03 fe 6c 30 52 46 2c
d3 f7 13 0f 72 4f f8 58 4c c7 28 5b 52 87 bf a5
db b5 11 b3 f7 50 09 f3 95 71 17 74 8e 46 8c a1
dc 81 e1 60 79 e7 ba 77 d8 cd 44 e0 45 70 43 ca
f6 47 e1 42 1f 32 4d 57 fd 6d f4 e8 fc 41 2f da
74 d1 f3 a0 0a 23 81 5f bc be 5f 6f 98 02 17 db
c2 85 09 2c de 7c c8 42 3f 1f 53 63 39 25 57 e2
e7 d4 26 bc d9 53 2c 4c 87 2f ea e9 96 0b 4c 93
1a 61 99 2e 47 88 20 f7 f8 88 88 28 f4 9a c4 b3
8b 22 5a 8d 7e 29 79 ef 25 87 ee a4 75 7d ff 2a

c0 84 2e 7b 52 1a 98 1b 13 dd ef 61 81 33 b1 1a 23 c2 d8 b2 cb a6 cb 90 eb 10 03 9a 54 2f 6b ac 8c 21 7e a2 85 fd 4c 60 17 88 25 99 6e 63 25 9b 97 7a e7 86 eb d6 be 4d 75 4f 53 28 7f 4a f5 5b 27 94 51 cc 3f 9c 48 fc 78 d7 d8 3a 8d 84 76 9d 9c c4 e2 d8 d8 73 83 21 86 66 29 31 80 19 16 39 48 f9 62 33 a3 6c 02 1b 4e 19 2b aa ef 4d cd 29 13 cd b9 b7 61 14 dd a3 af e5 70 56 8a 66 1d 57 bc 62 d2 c0 93 78 8b 67 56 09 88 ab 30 59 7b 72 21 31 ed a4 8f d2 0a 17 97 e3 ba c4 7e 50 1f 0b 10 c2 bb c4 a2 29 aa f7 17 3e eb 3d 90 f0 d8 63 2a aa 5a 14 e9 f4 d0 dc ca 48 bf 98 a0 39 a1 ec 66 0f 8d 99 a4 75 47 49 46 f2 7e 95 a4 61 b2 e1 cf af dc e6
Packet 2 audio subpacket
inputCtr 012345678c000000
ab 5b 09 2f 67 85 ee de 51 de e5 bb 27 d7 31 25 e2 c9 cb a9 7b f7 3f 79 e6 7e 4c e6 6c 2a 7b 8b 0b a9 f4 0f 37 9e fd 3c c8 8a 83 76 72 79 15 c0 bc b1 d4 88 3f 1f d3 1d 76 eb 72 b1 3b ef 78 32 c7 cd f2 54 aa 60 5d 46 98 3a a9 48 d9 cf 80 b6 13 53 c6 b1 08 a4 b7 fd a3 88 d3 60 b3 f2 90 a7 59 9a 19 df 3d 2a 0a 73 1a 92 f2 08 8d 84 5d c6 58 7b 9f a5 61 a2 f4 e1 16 22 af 10 5b 44 78 4c 50 1c af a8 f1 28 84 3b f2 e9 18 58 18 56 8b 28 2e b9 6d 63 0a 7f d2 c6 ce 1e 17 b1 72 bc b8 77 30 84 63 fa ab 4d c9 87 36 80 ac 21 d9 63 01 f8 bc 1d 05 c5 a8 eb f6 01 b3 41 20 84 83 e3 0b bb 8b 47 1b bd 85 d6 9e e0 80 41 47 9b b0 14 5c 74 41 0e 6e 1c 19 64 aa db c6 bc 38 79 ce 51 7d ee 68 8f 73 75 7c 88 e8 9e f1 2b f2 89 77 c3 6b 00 41 ea 2f 7c c6 2b 8e 60 d5 29 85 64 a2 d0 f7 ad e3 cd 5b 8b 0d 94 9c bb a6 4a 0f 7c c5 46 78 ff 81 47 c0 ca 87 62 d4 29 63 22 cb 6d a6 e6 60 39 ec 68 35 47 7d 83 83 60 ee ed 49 57 b6 b6 cd ae 7f d0 88 36 94 6b af 10 ad e2 a2 b1 45 bd 9a d9 02 59 98 fd 14 d1 de 5d f5 65 0c 7c 02 c8 d9 5a 18 70 95 9c 2f 73 7a a2 cb a4 18 f0 18 8c 7b 0e bc 4b 85 68 2d db ab 94 bc 51 11 59 82 71 ab d1 24 7f 02 7e f2 00 3c 81 c4 68 b0 00 34 96 48 f2 b9 20 98 76 89 fc 90 96 0f 3a ae 91 67 4a b8 e4 88 44 c4 49 df 5b af 69 78 91 3c 01 5c 9c 29 bb 52 bd 7d 3a 7c ba 6d 86 26 cf 10 52 3a 6a 6f c6 8f 6c 1a c3 3e 9f 25 84 2a 77 3d 42 50 64 13 63 2f 54 7c 65 39 6c 51 9e bb d5 0f cd 32 3c 9a af a2 cd 0e 91 62 fb a5 e4 66 5d 39 6a 40 d8 e9 09 65 a9 27 65 22 c7 ad b9 f0 a3 b0 28 9c 4b bc c1 da a1 2b 29 ff b9 8e a8 61 30 93 01 0e 5a a6 cc 86 99 1f 56 d7 f6 32 c5 ed c4 67 fb 9a 0a fd f6 b2 eb 81 7c 47 13 7d 90 9b 08 07 ec 35 94 e7 44

da df 0d df 0c 88 8e 88 61 e7 e1 12 b6 79 ea d9 c0 a5 66 6e 18 8f 58 00 2c 27 78 0f 82 82 b3 8e 3d 92 c3 69 f3 2b 45 fa 33 52 e5 76 4e a6 86 5b 9e d7 0a 5a 13 e0 b6 78 f7 35 96 32 7f 5a a4 b3 04 3d 50 61 0f d1 eb bd 22 ef 28 d4 38 2d b1 b0 48 9d dc 8b 54 92 0e ff 0b 1f 49 39 fd 1b 83 9e 01 56 d1 d1 68 e1 94 69 ab 4e aa 95 4e 13 77 5f 72 a6 8a fa 87 00 d0 50 8b 51 bd 7c f5 ea 5f 4d 0a 22 57 65 a0 ad 75 6b ae 3e 90 2c d8 19 e9 b1 22 81 d9 8a 93 eb fc ee a0 dc 69 ac a8 b7 ff 20 a5 04 1b dc de 67 1c 09 cd b3 31 46 18 d3 e8 69 c5 3a 9c e1 a8 a4 8c 6b 61 d0 d3 98 09 15 b9 05 9f 27 cc 49 1e 71 74 a5 11 36 55 28 9b f6 25 23 92 69 a9 9b a0 9f b5 60 d4 ce d1 80 c6 fd ab 80 a7 a2 c8 fe c8 35 83 72 03 cc 13 5a 38 f9 f3 f0 02 3d b5 34 52 95 b8 28 cd a9 b6 e1 67 81 47 9a 93 5e 47 c6 82 98 b3 d2 0e 6c cf b0 f1 b0 32 90 8a 2a 5d 9a a0 4a 17 b3 92 58 79 52 78 f3 08 62 cf 96 ed 93 2c e9 9c 8f 0b 2e 9c 6c 47 cd e3 3a 99 63 e5 66 10 54 a7 7c 5b 76 f7 7c fd 63 3c ab 2b e3 18 22 83 fc b0 0f e1 28 99 b2 3d 7a 5a 8a 01 e5 74 60 29 5d 85 f9 26 7f 44 fa f8 25 e0 df 19 67 0b 60
Packet 2 video subpacket 1
inputCtr 012345678d000000
12 74 6e ee c2 50 51 52 ea 39 c4 bf 2b 94 2c 9c 70 c4 ad b9 d5 82 bb 06 0b 8c fb 79 d1 1f bf b0 d9 8d cd aa 84 b7 22 92 fc d6 30 d1 68 18 91 d1 4b 8a 35 f8 9b 8f 84 2b 5a 6c da b9 8a 41 58 c0 7f b3 47 e6 d9 46 ce 8f 7c e3 cc a6 cc f0 c4 a5 af cc 75 53 b9 ea d4 47 bb dd 46 80 81 60 b5 bd 9d b4 00 0f 45 2e 30 06 69 77 f9 f6 58 69 3f 1c e4 49 9c f1 28 f6 b2 3f 1e 00 46 11 2f f3 d6 14 1d d0 00 79 72 cf 89 58 76 34 e8 ea c6 ee d9 a4 59 9f ed b7 1d e2 7f 05 f0 23 c6 4d cc de 6f d5 79 9a 39 54 f5 8c 6b 06 69 b8 ea 42 e1 a1 35 d2 0d 4a ff 78 df dd 5b c1 7d c9 5f 51 bd e8 b2 d3 85 ee 1e 3b 7e 86 2b 23 48 09 61 6d d1 cc 03 3f 4f 6f 2b 79 43 f1 7b 9b c0 df b8 08 3c f3 47 42 ea ca 0f 1e 0f 07 0c cb 8b a0 20 be 4a 0b 12 53 70 2a ad aa 75 de 88 f7 5e 58 a0 8c 05 81 f9 6e 90 b7 41 bb a6 ae 42 82 56 4f c4 2f 44 f7 f1 f6 d8 44 4f 2b 89 8c 09 33 2d 32 f5 10 09 06 5e 4b 0a 84 13 4a 6a 2d d3 20 83 a3 2d b5 79 84 b5 48 c3 5c 29 61 3b 04 93 47 17 36 e2 a3 10 1f 13 b4 fc da 28 e0 43 73 98 b5 7f 90 59 b3 20 2d a0 b4 2b 27 82 da 40 3d 36 a8 64 0e 66 92 04 3b a3 ab 7f f3 53 0c c1 12 e1 8f 8a a5 25 0b 59 2f 13 d0 b1 e9 ce 96 a5 72 e5 16 06 8c a6 53 a0 b6 86 20 9d 69 ce 32 25 3c 00 90 5a 5d 67 ba 52 31 11 50

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72 1d a5 4e 56 94 dc 72 bb b6 0a d9 cd 8c 1a 4d
dc 3c c6 0f 65 5d 33 2d 00 43 0d 27 71 93 6a b1
fb 68 a3 04 ac 25 b6 b1 f7 37 ed 84 18 7f 6e 6c
30 a6 a2 9b 44 0f 0f 5b 36 97 60 88 4d a2 1d 0e
61 8d bb 61 eb 2c 75 83 77 9d 85 12 54 0e 13 b2
18 56 1d 10 5a 25 d3 bf 75 85 cf 35 93 3b 80 5f
c5 12 d1 91 b6 4f 84 94 70 6a ff d2 37 db 56 fd
5a c0 a7 28 2b 0b 86 16 90 8b a2 b4 87 5a 2d 7e
8c e2 d6 de a7 6e 0e ed 99 16 b5 40 eb 93 d8 8b
5c 04 c2 63 b7 b9 9c 54 c3 fe 57 c0 0f 3f ec b6
e9 e3 01 94 11 5a c8 24 9f e4 e6 9a 2d ca 32 41
91 06 25 36 45 da d0 bf 86 f2 26 79 c8 f5 0a ff
27 8f 66 f6 76 6e c6 bb 86 f6 f9 7f 86 e0 07 b3
f7 37 2f ce 85 bc 13 1b bf 3a 54 a6 a7 7e e4 51
47 09 b8 f4 65 61 49 b1 85 d0 60 9c 0b d5 e1 a2
66 45 54 13 9d 3f 2b a3 ac 21 58 55 fc 1b 51 8e
e0 99 53 b0 34 ce 32 b5 91 8c 1f 53 92 f6 65 1a
4b 16 c2 81 4d 7f 50 9a f3 9b 9d 39 fd c0 f5 d5
74 5e 66 47 26 73 4c a5 09 18 c5 a4 c5 0d 9c 6d
39 12 d4 a4 71 69 80 f4 51 1b 77 51 a5 bf 9a a5
4c c4 10 d6 d3 51 dc 45 d5 22 b6 3c ca 32 cc 9f
e1 26 4b 64 10 32 51 10 9d 88 a8 2a 04 bb ed 6c
5e dc 9f c4 fe 4f 9a 7a d6 95 e7 70 42 56 52 f7
2f a0 55 f3 f1 d3 05 56 af 6f a2 b5 2b 55 9b d8
8f 8d b6 ed 5a a8 59 50 b8 85 06 95 f1 d4 2f c7
e6 47 c3 32 26 f8 5b 84 07 12 8e b6 a4 95 45 4e
b6 85 ab 6b df cd 6e 2b 10 69 4e 47 12 11 b7 5a
ab 05 3d 56 93 a4 df f6 c1 29 2a 60 7b e4 e7 de
3a ec a2 78 cc ee b0 bf 09 4a 79 f3 40 4f 0f 68
85 d2 52 58 4d 56 b3 7a ea e7 b3 82 62 a1 61 24
e8 e6 d1 30 f7 6f a0 d4 dc ee 32 51 6d 4b d6 71
f1 78 68 22 e1 90 48 c6 31 a3 c6 a4 fd 11 27 3a
df 02 fd e9 6d 99 44 96 dc 9d 58 72 0e 57 e2 c1
2d 09 0b 7d 6c 59 7a 7c b2 9e 17 68 8b 99 2e c2
65 63 b6 2e 05 51 2a ed eb 2b 56 6c ee 41 a3 7d
d5 c1 be af 8a 84 a9 ce 80 49 16 17 d1 32 c0 c3
59 1a fa 8a 67 69 4a 7a 22 8c 90 45 94 35 37 6f
00 d0 07 0e b3 d0 f5 dc ad 0b e3 c6 a3 dd 3d 91
2c ab c1 e3 f5 9d a3 13 d5 1a 45 86 0e 21 89 5f
d6 14 62 74 1c 7c 05 f9 48 4b 82 5e c5 62 bc 9c
0b 13 4a c0 8f 76 8f f2 a2 97 1e 5f cf d5 9c ae
ed 71 ab e1 4e 81 01 6c 67 54 13 42 55 31 c7 73
96 b7 82 f1 8c 57 2b 35 86 77 10 7b 99 fb 3a 5a
8e 62 f5 6e ab aa 95 27 8f 34 30 17 d5 0f 06 1b
a8 86 11 73 59 6a 5f b2 47 80 c8 27 4c e6 a3 a7
18 55 7c be 06 2a 89 97 9c 3b d1 38 eb 2f 1b 7c
7b 7d 76 85 bd f4 d4 4f f1 78 c5 cb 8d bb 54 36
61 77 f1 6a bd 22 c6 f2 81 15 e0 01 25 a1 53 bb
26 f3 af 10 0b 7e 82 b0 ef 5e 8d c5 6b 84 d1 ff
9d a5 04 7d 53 fd d4 90 62 af 6b b8 75 7f ca 30
84 f8 77 e5 2b a9 44 10 f9 69 e2 e4 d3 ee 2e 4c
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9f c4 e3 fc cf dd 5a 22 0b 89 a5 04 2c ee 7d 40
35 5e 46 cd 38 b6 f7 2c a8 11 3c d7 05 35 8a 95
42 ef 30 ae f2 f5 86 84 42 90 1b 75 8e 95 25 49
f8 63 9d d8 89 30 58 fd b4 04 d7 08 a3 74 5f 32
14 59 ae a0 66 38 30 42 e2 04 ac 48 2f a6 e6 23
5f bb 46 c2 95 74 c9 2d 03 e7 4a 81 36 fe e7 5c
ea 1a 26 06 19 ad b2 7a e3 96 cf f1 5b 3f b3 72
81 87 ee 1d 93 3e a3 ef 70 88 58 b6 af 78 63 91
23 ad 5a 80 60 9a f1 21 6c f8 de 20 ab c6 f7 09
8b 4a 3e 0a 0c 4b e7 84 d9 9f e6 f7 61 b2 3d 99
fd 03 bf 24 94 d6 99 c5 cc fe b8 29 23 4f fd 3c
23 09 67 72 13 0e 46 5a 04 9f 7c 1b 27 27 06 aa
d4 f6 f6 c8 33 2c 77 46 50 bd 39 ab bb d4 c9 b2
da d0 39 2c e5 93 ff 39 d5 cf 0b 18 3c e7 a6 7f
a6 49 8d e6 a6 fd f9 bf e6 f1 ff 67 23 72 b4 0e
7e 03 1d 12 35 85 0d 12 02 92 6e 7c f4 8a f5 3e
3a b8 d1 f4 54 f2 3f b2 5a 71 87 75 bd c6 de c6
fd 31 b2 76 c2 9d a2 9d 0f 6b 25 cf 55 6a 4d ad
29 a2 85 c4 f1 6a 34 85 8a 3e 9b 15 2c 6e e1 ff
ee a8 a8 2d 78 c1 ef 88 7a 1a c2 34 1c 63 db 4a
45 8a 95 a3 e7 8a 04 90 da c0 f0 b6 50 f5 28 80
7b df 82 42 58 50 e8 ba 98 10 1c 68 c6 bc 92 62
93 37 05 5d ab 2d ba f6 e5 c0 2f 56 7c 69 88 26
28 16 a5 8b 87 d8 00 d1 ad 99 57 b5 54 3b 20 ed
f6 c8 b4 e8 cc d0 55 ef e8 e4 a8 65 1b 48 42 6b
3b fe a3 0e 8e b4 97 44 63 9f b1 ab 99 3c 3a 5d
d1 d1 00 c3 d6 74 c0 38 8d 57 94 de db a3 fc 41
79 e1 4a a7 cc 2b 0f ca b7 47 63 91 be 62 7c 37
c9 1f d6 bd 64 ff cc f9 da 45 0c e4 73 f2 90 9d
9e b2 eb bb 71 b5 67 28 0d de 66 eb 74 12 c6 a5
17 18 5f 41 b4 81 88 4e 3b 69 41 16 de f5 67 a6
c2 85 4d 21 a9 2e c5 c9 a2 3a 0a 51 83 6c ff 15
06 b5 d9 c5 8c 37 63 9b ac a6 3e f0 1e 37 d8 a6
3a 43 5e 34 00 51 44 11 82 a2 22 df 5d 17 83 3a
e9 f0 e6 2e a3 b5 f3 58 cd 40 30 e9 7d 1d c9 7e
16 1c d9 45 e2 e5 8a a0 55 34 ae a4 c3 82 d3 a4
75 a1 1a e6 4b 87 ef e8 1f 63 d7 15 09 df 69 2a
6b 2a 04 30 ab 4e 9d 02 7b 5b 0f cf c6 67 4d 59
89 91 07 37 1f dc 12 ab b8 87 9e b6 d2 a5 4a 89
b6 57 c5 b3 f5 b0 52 b6 e2 4b 8f 86 07 17 15 80
84 7e 60 4c 0d 12 42 a9 11 87 03 9e 87 64 12 19
71 f1 73 38 14 cd 5d aa a1 15 65 4a bb 36 f6 fc
18 11 fc e7 35 be 9e f2 f0 55 dd bf 03 c9 ee 7c
04 dc 10 33 35 7f 44 be 5d 4c 78 6f ec 59 89 c2
39 d1 68 e7 29 3f e6 8a f9 32 97 13 06 01 4b e0
cf 9e d1 c8 0c 0c ef 43 5a 13 3f 95 5e 37 00 b1
2c 3a 36 6c d5 0c e8 98 07 cb 24 fe 53 91 2c c3
06 ee 22 04 2d d4 fe c5 39 37 ce e9 1b f5 4f 68
fa 27 19 95 aa 6d 53 a9 8f 7e 12 24 da 4d 59 ba
26 b1 ab 28 d0 bc 34 8a 6b e3 30 43 f1 fd fc cd
3f ed bf c2 06 d9 14 81 19 c2 34 29 aa 0d 5a a9
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9e 32 0c e6 10 6f 94 8e b0 f2 89 17 b2 8f 9f de
b5 a1 43 93 18 b1 2e 8f 49 b8 41 6c a1 aa 03 be
ce 9d 94 6a da d9 7f b4 a0 e8 9a f8 99 c0 0e c9
0e 69 1e a3 5c 1e be 7d 61 30 75 2e a5 a5 29 2a
cd e0 32 a8 e0 77 d9 ea 27 e6 f8 3d 02 e9 b5 61
50 68 95 7e b9 c9 76 f8 19 34 20 04 c1 d3 ff d1
ab 26 ba 4e 74 e8 da cd 83 59 01 db 56 9e ae 72
da cd 57 9b ed b1 f6 8b dc 5d 8f 10 1a 5c ac 57
63 26 9c 68 9f 40 cc 5b b4 cf c5 62 48 17 a2 75
5d 6e 48 c8 7e 60 cf 55 82 d0 56 f0 03 ba 1d 13
a2 07 03 fc 73 30 4d ba 07 92 81 1f 75 d9 6c ff
e2 ef 99 f6 f2 0f 54 13 18 03 14 e1 0e d9 37 39
8c 39 47 63 e0 ef 3a 15 ea ce 58 4d 8c e0 f5 c9
a5 32 1f ac f2 47 7a 76 52 14 18 bf 28 80 25 04
76 10 af 28 4f c6 87 87 27 76 b5 9e b4 d2 c4 cc
26 75 ce 7d c8 8d e1 6f 89 fd c5 35 e9 39 0f 38
f5 06 07 b4 83 e0 31 e9 da 75 42 4c 42 60 c9 e0
a8 88 cb ce 68 64 5c ca 05 49 2d 27 97 c2 5b 0c
04 f5 b0 04 5d 43 5c ae b5 90 ee 73 32 fb 2f 79
07 13 9a 2c 36 e6 ac f4 7a 07 5b dd 2b 52 19 5c
89 6f 35 a0 20 ce 7b e8 31 f1 5e a6 0c af c0 7d
95 ce 7a 4c c8 fe e4 14 03 db d8 ee 63 d4 59 0d
51 75 03 d1 04 ef 90 37 9a 41 17 8d b4 04 85 0b
15 8d 8d 0d bd eb 7b ed d3 d1 c9 4b 2f db 9a 17
53 4d 43 33 b9 48 57 bf 13 54 8c e9 15 4e 0c 63
24 da 54 a9 52 4c b8 23 79 ca b8 dc 89 2c 97 e8
ee 22 2b ee 9d 37 30 b0 fc d6 fa ef 8a 18 5e b5
5d 53 1e 9e f4 1c 0c d9 36 10 f9 58 39 f9 8c ff
7b af e9 44 5d a0 c6 b8 83 07 bb e1 d7 d4 c7 8f
85 54 52 33 03 79 92 8b 36 37 30 e3 cc 55 35 d9
f2 b8 25 08 3c 4b 9d e4 9c 2f 48 01 8d bc aa 9d
04 77 20 60 c4 4f 9e 46 de 04 7f 43 c6 09 a3 78
12 4b f4 59 e6 af 37 9c 40 2c e8 b9 37 bf 4c 54
d2 88 1f bb 1c 3e da 75 f5 14 dc c3 e5 a4 33 23
fa ef bd fe 6e 7c a4 a2 85 db a3 84 ae 54 cf ef
1f 29 c5 42 d6 c8 2b 27 3f 57 ac d6 58 b2 e9 fe
67 d9 76 fe d5 88 52 81 f3 fe 2d b3 83 0e 68 09
43 0e 46 c7 9e 23 e4 c7 98 7f 2f c0 61 b1 7b 5e
41 61 31 a1 77 2b c3 44 46 68 ed 3e b7 80 61 03
14 18 a8 6e 03 00 7c 0f 06 d8 a4 89 cb b3 4e 13
3e 33 1c 22 23 e0 65 01 ee 9b ab ff 13 29 eb 3d
ee a2 75 fb 98 8d 90 66 8f f2 ea 83 e4 37 55 2b
c9 39 4b 5a 99 3e aa 1c df 90 88 33 30 23 db 76
42 6f 3c 5f 2a 64 9c 7a 1b 5b c7 5f cb 99 36 9b
27 72 99 06 e5 31 55 db df 70 eb 53 2b f8 7c c8
0e 82 ce 98 76 2f b5 a5 b1 fe d9 4f e1 3f 7f d2
e9 90 74 27 a1 21 0c e1 c1 52 d5 30 00 5d b9 ee
61 24 b2 87 98 b4 1a 3a c7 b3 12 c3 70 e9 54 c6
5a 22 25 22 e4 5c 3c 86 7f 99 26 da e9 d9 7c 4f
2c 9e dc f5 67 c5 af 54 db 3e c4 12 a6 cd e4 67
e7 90 d9 33 99 b1 9b 56 68 1f 89 30 c1 f2 fd a2
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24 e9 bb 69 d5 07 df 99 44 a4 67 e4 7e a2 54 9d
df 68 71 21 88 59 6a 8e 04 e5 33 7c 32 87 02 98
21 54 9c d6 f7 23 bc 90 21 7d dd c3 85 7c 44 67
1e 65 07 a1 de 5a 77 64 54 72 7b 05 60 f2 52 23
a7 12 d1 e3 67 22 c6 ac 31 2d 3d 8c 50 6e 4e 3d
17 4d 19 0a 51 88 49 82 90 cf 6b 2a 21 34 f3 96
69 c6 aa 74 9a 0b d6 7d 65 f1 36 c3 c5 f7 f9 2e
77 2b ab ff 32 06 db 90 10 d6 95 1a 3f d5 32 2f
2b 1e a0 b0 44 6a 46 2c 90 b7 91 8f 47 71 2f 7b
d0 8e 39 be 30 c4 6a b4 98 3d 44 66 be 53 13 86
1d 0a de 4f 10 d6 ab d3 a4 0a 30 db a9 ad fe 5f
6f 1b 42 a8 6e 42 16 2f 49 7d ad 15 f8 fd 10 6a
3d aa 0e 84 2c 8c 5a 34 e2 2e 1c e9 a2 b9 b5 dd
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c0 0e f5 11 e7 65 31 3d f9 ef 01 30 5a ad 7e d4
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7d 69 f3 e5 e0 77 73 d5 3d 65 b5 0e 30 7d ff 98
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1a 7c a7 55 fc ac ea 71 dc 63 2c 63 90 24 78 67
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3d 3b 91 87 83 27 5e d1 5e 52 36 c7 fb ae 8d cc
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4b 5c b8 13 bc 80 ba e7 8e b1 25 70 2b 4c a9 9d
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65 75 cc 58 fb 6f ff 90 4d 16 e8 62 f5 cb 39 e9
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2c 58 61 a5 57 d9 e6 20 b7 ca a4 1a fe 9a 3b 8f
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1a 12 92 20 1c c2 89 6d ab 4c e9 fd c0 52 78 40
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46 76 94 da e5 c2 57 35 89 ac 7d 4d b3 93 c5 63
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bc 06 5c 56 3f 0c d5 84 a9 8e 81 73 aa a1 b2 bf
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47 31 e2 72 10 c2 d8 59 5d 3d 81 86 4f 5e 1d 9c
ef 5f dc b2 38 77 11 d7 56 54 b2 99 d6 1c c6 a6
fb 50 eb fe 6b 29 7f bf 49 f4 29 32 d3 6c e7 45
46 43 4d 47 92 3f d7 e8 f6 35 0d 5a 41 7a 25 be
c8 65 79 c9 98 e3 09 8e ce eb 81 8a 9c 20 02 c5
df 98 28 12 cf d5 a8 96 ac 62 3e 94 d0 3c a4 8a
84 ac 41 9f a9 1c b2 31 6d 02 a2 9c 9d f5 19 c1
e6 22 a5 ea 00 e9 4f d7 cc b9 3e 5e 88 0e 8f 45
21 67 df 4c 11 ab 23 ce e1 f0 b9 d4 f3 67 45 e9
04 25 71 e5 b2 2e 33 5d 19 32 1f 54 43 e8 90 1f
85 ea 2f 93 32 b8 bc f0 e2 0a 9e 56 20 65 ca 11
```

```
37 80 76 0e 45 d0 21 a3 a4 50 62 46 a3 94 a9 f1
c9 23 23 92 5e 80 b6 82 3a ec 6b 4c 73 43 8a ba
d4 ac 3e 26 e4 69 4e 6f b5 5e a5 0d 15 89 66 0c
e5 22 30 94 4f cd 5e 29 4d ed c8 03 a1 64 ed ae
7b 4a ba ea 1b 1e 77 04 ee c3 0a 6d 05 e3 f2 1d
b7 9a 05 26 c8 17 8c 1e b8 76 8b bd c3 34 01 ea
07 c3 f8 c0 e8 77 da 07 f1 1e d1 0c 76 7d 76 f8
b5 ec c4 a6 05 b4 8e 3d f1 2d eb 7e b7 89 d0 0e
08 7f 5f 48 a0 37 aa 51 b2 8f 2f fe 0b b6 f8 c7
0a 56 9d 10 03 ed 9b 8c bf 8a 32 cf 53 11 aa 47
85 88 7b a3 8c b4 dd dc f8 f3 b5 f9 81 29 e8 1e
50 78 ba 38 86 1b b6 5f 38 06 b9 c7 17 61 29 da
2b 2b 10 7f 5b 7f fc 99 3d b5 40 a2 52 06 1f f2
ae 9b 31 3d 87 9d 57 6c a8 66 cd 8f d7 b1 ab 31
23 8a 0b 69 22 f2 69 71 6d 39 e4 80 d4 7c 34 b0
fb fe ff a2 04 8e 49 1a b0 b5 93 d9 e6 82 36 76
c4 03 73 03 7c ba 9b 26 ad c6 b3 e8 9a 19 1c cb
a6 4a af ce 3d 16 c2 36 84 ba b0 e5 6c 3d 7d 35
bd 59 94 ea 53 88 54 50 08 fd c1 a3 e4 6d 68 57
28 7b b9 26 e0 33 c2 e9 76 ee eb d2 8d 49 00 37
57 e5 a9 bd d3 c9 c0 78 bc fb a8 b4 f1 f1 69 c9
f7 48 2f d0 f2 de 50 2d 63 66 32 bc 74 41 4c 07
bc 0c 1c 19 2a e2 47 58 80 93 c3 24 50 d0 4b 42
e2 ec ca 6e 5a 99 c0 5d 5b 55 bb e6 ec c9 fa d8
f6 49 ab 01 11 cd 42 5b 89 84 a0 c8 3b 76 31 72
bc ef 89 d1 51 4f 07 cb 4f 7d 5d 13 c1 68 d5 29
6c a0 96 73 64 c2 ac 29 f1 ac 7b b6 6f 65 6b 79
73 74 8a b9 09 25 0a 87 09 3b 95 0d b8 80 12 9b
43 2f d4 50 f9 f5 08 92 06 23 cd 38 4a 39 c2 ed
f3 56 1a 34 05 68 1c 3c e9 ec e0 ec 3f d2 47 c4
d4 62 56 0e 1c af 6a fe 1e 5a 17 23 81 eb 54 17
33 a9 d0 80 0b 87 19 b3 3e c6 1d 16 a1 e2 b8 d5
42 98 29 12 a0 c4 f9 15 53 9f 6f 19 1b ba 3d 40
34 06 1b c3 6d e5 39 07 b3 4e c5 e3 0b 41 86 ec
f7 fc 0f 73 4a 32 e2 2e 0e 08 a5 f6 86 8e 1c 31
e9 13 66 d5 3a 8c 4f fd dd 9d 26 32 8a 5a 97 32
b8 3e 87 7c 0f 87 9f 7c 34 bd 70 d2 fd 2e dc 07
f8 8c 4b dd e1 87 cc 51 9d 84 ef 55 4c 44 02 bf
6b 26 6a 5b a3 66 a5 d7 4e 5b 96 23 84 61 a2 9f
37 b9 3d 5a 91 6c 6d 5e 19 d4 81 15 c8 ed 5b 1b
53 42 03 29 8c 6b e4 ca 0b fe 82 71 dd e9 20 4f
07 c8 78 03 81 5e 29 79 57 33 80 9a 71 0d cb 3e
1b 10 d9 b4 92 9e ee 80 04 bf 75 09 64 b0 cb 74
f0 1a 08 6e 83 4f 6b 01 91 ed cc 0c d6 47 e4 53
7d c8 fe eb 59 b3 ad 8d c5 fe 93 b6 28 9d 22 01
2d c6 21 95 b6 3e 0c cd 78 17 9f 03 a5 16 c6 97
a9 75 09 a9 92 3f 2e 4c 77 7a 5c aa d4 87 f6 b7
```

Table D.10

Table D.11 provides a sample SRM with an empty list of Receiver IDs revoked. This sample SRM is signed using the production cryptographic parameters (Table B.1).

Receiver IDs Revoked	SRM Version	Value (Sequence of hexadecimal bytes)
(none)	0001	91 00 00 01 01 00 01 87 00 00 00 00 8b be 2d 46 05 9f 00 78 7b f2 84 79 7f c4 f5 f6 c4 06 36 a1 20 2e 57 ec 8c a6 5c f0 3a 14 38 f0 b7 e3 68 f8 b3 64 22 55 6b 3e a9 a8 08 24 86 55 3e 20 0a db 0e 5f 4f d5 0f 33 52 01 f3 62 54 40 f3 43 0c fa cd 98 1b a8 b3 77 b7 f8 fa f7 4d 71 fb b5 bf 98 9f 1a 1e 2f f2 ba 80 ad 20 b5 08 ba f6 b5 08 08 cf ba 49 8d a5 73 d5 de 2b ea 07 58 a8 08 05 66 b8 d5 2b 9c 0b 32 f6 5a 61 e4 9b c2 f6 d1 f6 2d 0c 19 06 0e 3e ce 62 97 80 fc 50 56 15 cb e1 c7 23 4b 52 34 c0 9f 85 ea a9 15 8c dd 7c 78 d6 ad 1b b8 28 1f 50 d4 d5 42 29 ec dc b9 a1 f4 26 fa 43 cc cc e7 ea a5 d1 76 4c dd 92 9b 1b 1e 07 89 33 fe d2 35 2e 21 db f0 31 8a 52 c7 1b 81 2e 43 f6 59 e4 ad 9c db 1e 80 4c 8d 3d 9c c8 2d 96 23 2e 7c 14 13 ef 4d 57 a2 64 db 33 f8 a9 10 56 f4 59 87 43 ca fc 54 ea 2b 46 7f 8a 32 86 25 9b 2d 54 c0 f2 ef 8f e7 cc fd 5a b3 3c 4c bc 51 89 4f 41 20 7e f3 2a 90 49 5a ed 3c 8b 3d 9e f7 c1 a8 21 99 cf 20 cc 17 fc c7 b6 5f ce b3 75 b5 27 76 ca 90 99 2f 80 98 9b 19 21 6d 53 7e 1e b9 e6 f3 fd cb 69 0b 10 d6 2a b0 10 5b 43 47 11 a4 60 28 77 1d b4 b2 c8 22 db 74 3e 64 9d a8 d9 aa ea fc a8 a5 a7 d0 06 88 bb d7 35 4d da c0 b2 11 2b fa ed bf 2a 34 ed a4 30 7e fd c5 21 b6

Table D.11

Table D.12 provides a sample SRM with revoked Receiver IDs. This sample SRM is signed using the facsimile cryptographic parameters (Table D.2).

Receiver IDs Revoked	SRM Version	Value (Sequence of hexadecimal bytes)
0x04bdb85b74, 0xfb4247a48b	0002	91 00 00 02 01 00 01 91 00 80 00 00 04 bd b8 5b 74 fb 42 47 a4 8b 2a 53 45 a0 9e f7 76 d9 c8 f4 c8 92 58 08 dd 71 89 ac 22 79 75 43 c9 d0 4f 9c e2 b8 29 5f be 22 4b 3b d2 4d 09 55 1d 5c bf 21 7d 0e 62 76 c3 bd c7 fc c9 9e 54 3f 94 59 51 4b 8f 85 99 75 c8 bc 1d 84 cc ba e4 36 03 69 d8 01 76 97 db f9 2d 3f b8 66 e5 5e 8b 85 0b ac be 0d dd 06 d4 9d 28 9e 51 62 cd ce 36 23 84 65 0c 74 a3 7b a0 59 b1 84 b7 c1 27 8f 62 ad 1b 16 26 70 9f 08 91 1b 1b 64 90 e8 1e 28 84 f7 53 15 2c 88 87 53 19 53 29 75 9f 4b 95 11 6a 1c 43 6f 11 6a 19 ba ef 3d bd 1f 8b 00 39 9b 7d ab 97 0b 36 26 04 82 7b 60

		0e c5 4f 7e 2b 21 96 dc ed 8e 15 8f 34 86 58 3c 91 75 f4 d1 0a 47 b1 54 18 f1 46 17 28 80 73 d5 98 97 75 ad 61 80 c8 0f 80 aa 98 ce 5f 53 03 fa cc 46 7b 2c 8c 99 5c a1 2b 36 36 39 b0 21 26 1b e7 76 29 02 52 1a 9c e3 97 e9 b7 24 5b de 8e 86 5d 09 1c 87 ba 6c 82 f8 44 c2 c0 8a bf 2d 7d 79 78 11 b4 0a 68 f7 cb de f5 ec d5 b0 9c 57 0b 20 1c 2c d3 36 b3 44 e2 ff d2 27 80 c3 b5 cf 0b c2 d6 9b 49 13 22 56 91 40 73 ee 67 6c 49 67 e7 5f da fd 76 57 75 95 c3 09 3b bb ab eb 1d 01 e3 3f e3 87 89 2a 8b f6 2b 98 2e 19 70 fe ab ba 24 1f 44 5a 42 db b9 9c e0 3d b4 68 b5 0d ae ba 24 51 e1 39 ac 06 9e 57 bd 7c 98 cc 82 52 28 8b cf 09 ca 09

Table D.12