Car Connectivity Consortium

MirrorLink®

MirrorLink 1.1 Errata

Version 0.3.0
(CCC-TS-034)

VERSION HISTORY

Version	Date	Comment
0.1	06 December 2012	Added CCC-TS-024 (UPnP Application Server service)
0.1.1	06 December 2012	Added CCC-TS-014 (Device Attestation Protocol)
0.1.2	21 December 2012	Added CCC-TS-026 (UPnP Client Profile service) Added CCC-TS-018 (Service Binary Protocol)
0.2	12 March 2013	Added Errata additions from Barcelona TWG meeting
0.2.1	05 April 2013	Added Errata for CCC-TS-010 (1.1.5)
0.2.2	01 May 2013	Added Errata for CCC-TS-036 (1.1.1) Added Errata for CCC-TS-014 (1.1.4)
0.2.3	16 May 2013	Added Errata for CCC-TS-036 (1.1.2)
0.2.4	18 June 2013	Added Errata for CCC-TS-024 (1.1.4) Added Errata for CCC-TS-044 (1.1.1)
0.2.5	24 July 2013	Added Errata for CCC-TS-014 (1.1.5)
0.2.6	07 September 2013	Added Errata for CCC-TS-024 (1.1.5) Added Errata for CCC-TS-028 (1.1.3) Added Errata for CCC-TS-036 (1.1.3) Added Errata for CCC-TS-038 (1.1.2) Added Errata for CCC-TS-044 (1.1.2)
0.3.0	13 November 2013	Added Errata for CCC-TS-008 (1.1.3) Added Errata for CCC-TS-014 (1.1.6) Added Errata for CCC-TS-016 (1.1.3) Added Errata for CCC-TS-024 (1.1.6) Added Errata for CCC-TS-026 (1.1.4) Added Errata for CCC-TS-028 (1.1.4) Added Errata for CCC-TS-030 (1.1.4) Added Errata for CCC-TS-035 (1.1.2) Added Errata for CCC-TS-036 (1.1.4) Added Errata for CCC-TS-038 (1.1.3) Added Errata for CCC-TS-044 (1.1.3)

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TERMS AND ABBREVIATIONS

BT	Bluetooth
ML	MirrorLink
RFB	Remote Framebuffer
UPnP	Universal Plug and Play
USB	Universal Serial Bus
VNC	Virtual Network Computing

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1 ABOUT

This document is part of the MirrorLink specification, which specifies an interface for enabling remote user interaction of a mobile device via another device. This specification is written having a car head-unit to interact with the mobile device in mind, but it will similarly apply for other devices, which do provide a colored display, audio input/output and user input mechanisms.

The document will focus on Errata for the MirrorLink 1.1 specification version.

The specification lists a series of requirements, either explicitly or within the text, which are mandatory elements for a compliant solutions. Recommendations are given, to ensure optimal usage and to provide suitable performance. All recommendations are optional.

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are following the notation as described in RFC 2119 [1].

1. MUST: This word, or the terms "REQUIRED" or "SHALL", mean that the definition is an absolute requirement of the specification.
2. MUST NOT: This phrase, or the phrase "SHALL NOT", mean that the definition is an absolute prohibition of the specification.
3. SHOULD: This word, or the adjective "RECOMMENDED", mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.
4. SHOULD NOT: This phrase, or the phrase "NOT RECOMMENDED" mean that there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.
5. MAY: This word, or the adjective "OPTIONAL", means that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item. An implementation which does not include a particular option MUST be prepared to interoperate with another implementation which does include the option, though perhaps with reduced functionality. In the same vein an implementation which does include a particular option MUST be prepared to interoperate with another implementation which does not include the option (except, of course, for the feature the option provides.)

2 INTRODUCTION

This document contains all Errata for MirrorLink 1.1 specification.

3 CCC-TS-008: CONNECTIVITY

3.1 Revision 1.1.3 from November 05, 2013

Chapter Terms and Abbreviation, Page 7

Removed Bluetooth related entries

A2DP

BT

HFP

HSP

Removed Bluetooth trademark usage

Chapter 3.3, Page 12

Removed Chapter

MirrorLink over Bluetooth has been deprecated, i.e. removed from the specification.

Chapter 4, Page 13, Figure 1

Update Figure

Removed Bluetooth.

Chapter 4, Page 13, Line 7

Update sentence

Removed Bluetooth.

Chapter 4.3, Page 13/14

Removed Chapter

MirrorLink over Bluetooth has been deprecated, i.e. removed from the specification.

Chapter 4.4.1, Page 14, Line 25

Replace

```
Bluetooth
```

By

```
Wi-Fi
```

Chapter 4.3.1, Page 14, Line 26-30

Replace

```
If the DHCP client indicates that an IP conflict occurred, sending
a DHCPDECLINE message, the DHCP server MUST offer a new IP address
192.168.x_new.y_new, where at least x_new is different from the
previous offered address or and it MUST provide a manual mechanism
to change the provided IP address.
```

By

```
If the DHCP client indicates that an IP conflict occurred, sending
a DHCPDECLINE message, the DHCP server MUST offer a new IP address
192.168.x_new.y_new, where at least x_new is different from the
previous offered address or it MUST provide a manual mechanism to
```

change the provided IP address to achieve the same IP address change.

Chapter 6, Page 16

Remove reference 3

3.2 Revision 1.1.2 from March 05, 2013

General document

Editorial changes throughout the document

3.3 Revision 1.1.1 from September 24, 2012

Chapter 3.1.1, Line 29, Page 10

Added paragraph

USB uses little endian. Therefore the MirrorLink minor version is in the high byte and the MirrorLink major version in the low byte of wValue.

```
MirrorLink 1.0:   wValue = 0x0001 (0x01, 0x00)
MirrorLink 1.1:   wValue = 0x0101 (0x01, 0x01)
```

A MirrorLink Server SHOULD treat a received MirrorLink version 0.1 as a 1.0 version (for backward compatibility reasons).

4 CCC-TS-010: VNC BASED DISPLAY AND CONTROL

4.1 Revision 1.1.5 from April 04, 2013

Chapter 5.5, Page 37, Figure 11

Replace Text box entry

```
Wait for Text Event
```

By

```
Wait for Key Event
```

Chapter 5.6, Page 41, Line 15 and 16

Replace

```
Server Cut Text
```

By

```
Client Cut Text
```

Chapter 5.7, Page 44, Line 36

Add Text

```
The MirrorLink Server and Client MUST support Landscape orientation
mode at any time. The MirrorLink Server and Client MAY support
Portrait mode as well. The MirrorLink Server SHOULD start in Land-
scape orientation.
```

Chapter 5.8, Table 23

Replace description

```
(Optional) SHA-256 hash of framebuffer context information data
```

By

```
(Optional) SHA-256 hash of context information pseudo encoding, as
provided within the last framebuffer update (as defined in Table
22)
```

Replace description

```
(Optional) SHA-256 hash of framebuffer content
```

By

```
(Optional) SHA-256 hash of framebuffer content, as provided with
the last framebuffer update (as de-fined in Table 22)
```

Replace description

```
(Optional) Number of framebuffer bytes sent since previous attes-
tation.
```

By

```
(Optional) Number of framebuffer pixels sent since previous content
attestation response message (as defined in Table 22).
```

Chapter 5.9, Page 49, Line 25

Add Text

The MirrorLink Client MUST NOT block a framebuffer for the reason "UI layout not supported" in case the MirrorLink Server is switching to Landscape mode.

Chapter 5.9, Page 50, Line 5

Add Text

The VNC Server MAY receive the VNC Framebuffer Blocking Notification message only after the VNC Client has already made the "UI not visible on the remote screen". The VNC Client MUST send the VNC Blocking Notification message immediately after receiving the next Framebuffer Up-date message following the removal of the UI from its screen.

4.2 Revision 1.1.4 from March 05, 2013

General document

Editorial changes throughout the document

Chapter 4.3, Line 9, Page 17

Replace

MUST

By

SHOULD

Chapter 4.3, Line 44, Page 18

Added paragraph

In case the MirrorLink Server supports other languages, Appendix C defines language specific character sets, which MUST be supported.

Chapter 4.3, Line 19, Page 19

Added paragraph

For other Unicode values, found in ISO 10646 / Unicode, the following algorithm MUST be used: The X11 key symbol value is the character's Unicode number plus 0x01000000 [25].

Chapter 4.3, Line 19, Page 19

Added paragraph

For other Unicode values, found in ISO 10646 / Unicode, the following algorithm MUST be used: The X11 key symbol value is the character's Unicode number plus 0x01000000 [25].

Chapter 5.2, Page 25, Table 9

Delete text

(unknown value MUST be 0)

Chapter 5.2, Line 1, Page 26

Added paragraph

The MirrorLink Client MUST provide correct client display width and height values in [pixel] and [mm] within the Client Display Configuration message, which MUST NOT be equal to zero (0).

The MirrorLink Client MUST provide a correct client display distance value in [mm] within the Client Dis-play Configuration message. If the distance is unknown, the value MUST be 0, in which case a value of 1000 mm MUST be used from the MirrorLink Server per default.

A MirrorLink Client supporting MirrorLink-Certified, MUST provide a rectangle window within the Mir-rorLink Client's display with at least the following properties:

- Minimum Vertical resolution: 400 pixel
- Minimum Horizontal resolution: 600 pixel
- Minimum Framebuffer Aspect Ratio: 13.5:9 (=1.50, rounded up to 2 decimal points)
- Maximum pixel density
  - Vertical resolution <=600: 190 pixel/inch
  - Vertical resolution >600: 230 pixel/inch

The MirrorLink Client MUST NOT request a framebuffer resolution smaller than 600x400 within the Client Display Configuration mes-sage.

A MirrorLink Client, not meeting the above properties, MAY use Member-Certified Applications, if certified for the specific Mir-rorLink Client.

It is the responsibility of the MirrorLink Client to validate this.

Chapter 5.3, Page 32, Line 2

Add paragraph

A MirrorLink Client, not supporting Pointer events, MUST support the Knob_2D_0_shift_push event and at least one of the knob event pairs listed below and MUST enable them in the Client Event Config-uration message.

- Knob_2D_0_shift_right and Knob_2D_0_shift_left or
- Knob_2D_0_shift_up and Knob_2D_0_shift_down or
- Knob_2D_0_rotate_z and Knob_2D_0_rotate_Z

A MirrorLink Server MUST pass the following knob events to the applications and MUST enable them in the Server Event Configuration message.

- Knob_2D_0_shift_push event
- Knob_2D_0_shift_right, Knob_2D_0_shift_left
- Knob_2D_0_shift_up, Knob_2D_0_shift_down
- Knob_2D_0_rotate_z, Knob_2D_0_rotate_Z

A MirrorLink Server MUST NOT remap the above listed knob events to different key event values, other than to allow MirrorLink appli-cations to navigate and select user input elements.

A MirrorLink Server MUST pass all other received MirrorLink events to MirrorLink-Certified and Member-Certified Applications. The Mir-rorLink Server MAY remap them to other key event values.

Chapter 5.3, Page 33, Line 11

Add paragraph

A MirrorLink Server MUST support Pointer events, at least to navi-gate and select user input elements, and MUST enable it in the Server Event Configuration message.

Chapter 5.6, Page 40, Line 4

Add paragraph

The MirrorLink Server SHOULD provide a virtual keyboard. The MirrorLink Server MAY provide other different keyboard types (e.g. alphanumeric, numeric). While in drive mode, the MirrorLink Server MUST provide the same platform-specific virtual keyboard as used in Drive-level certification. Any MirrorLink-Certified or Member-Certified Application MAY provide its own virtual keyboard.

The MirrorLink Client MAY provide a virtual keyboard. In that case, the MirrorLink Client MUST NOT overlay its own virtual keyboard, while showing a MirrorLink-Certified or Member-Certified Application, unless the MirrorLink Server and Client are supporting a Client Virtual Keyboard and the MirrorLink-Certified or Member-Certified Application is requesting it explicitly.

The MirrorLink Client MAY send key events, while the MirrorLink Server shows a virtual keyboard.

The MirrorLink Server MUST support Unicode in key events and Cut Text messages.

Chapter 5.7, Page 44, Line 31

Add paragraph

The MirrorLink Server and Client MUST correctly follow the Device Status flags for Night Modus, Driver Distraction Avoidance and MUST only use “enabled”/“disabled” values for them.

The MirrorLink Server and Client MUST correctly follow the Device Status flags for Voice Input, and Mic Input, if they support the underlying use cases; in that case they MUST only use “enabled”/“disabled” values for them.

The MirrorLink Client MUST respond with “disabled” if the Mic Input is currently occupied internally.

Chapter 5.8, Page 45, Table 22 – multiple places

Replace

Signature / Signature flag

By

SignedInfo / SignedInfo flag

Chapter 5.8, Page 46, Table 23 – multiple places

Replace

Signature / Signature flag

By

SignedInfo / SignedInfo flag

Appendix C, Page 70

Added

Basic Set Latin-1

The following X11 key event values MUST be supported for Latin-1.

- 'a' - 'z' (0x0061 – 0x007A)

- 'A' - 'Z' (0x0041 – 0x005A)
- '0' - '9' (0x0030 – 0x0039)

Latin-1 set MUST be used, if a country specific set is not supported from both, the MirrorLink Server and Client.

4.3 Revision 1.1.3 from 20 December 2012

Terms and Abbreviations, Page 9

Replace

Touch events are used to describe touch screen action in which the user touches the screen with two or more separate fingers at different locations.

By

Touch events are used to describe touch screen action in which the user touches the screen with one or more separate fingers at different locations.

Chapter 4.3, Page 18

Replace list of key events

- 'a' - 'z', 'A' - 'Z',
- '0' – '9',
- '!', '”', '§', '$', '%', '&', '/', '\', '(', ')', '{', '}', '[', ']', '=', '?', '#', ',', '.', '-', ';', ':', '_', '<', '>', '|', '@', '~', '''.

by

- 'a' - 'z' (0x0061 – 0x007A)
- 'A' - 'Z' (0x0041 – 0x005A)
- '0' – '9' (0x0030 – 0x0039)
- ' ' (0x0020) - Space
- '!' (0x0021) - Exclamation mark
- '”' (0x0022) - Quotation mark
- '#' (0x0023) - Number sign
- '$' (0x0024) - Dollar sign
- '%' (0x0025) – Percent sign
- '&' (0x0026) - Ampersand
- ''' (0x0027) - Apostrophe
- '(' (0x0028) – Parenthesis left
- ')' (0x0029) – Parenthesis right
- '*' (0x002A) – Asterisk
- '+' (0x002B) – Plus
- ',' (0x002C) - Comma
- '-' (0x002D) - Minus
- '.' (0x002E) - Period
- '/' (0x002F) - Slash
- ':' (0x003A) - Colon
- ';' (0x003B) - Semicolon
- '<' (0x003C) – Less-than
- '=' (0x003D) - Equal
- '>' (0x003E) – Greater-than

- '?' (0x003F) – Question mark
- '@' (0x0040) - At
- '[' (0x005B) – Bracket left
- '\' (0x005C) – Back slash
- ']' (0x005D) – Bracket right
- '^' (0x005E) – Circumflex
- '_' (0x005F) – Underscore
- '`' (0x0060) - Grave
- '{' (0x007B) – Brace left
- '|' (0x007C) - Bar
- '}' (0x007D) – Brace right
- '~' (0x007E) - Tilde
- (0xFF08) – Backspace
- (0xFF0D) - Return

Chapter 5.7, Page 43

Replace

The VNC Client MUST NOT use the "reserved" value in any of the Device Status Request message features. If the VNC Server receives a Device Status feature with the "reserved" value, it MUST consider the value being "ignore".

The VNC Server MUST NOT use the "reserved" value in any of the Device Status message features. If the VNC Client receives a Device Status feature with the "reserved" value, it MUST consider the value being "unknown".

Bye

The VNC Client SHOULD NOT use the "reserved" value in any of the Device Status Request message features. If the VNC Server receives a Device Status feature with the "reserved" value, it SHOULD consider the value being "ignore".

The VNC Server SHOULD NOT use the "reserved" value in any of the Device Status message features. If the VNC Client receives a Device Status feature with the "reserved" value, it SHOULD consider the value being "unknown".

Chapter 5.1

Replace

Touch events are used to describe touch screen action in which the user touches the screen with multiple individual fingers at different locations.

By

Touch events are used to describe touch screen action in which the user touches the screen with one or more individual fingers at different locations.

5 CCC-TS-012: AUDIO

5.1 Revision 1.1.3 from March 05, 2013

General document

Editorial changes throughout the document

Chapter 5.1, Page 15, Line 32

Changed obligation for priority order in RTP extension header from

SHOULD

to

MUST

Chapter 5.1, Page 15, Line 5

Changed obligation for RTP extension header in Audio Server from

SHOULD

to

MUST

Chapter 5.1, Page 16, Line 10

Added paragraph

The MirrorLink Server MUST use the audio context information, provided from MirrorLink certified applications via the Common API. The MirrorLink Server SHOULD determine the source of audio streams originating from non-certified MirrorLink applications and from applications not using the Common API [16]. The MirrorLink Server MUST set the audio context information to valid, not unknown values, if it can determine the source of an audio stream. The MirrorLink Server MUST set the audio context information to 0x00000000, if it cannot determine the source of an audio stream

Chapter 8, Page 27, Line 29

Added Reference

[16] Car Connectivity Consortium, "MirrorLink – Common API", Version 1.1.0, CCC-TS-038

6 CCC-TS-014: DEVICE ATTESTATION PROTOCOL

6.1 Revision 1.1.6 from 05 November 2013

Chapter 4, Page 15, Table 2

Replaced wildcard description

> Wildcard. All components MUST be attested.
>
> In this case the MirrorLink server SHOULD reply with multiple attestation elements within an attestationResponse message. Each attestationResponse message includes the identifier of the attested component.

by

> Wildcard. All components, which can be attested from the MirrorLink Server, MUST be attested.
>
> In this case the MirrorLink server MUST reply with a single attestationResponse message, which includes the attestation elements of all attested components.

Chapter 4, Page 15, Line 2 (and following)

Replace

> The MirrorLink Server MUST support attesting the "MirrorLink:Device" component. It SHOULD provide support for attesting other components.

Replace

> The MirrorLink Server MUST support attesting of the following components (DAP Minimum Set):
>
> - "MirrorLink:Device" component
> - "TerminalMode:UPnP-Server", including the URL and the applicationPublicKey.
>
> The MirrorLink Client MUST accept a MirrorLink Server, implementing the above listed DAP Minimum Set, in Park and Drive Mode.
>
> The MirrorLink Server SHOULD provide support for attesting other components. Components, the MirrorLink Server is not able to attest, MUST NOT be included in the attestationResponse.

Chapter 4, Page 16, Table 3

Remove "later" in applicationPublicKey description.

Chapter 4, Page 16, Table 3

Replace "SHOULD" by "MUST" in applicationPublicKey description.

Chapter 4, Page 17, Line 4

Add sentence

> The MirrorLink Server MUST NOT use a componentID value equal to the wildcard "*"within the attestationResponse message.

Chapter 4, Page 17, Line 30

Add sentence

In case the MirrorLink Client request attestation of an individual component, which is not available for attestation, the MirrorLink Server MUST respond with the "Component not existing" response.

Chapter 4, Page 17, Table 4

Add sentence to description of "1" (and remove footnote)

or attestation not available.

Chapter 4, Page 18, Line 12 (and following)

Add paragraph

That means that the MirrorLink Server MUST NOT include components into a DAP response to a wildcard "*" DAP request, which have not been specified for the respective MirrorLink Client version, as given below:

- A MirrorLink 1.1 Server connected to a MirrorLink 1.0 Client MUST NOT include any MirrorLink:Device component
- A MirrorLink 1.2 Server connected to a MirrorLink 1.0 Client MUST NOT include any MirrorLink:Device, MirrorLink:HSML, MirrorLink:WFD:RTSP components
- A MirrorLink 1.2 Server connected to a MirrorLink 1.1 Client MUST NOT include any MirrorLink:HSML, MirrorLink:WFD:RTSP components

It MUST be noted though, that a MirrorLink Server MUST correctly respond to a DAP request for any individual component (i.e. excluding the wildcard), even if that component is not specified for the respective MirrorLink Client version (but is specified within the respective MirrorLink Server version).

6.2 Revision 1.1.5 from July 24, 2013

Chapter 4, Page 12, Line 28

Replaced

Using this chain of two certificates

by

Using this chain of certificates

Chapter 4, Page 17, Line 1

Added paragraph

The MirrorLink Server MUST NOT include more than 3 entries into the manufacturer certificate chain. To simplify the validation for the MirrorLink Client, the MirrorLink Server MUST include the manufacturer certificates in trust chain order, i.e. the certificate from the CA, which signed the device certificate, MUST be first and the certificate, which was signed by the CCC root CA MUST be last.

An example with 3 entries is shown below.

```
<deviceCertificate>
   Device Certificate, signed by manufacturer Sub-Sub-CA
</deviceCertificate>
<manufacturerCertificate>
```

```
            Manufacturer Sub-Sub-CA Certificate, signed by manufacturer
      Sub-CA
         </manufacturerCertificate>
         <manufacturerCertificate>
            Manufacturer Sub-CA Certificate, signed by manufacturer CA
         </manufacturerCertificate>
         <manufacturerCertificate>
            Manufacturer CA certificate, signed by CCC root CA
         </manufacturerCertificate>
```

An example with 1 entry is shown below.

```
         <deviceCertificate>
            Device Certificate, signed by manufacturer CA
         </deviceCertificate>
         <manufacturerCertificate>
            Manufacturer CA certificate, signed by CCC root CA
         </manufacturerCertificate>
```

Appendix A, Page 21, Line 40

Replaced

```
minOccurs="0" maxOccurs="unbounded"
```

by

```
minOccurs="0" maxOccurs="3"
```

6.3 Revision 1.1.4 from April 10, 2013

Chapter 4, Page 16, Table 3

Replaced text in Description of the manufacturerCertificate element

The certificate contains the public part of the 4096-bit RSA manufacturer key with SHA-512.

by

The certificate contains the public part of the 2048-bit or 4096-bit RSA manufacturer key with SHA-512.

6.4 Revision 1.1.3 from March 05, 2013

General document

Editorial changes throughout the document

Chapter 3.3, Page 11, Line 18

Add paragraph

For testing MirrorLink Servers, the CTS MUST only accept legitimate certificates signed by the CCC's Root Certificate. For the purposes of testing, MirrorLink Server manufacturers are allowed to issue a small number (<100) of device certificates with an expiration of 3 months from the date of signing before successful completion of their Server Device Audit as described in [16]. MirrorLink Server manufacturers must still have a Passed/Conditional result for their Server Manufacturer Audit in order to receive a Manufacturer Certificate.

Chapter 4, Page 12, Line 18

Replace

> Additionally, the server MUST have one or more X.509 manufacturer certificates (client manufacturer has certified server manufacturer) from one or more client manufacturers.

by

> Additionally, the server MUST have one X.509 manufacturer certificate signed from the CCC DAP management system.

Chapter 4, Page 16, Table 3

Replace in manufacturer certificate entry

> A (chain of) X.509v3 [3] certificate(s) issued for the MirrorLink server manufacturer by the MirrorLink client manufacturer.

by

> A (chain of) X.509v3 [3] certificate(s) issued for the MirrorLink server manufacturer by the CCC DAP management system.

Chapter 5, Page 19, Line 28

Add reference

> [15][16] Car Connectivity Consortium, "MirrorLink – DAP Audit Requirements and Certificate Management", Version 1.1, CCC-TS-035

6.5 Revision 1.1.2 from 05 December 2012

Chapter 3.3, Page 11, Line 17

Remove sentence:

> A MirrorLink Server MUST respond with a failed DAP response (Error result value 3 – Error in attestation: unknown trust root), if presented with the CTS root certificate's trust root.

Chapter 4, Page 14, Table 1

In trustRoot Description, replace "client manufacturer public key" by "CCC root public key"

In trustRoot Parent, replace "AttestationRequest" by "attestationRequest"

In componentID Parent, replace "AttestationRequest" by "attestationRequest"

Chapter 4, Page 16, Table 3

In deviceCertificate Description, add text in

> "The certificate contains the public part of the 2048-bit RSA device key with SHA-256 or SHA-512."

In manufacturerCertificte Description, add sentence:

> "The certificate contains the public part of the 4096-bit RSA manufacturer key with SHA-512."

Chapter 4, Page 16, Line 2

Remove "SHA-1 and" from "SHA-1 and SHA-2"

6.6 Revision 1.1.1 from 24 September 2012

Chapter 3.3, Page 11, Line 5 - 18

Added new text and figure

The MirrorLink Client MUST have a mechanism to allow a test engineer to launch a DAP session (either automatically or manually).

For DAP testing purposes, the MirrorLink Client MUST use a CTS root certificate to validate responses from the CTS Server. This CTS root certificate MUST be decoupled from the regular CCC root certificate used during production.

The CTS root certificate MUST be accepted from the MirrorLink Client in test setup only. The CTS public key (DER encoded) and the 32-byte SHA-256 hash of the CTS public key (Base64 encoded) are provided separately.

The DAP trust chain, for testing purpose is shown in the following picture.

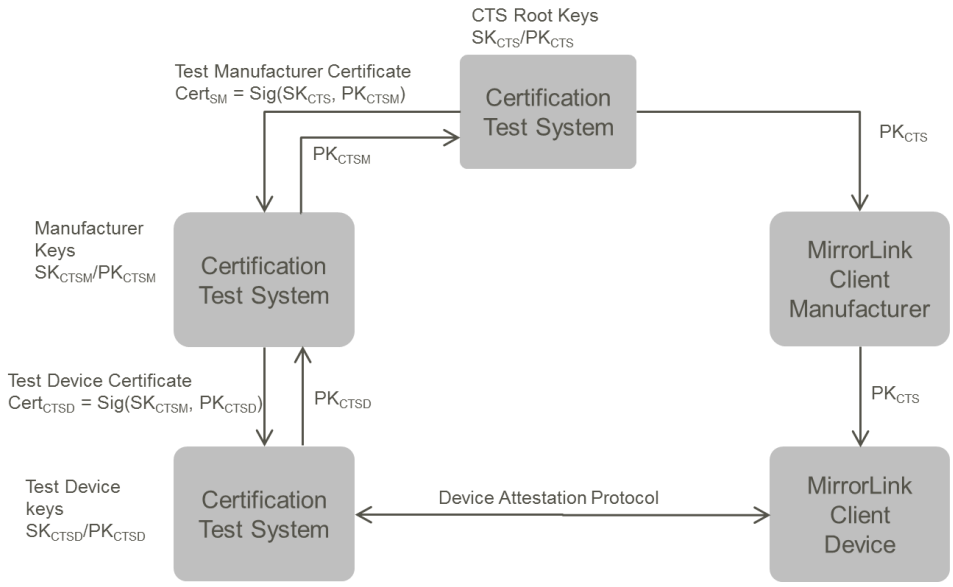

Figure 1: Device Attestation Certification Infrastructure – Testing Only

The MirrorLink Client MUST NOT accept and request the CTS root certificate outside DAP testing and certification. A MirrorLink Server MUST respond with a failed DAP response (Error result value 3 – Error in attestation: unknown trust root), if presented with the CTS root certificate's trust root.

Chapter 4, Page 12, Figure 2

Replaced figure 2.

Chapter 4, Page 12, Line 12-15

Rephrased paragraph to

MirrorLink assumes pre-established trust relationships and security associations between the MirrorLink server device manufacturers and MirrorLink client device manufacturers via a central CCC controlled DAP Management System, which extends to both client and server devices. This is achieved using a standard X.509 certificate chain.

Chapter 4, Page 12, Line 16-18

Rephrased paragraph to

The key pair SKA/PKA, as shown in Figure 2, consists of the private key SKA and the public key PKA. The certificate CertA = Sig(SKB, PKA) is an X.509 public key certificate with subject public key PKA and signed with private key SKB (i.e., the certificate issuer is B).

Chapter 4, Page 13, Line 1

Replace "PK_{CM}" with "PK_{CCC}"

Chapter 4, Table 2

Replace componentID "TerminalMode:UpnP-Server" by "TerminalMode:UPnP-Server"

Chapter 4, Table 2

Replace sentence Wildcard Description with

"In this case the MirrorLink server SHOULD reply with multiple attestation elements within an attestationResponse message."

Chapter 4, Table 3

In quoteSignature Description, remove text

"(with exception that 1024-bit signatures are ac-cepted in addition to 2048-bit signatures). 128-byte or"

In URL Description, add sentence

"Multiple URLs of the same component MUST be added as separate attestation elements"

In applicationPublicKey, remove

"1024 bit or"

In deviceCertificate, remove

"1024 bit or"

Chapter 4, Page 16, Line 2-3

Remove ECC key reference and provide reference to algorithms in

"The MirrorLink Client MUST be able to verify a X.509 trust chain, using only RSA with SHA-1 and SHA-2. Algorithms are defined in [4]."

Chapter 4, Page 17, Line 19-20

Bug fix replace Client by Server in

"The MirrorLink Server MUST return a version number, which is equal or smaller than the MirrorLink Client's version number."

Chapter 4, Page 17, Line 31

Remove double entry

Chapter 5

Add reference to IETF, RFC 3279

Chapter A, Line 16, 38, 40

Replace "minOccurs="1"" with "minOccurs="0""

7 CCC-TS-016: COMMON DATA BUS

7.1 Revision 1.1.3 from November 05, 2013

Chapter 3.2, Page 11, Line 2

Added

Otherwise the CDB sink endpoint MUST send a ServiceResponse with respective Error code 0x0209 in response to the received ServicesSupported message.

By

Otherwise the CDB Sink endpoint MUST send a ServiceResponse message with the Error code 0x0209 in response to the received ServicesSupported message.

7.2 Revision 1.1.2 from March 05, 2013

Chapter 3.1, Page 10, Line 24

Added

within 5s

Chapter 3.1, Page 10, Line 26-27

Added

In case a response is not received within 5s, the CDB Sink endpoint MUST assume that the CDB Source is not providing any service. No further action is required.

Chapter 3.3, Page 12, Line 26

Added

within 5s. Otherwise the CDB Source endpoint MUST respond with a ServiceResponse message (Error Code set to 0x0010 – Response pending) latest every 5s until the final response message is available. The CDB Source endpoint MUST respond with a ServiceResponse message (Error Code set to 0x0201 – Launch failed) if no response can be provided within 2 min.

Chapter 3.4, Page 13, Line 9

Added

within 5s

Chapter 3.4, Page 13, Line 10

Added

In case the ServiceResponse message is not received in time, the CDB Sink endpoint MUST consider the termination finally failed. No further action is required.

Chapter 3.6, Page 14, Table 8

Added table entry

Response Value: 0x0010 Response pending

Description: Response pending for another 5swithin 5s

Chapter 4, Page 16, Line 12

Added table entry (for Message received from Start Service (Sink))

Message Response: `ServiceResponse (0x0010)`

Comment: `Response pending`

7.3 Revision 1.1.1 from September 24, 2012

Chapter 2.2.1.2, Page 8, Line 19

Replace

```
Server CDB signal the CDB endpoint's termination to the client
```

By

```
Server CDB endpoint MUST signal the CDB endpoint's termination to
the client
```

Chapter 3.7, Page 14, Table 8

Added error code:

- Response Value: 0x020B Error – Unsupported Payload Format
- Description: The payload format used in the ServicePayload message is not supported from the Data Service. CDB sink endpoint MUST stop the service.Delete text

Chapter 4, Page 16, Table 12

Added message responses for ServiceRequest (0x020B)

8 CCC-TS-018: SERVICE BINARY PROTOCOL

8.1 Revision 1.1.2 from 20 December 2012

Chapter 3.4.4, Page 16, Line 11

Delete text "Note than UID and packet_id SHOULD be the same as the original Subscribe command."

Chapter 3.4.4, Page 16, Table 13:

Replaced Examples by

1. SBP Sink: command_type: Subscribe, payload_length , UID: "thermometer", packet_id: 3, type: 0, interval: 1000 (1Hz), 0, END_C
2. SBP Source: command_type: Response, payload_length , UID: "thermometer", packet_id: 3, value 0 (OK), 0, END_C
3. SBP Source: command_type: Response, payload_length , UID: "thermometer", packet_id: 3, value 0, 1, UID: "temperature", data_type: INT, value: 0, END_C
4. SBP Sink: command_type: Cancel, payload_length , UID: "thermometer", packet_id: 4, value: Subscribe, 0, END_C
5. SBP Source: command_type: Response, payload_length , UID: "thermometer", packet_id: 4, value 0 (OK), 0, END_C
6. SBP Source: command_type: Response, payload_length , UID: "thermometer", packet_id: 3, value 0x1000000B (Successfully cancelled), 0, END_C

Chapter 3.4.4, Page 16, Table 14

Add new Example

The following example shows how a get request to the thermometer object is cancelled.

1. SBP Sink: command_type: Get, payload_length , UID: "thermometer", packet_id: 3, 0, 0, END_C
2. SBP Sink: command_type: Cancel, payload_length , UID: "thermometer", packet_id: 4, value: Get, 0, END_C
3. SBP Source: command_type: Response, payload_length , UID: "thermometer", packet_id: 4, value 0 (OK), 0, END_C
4. SBP Source: command_type: Response, payload_length , UID: "thermometer", packet_id: 3, value 0x1000000B (Successfully cancelled), 0, END_C

Table 1: Example of Cancel command sequences (Get)

Chapter 3.4.4, Page 17, Table 15:

Add new Example

The following example shows, how a set request to the thermometer object is cancelled.

1. SBP Sink: command_type: Set, payload_length , UID: "accelerometer_control", packet_id: 3, 0, 2, member data, END_C
2. SBP Source: command_type: Response, payload_length , UID: "accelerometer_control", packet_id:3, value: continue error, 0, END_C
3. SBP Sink: command_type: Cancel, payload_length , UID: "thermometer", packet_id: 4, value: Set, 0, END_C

4. SBP Source: command_type: Response, payload_length , UID: "thermometer", packet_id: 4, value 0 (OK), 0, END_C 5. SBP Source: command_type: Response, payload_length , UID: "thermometer", packet_id: 3, value 0x1000000B (Successfully cancelled), 0, END_C

Table 15: Example of Cancel command sequences (Set)

Chapter 3.4.4, Page 18, Line 2/3

Add text

> Note that the SBP Source will be able to detect, whether the SBP Sink has canceled a GET, SET or a SUBSCRIBE command, from the value entry in the Cancel command.

Chapter 3.4.4, Page 17, Line 5

Change sentence (add words):

> After sending the Response for the Cancel command, SBP Source SHOULD NOT send Response messages with data for the requested command any more. SBP Sink MUST treat such situation as recoverable error.

Chapter 3.6.4, Table 16

Add "Packet_id MUST be the same as the original GET, SET or SUBSCRIBE command." to description of Error code 0x1000000B.

8.2 Revision 1.1.1 from 24 September 2012

Many places through the specification:

Replace "server" by "SBP Source".
Replace "server" by "SBP Source".

Chapter 1, Page 6, Line 3

Replace

> This specification describes top level architecture of MirrorLink data service, a mechanism to exchange meaningful data between Terminal mode server and client [1].

By

> This specification describes top level architecture of MirrorLink data service, a mechanism to exchange meaningful data between MirrorLink Server and Client [1].

Chapter 3.2, Page 12, Line 14

Replace "client" by "SBP Sink".

Chapter 3.3, Page 13, Table 8

Remove text from Description of Cancel.

> Packet_id of Cancel should be the same with the command to cancel.

Chapter 3.3, Page 14, Line 3

Remove text "which is service independent".

Chapter 3.4, Line 21/22:

Replace

Additionally, Cancel command sequence for the pending Get/Set/Subscribe command MUST have the same packet_id with the pending command.

By

A Cancel command sequence for a pending Get/Set/Subscribe command MUST have a different packet_id as the pending command.

Chapter 3.6.2.2, Page 18

Replace "Feature not supported" by "Unknown Command"

Chapter 3.6.2.3, Page 18

Chapter added

3.6.2.3 Unsupported feature

When any SBP endpoint sends a command of an unsupported feature, the other SBP endpoint MUST reply with a Response with the error code of "Feature not supported".

9 CCC-TS-024: UPnP Application Server Service

9.1 Revision 1.1.6 from 05 November 2013

Chapter 2.2, Page 8, Table 2-1

Changed obligation of AppListUpdate variable from OPTIONAL to REQUIRED.

Chapter 2.2.6, Page 12, Table 2-3

Replaced in contentRules description

```
Depreciated
```

By

```
Deprecated
```

Chapter 2.2.6, Page 12, Table 2-3

Removed Default values from audioType, contentCateogory descriptions and changed Availability entry from `Optional` to `Required`.

Chapter 2.2.6, Page 12, Table 2-3

Replaced in Signature description

```
The SignatureMethod SHOULD be RSA with SHA1.
```

By

```
The SignatureMethod MUST be RSA with SHA1.
```

Chapter 2.2.6, Page 12, Table 2-3

Added footenote to audioInfo element

```
The audioInfo element MUST be included into the advertisement on
any RTP Client, RTP Server, BT HFP or BT A2DP module.
```

Chapter 2.2.6, Page 14, Table 2-5

Replaced in RTP description

```
Default: "0,99"
```

By

```
Default: "99"
```

Chapter 2.2.6, Page 14, Table 2-6

Added "`Used`" to VNC section of the resourceStatus row.

Chapter 2.2.6, Page 14, Line 7-8

Added sentence

```
An application with a protocolID of "VNC" MAY use the resourceStatus
value "NA" to indicate that the particular application is accessible
to launch, via a separately advertised Home Screen application.
```

Chapter 2.2.11, Page 16, Table 2-8

Removed Default values from restricted, nonRestricted descriptions and changed Availability entry from `Optional` to `Required`.

Chapter 2.2.11, Page 17, Table 2-8

Replaced in Signature description

The SignatureMethod SHOULD be RSA with SHA1.

By

The SignatureMethod MUST be RSA with SHA1.

Chapter 2.2.11, Page 17, Line 4-14

Added paragraph

The appUUID MUST be a universally-unique identifier for the application, across application versions and MirrorLink Server platforms. It MUST begin with "uuid:" followed by a 128 bit number that MUST be formatted as specified by the following grammar (taken from [1]):

```
UUID     = 4 * <hexOctet> "-" 2 * <hexOctet> "-"
           2 * <hexOctet> "-" 2 * <hexOctet> "-"
           6 * <hexOctet>
hexOctet = <hexDigit> <hexDigit>
hexDigit = "0"|"1"|"2"|"3"|"4"|"5"|"6"|"7"|"8"|"9"|
           "a"|"b"|"c"|"d"|"e"|"f"|"A"|"B"|"C"|"D"|"E"|"F"
```

The following is an example of an appUUID:

"uuid:2fac1234-31f8-11b4-a222-08002b34c003"

Chapter 2.2.11, Page 18, Line 4-7

Added paragraph

In order to show that an application has been drive-certified for the entire world, i.e. all localities, the <restricted> entry within A_ARG_TYPE_AppCertificateInfo MUST have the following value:

"EU,EPE,CAN,USA,AMERICA,AUS,KOR,JPN,CHN,HKG,TPE,IND,APAC,AFRICA,WORLD"

A value of "WORLD" is invalid.

Chapter 2.5.3, Page 22, Line 3-20

Added paragraph

A MirrorLink Server MAY NOT support terminating an application (i.e. the application is removed from the MirrorLink Server device's process list), but the MirrorLink Server MUST ensure the following behavior in case the MirrorLink has requested the application's termination:

- In case the application to be terminated, is a VNC application in the "Foreground", that application MUST change its application status to "Notrunning" or "Background". The terminated application MUST end any ongoing audio streaming. The MirrorLink Server MAY (potentially launch and) bring another application into the foreground.
- In case the application to be terminated, is a VNC application in the "Background", that application MUST change its application status to "Notrunning" or stay in "Background". The terminated application MUST end any ongoing audio streaming. The MirrorLink Server MUST keep the current foreground applications
- In case the application to be terminated, is a RTP Server, RTP Client, DAP endpoint or CDB Endpoint application, that application MUST change its application status to "Notrunning". The MirrorLink Server MUST keep the current foreground applications

If any of the above conditions is fulfilled, the MirrorLink Server MUST respond with “TerminationResult=true”, otherwise with “TerminationResult=false”. The MirrorLink Server MUST always notify any application’s status change to the MirrorLink Client via the AppStatusUpdate evented variable, if that application has been included within the UPnP advertisements.

Chapter 3.2.3, Page 30, Line 9-11

Replaced in Signature description

The MirrorLink server MUST NOT advertise more than one RTP server or client for the same RTP payload type.

By

The MirrorLink server MUST NOT advertise multiple RTP servers or clients with different RTP payload types.

Chapter 3.2.3, Page 30, Line 15-34

Added paragraph

The A_ARG_TYPE_AppList audioInfo entry provides information, which audio related services are available from the MirrorLink Server.

- Phone Call (over RTP): The advertised RTP Client and RTP Server MUST have an audioType of “phone” or “all” and MUST include the “Phone Audio” flag within the audioInfo@contentCategory.
- Phone Call (over BT): The advertised BT HFP component MUST have an audioType of “phone” and MUST include the “Phone Audio” flag within the audioInfo@contentCategory.
- Voice Command (over RTP): The advertised RTP Client MUST have an audioType of “phone” or “all” and MUST include the “Voice Command In” flag within the audioInfo@contentCategory.
- Voice Command (over BT): The advertised BT HFP component MUST have an audioType of “phone” and MUST include the “Voice Command In” flag within the audioInfo@contentCategory.
- Media Streaming (over RTP): The advertised RTP Server MUST have an audioType of “application” or “all” and MUST include the “Media Audio Out” flag within the audioInfo@contentCategory.
- Media Streaming (over BT): The advertised BT A2DP component MUST have an audioType of “application” and MUST include the “Media Audio Out” flag within the audioInfo@contentCategory.

Chapter 3.3, Page 31, Line 35-42

Added paragraph

Example 3: The following AppListingFilter argument causes only those application listings with “platformA” in one of comma-separated entries within the <variant> element to be returned:

“variant="platformA"”

The filter MUST be applied to individual list element, and not to the entire list as a whole; i.e. application will be included, if the <variant> entry equals “platformA,platformB”, “platformA”, or “platform0,platformA,platformB”. A wildcard, will apply only for an individual entry within the comma-separated list. Leading or trailing white spaces MUST NOT be considered, i.e. the application will be included, if the variant entry equals “ platformA , platformB ”.

Chapter 3.3, Page 32, Line 9

Replaced

```
"name="*music*""
```

By

```
"name="music""
```

Chapter 3.4, Page 32, Line 35-41

Added paragraph

Example 3: The following AppCertFilter argument causes only those application listings with "US" in one of comma-separated entries within the REQUIRED <restricted> element to be returned:

```
"restricted="US""
```

The filter MUST be applied to individual list element, and not to the entire list as a whole; i.e. application will be included, if the <restricted> entry equals "US,EPE", "US", or "EPE,US,JPN". A wildcard, will apply only for an individual entry within the comma-separated list. Leading or trailing white spaces MUST NOT be considered, i.e. the application will be included, if the variant entry equals " US , EPE ".

Chapter 3.5.4, Page 35, Line 12 & 27

Added line

```
<contentCategory>0x02</contentCategory>
```

Chapter 3.5.4, Page 35, Line 42

Added line

```
<contentCategory>0x01</contentCategory>
```

Chapter 3.6, Page 36

Added chapter XML Signature Minimum Set

Chapter 3.7, Page 37

Added chapter Handling of Applications Available via Home Screen Application

Chapter 4.2, Page 42, Line 51

Replaced

```
<xs:element name="audioType" minOccurs="0" default="none">
```

By

```
<xs:element name="audioType" minOccurs="1">
```

Chapter 4.2, Page 42, Line 51

Replaced

```
<xs:element name="contentCategory" minOccurs="0" default="none">
```

By

```
<xs:element name="contentCategory" minOccurs="1">
```

Chapter 4.3, Page 44, Line 39-42

Replaced

```
<xs:element name="restricted" type="xs:string" minOccurs="0"
```

```
        default="WORLD"/>
      <xs:element name="nonRestricted" type="xs:string" minOccurs="0"
        default="WORLD"/>
```

By

```
      <xs:element name="restricted" type="xs:string" minOccurs="1"/>
      <xs:element name="nonRestricted" type="xs:string" minOccurs="1"/>
```

Chapter 4.3, Page 45, Line 4-5

Replaced

```
      <xs:element name="Signature" type="ds:SignatureType"
       minOccurs="0"/>
```

By

```
      <xs:element name="Signature" type="ds:SignatureType"
       minOccurs="1"/>
```

Appendix A, Page 52

Add statement to Voice Command Engine entry

```
      (MUST only be used in RTP header extensions)
```

9.2 Revision 1.1.5 from 29 August 2013

Chapter 2.2.4, Page 9

Added Paragraph

The MirrorLink Server MUST use the unsigned integer value of a variable of this type within any action. I.e. comparing the values of two A_ARG_TYPE_AppID variables MUST be done based on the unsigned integer value and not based on a specific character representation.

Therefore, the following two A_ARG_TYPE_AppID values are identical:

- 0x45ab and 0x45AB (case insensitivity of the hexadecimal numbers)
- 0x45ab and 0X45ab (case insensitivity of the 0x)
- 0x00001234 and 0x001234 (leading zeros do not matter)

Chapter 2.2.6, Page 13

Added Paragraph

The MirrorLink specification uses UTF-8 encoded strings, representing an unsigned 16- or 32-bit integer in hexadecimal format (with '0x' prefix). The MirrorLink Server and Client MUST use the unsigned integer value of a variable of this type within any action or response. I.e. comparing the values of two such variables MUST be done based on the unsigned integer value and not based on a specific character representation.

Therefore, the following two values are identical:

- 0x45ab and 0x45AB (case insensitivity of the hexadecimal numbers)
- 0x45ab and 0X45ab (case insensitivity of the 0x)
- 0x00001234 and 0x001234 (leading zeros do not matter)

Chapter 2.2.11, Page 17

Added Paragraph

The entity name MUST be used case-insensitive, when comparing the entry with other values, i.e. the following entries are identical:

1. "CCC" and "CcC"
2. "VW" and "vw"
3. "Volkswagen" and "VolksWagen"

Chapter 2.2.11, Page 17, Line 13

Replace

"EUROPE"

By

"EPE"

Chapter 2.2.6, Page 13, Line 27

Added Sentence

The localities MUST be used case-insensitive, when comparing them with other values.

Chapter 3.5.4, Page 32, Line 46

Replace

```
http://192.168.200.1/navApp.cert
```

By

```
http://192.168.100.1/navApp.cert
```

Chapter 4.3, Page 41, Line 20

Replace

```
<xs:element name="appUUID" type="xs:string" minOccurs="0"
maxOccurs="1"/>
<xs:element name="nonce" type="xs:string" minOccurs="1"
maxOccurs="1"/>
```

By

```
<xs:element name="nonce" type="xs:string" minOccurs="1"
maxOccurs="1"/>
<xs:element name="appUUID" type="xs:string" minOccurs="0"
maxOccurs="1"/>
```

Chapter 5, Page 45, Line 54

Replace

```
<name>AppID</name>
```

By

```
<name>ProfileID</name>
```

9.3 Revision 1.1.4 from 18 June 2013

Chapter 2.2.11, Page 17, Line 6-7

Added Note to the description

Note: The list of locales, for which a certificate is valid, MUST always include all localities, even if one locale includes other ones.

Chapter 3.4, Page 31, Line 65-

Added Note to the description

`For clarification: The returned list MUST include only those applications, for which the target "2011" is in the target list of the same entity, which has the entity name "OEM-A".`

9.4 Revision 1.1.3 from 05 March 2013

General document

Editorial changes throughout the document

Chapter 2.2.6, Page 10, Table 2-3

Add to description of `url` entry.

`MirrorLink Client MUST use HTTP-GET to access the icon behind the URL.`

Chapter 2.2.6, Page 10, Table 2-3

Replace description of `allowedProfileIDs` entry

`In case the application cannot be executed at a given time using any of the available profiles, then the value of this element MUST be set equal to -1`

By

`In case the application cannot be launched at a given time via any of the available profiles, then the value of this element MUST be set equal to -1`

Chapter 2.2.6, Page 11, Table 2-3

Add to description of `appCertificateURL` entry.

`MirrorLink Client MUST use HTTP-GET to access the certificate behind the URL.`

Chapter 2.2.6, Page 11, Table 2-3

Add to description of `contentRules` entry.

`Depreciated use for applications coming with an application certificate issued from CCC.`

Chapter 2.2.6, Page 12, Table 2-3

Add to description of `contentRules` entry.

`Depreciated use for applications coming with an application certificate issued from CCC.`

Chapter 2.2.7, Page 14, Line 4

Replace

`<PROTOCOL_ID>://<ADDRESS>[:<CHANNEL>]`

By

```
        foo://example.com:8042/over/there?name=ferret#nose
        \_/   \______________/\_________/ \_________/ \__/
         |           |            |            |        |
```

```
      scheme     authority       path        query   fragment
```

with the authority being defined as

```
        example.com:8042
        \_________/ \__/
             |       |
          host    port
```

Chapter 2.2.7, Page 14, Line 13

Replace

The values of PROTOCOL_ID, ADDRESS and CHANNEL fields will differ based on the specific remoting protocol being used, as given in the following table. The CHANNEL field is OPTIONAL for BTHFP and BTA2DP protocol identifiers. The port field MUST be present for other non-vendor specific remote protocol identifiers.

By

The values of scheme, host and port fields will differ based on the specific remoting protocol being used, as given in the following table. The port field is OPTIONAL for BTHFP and BTA2DP protocol identifiers. The port field MUST be present for other non-vendor specific remote protocol identifiers.

Chapter 2.2.7, Page 14, Table 2.7

Added `path, query, fragment` column

Chapter 2.2.7, Page 14, Table 2.7

Added obligations

Chapter 2.2.7, Page 14, Table 2.7

Added `http` entry with

Host: `IP address of the resource being accessed`

Port: `Port number of the resource being accessed`

Path: `Used; MUST be available, in case the URI is used via HTTP-GET to retrieve the resource.`

Chapter 2.2.7, Page 15, Line 1,

Added sentence

The MirrorLink client MUST use the http schema to the host and port of the UPnP Application Server Service's URL, if all schema, host and port entries are missing from the URI.

Chapter 3.2.3, Page 29, Line 3 & 7

Replace

`1.0.1`

by

`1.0`

Chapter 3.2.4, Page 29, Line 24

Remove line

```
<format>    MUST be “1.1” or non-existing
```

Chapter 3.2.5, Page 29, Line 35

Remove line

```
<format>    MUST be “1.0”, or “1.1” or left empty
```

Chapter 3.2.3, Page 29, Line 3 & 7

Replace

```
Elements and attributes REQUIRED by the A_ARG_TYPE_AppList schema
to be present in the AppListing output argument are always returned.
Optional elements and attributes are only returned, if AppListing-
Filter is set equal to “*” or the AppListingFilter explicitly spec-
ifies the OPTIONAL element or attribute to be returned (as shown in
Example 1).
```

by

```
Elements and attributes REQUIRED by the A_ARG_TYPE_AppList schema
to be present in the AppListing output argument are always returned.
Optional elements and attributes MUST be returned, regardless of
their values, if the AppListingFilter explicitly specifies the
OPTIONAL element or attribute to be returned (as shown in Example
1).
```

Chapter 3.5.4, Page 32, Line 28

Replace

```
<appList>
```

by

```
<appList xml:id="mlServerAppList">
```

Chapter 3.5.4, Page 32, Line 50

Replace

```
http://172.389.200.1/navApp.cert
```

by

```
http://192.168.200.1/navApp.cert
```

Chapter 3.5.4, Page 34, Line 21

Replace

```
<Reference>
```

by

```
<Reference URI="#mlServerAppList">
```

Chapter 4, Page 35, Line 40, 43, 49 & 55
Chapter 4.2, Page 37,, Line 46, 49, & 55
Chapter 4.2, Page 38, Line 30, 33 & 57
Chapter 4.2, Page 39, Line 2, 42 & 45
Chapter 4.2, Page 40, Line 27, 30, 42, 45, 50 & 53
Chapter 4.2, Page 43, Line 36, 51 & 54
Chapter 4.2, Page 44, Line 1, 7 & 10

Replace

```
namespace="##other"
```

by

```
namespace="##any"
```

Chapter 4.2, Page 38, Line 37

Add lines

```
<xs:element name="appCertificateURL" type="xs:string" minOc-
curs="0"/>
```

Chapter 4.3, Page 41, Line 5

Add line

```
xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
```

Chapter 4.3, Page 41, Line 8

Add line

```
<xs:import schemaLocation="xmldsig-core-schema.xsd"
namespace="http://www.w3.org/2000/09/xmldsig#"/>
```

Chapter 4.3, Page 41, Line 21

Replace

```
maxOccurs="1"
```

Replace

```
maxOccurs="1"/>
```

Chapter 5, Page 44, Line 54

Replace

```
<name>ProfileID</name>
```

by

```
<name>AppID</name>
```

Chapter 7, Page 52, Line 5

Add reference

```
[3] IETF, RFC 3986, "Uniform Resource Identifier (URI): Generic
Syntax", January 2005, http://tools.ietf.org/html/rfc3986
```

9.5 Revision 1.1.2 from 05 December 2012

Chapter 2.2, Page 16, Line 16/17

Added entries for "HKG" (Hongkong) and "TPE" (Taiwan)

Chapter 2.5.7.1, Page 24, Table 2023

Replace Argument name AppId by AppID. Bug fix; all; spelling in line with Service XML (chapter 5) and all other arguments in actions referring to the application identifier.

9.6 Revision 1.1.1 from 16 October 2012

Chapter 2.2.4, Page 9

Added Entry:

Note: The application identifier SHOULD be the same over time for the same application (e.g. should survive a reboot or MirrorLink reconnect), to allow the MirrorLink Client to implement a Last-Mode behavior.

Chapter 2.2.7, Page 14, Line 6

Added Entry

The CHANNEL field is OPTIONAL for BTHFP and BTA2DP protocol identifiers. CHANNEL field MUST be present for other non-vendor specific remote protocol identifiers.

A_ARG_TYPE_URI is not specified for any vendor specific remote protocol identifier.

Chapter 2.2.11, Page 14/15, Table 2-8

Added Entries

Element	Description	Parent	Availability
appID	Application identifier (appID) of the requested application. MirrorLink Client MUST check, whether the appID is equal to the one requested.	certification	Required
nonce	Random DAP nonce, provided from the MirrorLink Client during the last DAP request. 20-byte random number Base64-encoded. Empty string indicates, that MirrorLink Client has not used DAP during the active MirrorLink session. (A_ARG_TYPE_String)	certification	Required

Add sentence to entity description:

The application MUST be considered not certified, if this field is not available.

Bug fix in name description; replaced “as a entity name” by “as an entity name”

Add sentence to target description

Comma separated list of MirrorLink Client vendor specific values. Might be interpreted as a White and/or a Black list.

Chapter 2.3, Page 16, Table 2-9

Bug fix; removed blank character in “A_ARG_TYPE_ AppCertificateInfo”

Chapter 2.5.5.3, Page 22, Table 2-20

Remove Error code 812

Chapter 2.5.6.1, Page 23, Table 2-21

Bug fix; Add “List” to Table header “Arguments for GetCertifiedApplicationsList”

Chapter 2.5.6.1, Page 23, Line 10

Remove text in Parameters description; bug fix as the action does not return XML, but a list of comma-separated list of appIDs

If the value of the AppListingFilter parameter is equal to “*” (default value), all elements and attributes (including OPTIONAL ones, when present) and their values, are returned in CertifiedAppList.

Chapter 2.5.6.1, Page 23, Line 12

Add “(default value)”

Chapter 2.5.6.3, Page 23, Table 2-22

Bug fix; Add "List" to Table header "Arguments for GetCertifiedApplicationsList"

Chapter 2.5.9, Page 25/26, Table 2-25

Add description of expected behavior to Error Code Summary

ErrorCode	errorDescription	Description
400-499	TBD	See UPnP Device Architecture section on Control.
500-599	TBD	See UPnP Device Architecture section on Control.
600-699	TBD	See UPnP Device Architecture section on Control.
701	Operation Rejected	The TmApplicationServer service has rejected the operation. MirrorLink Client SHOULD retry the action.
810	Bad AppId	The AppId does not exist or is malformed. MirrorLink Client SHOULD check the appId (e.g. using GetApplicationList) and retry action. MirrorLink Client SHOULD NOT retry the action with the same appId.
811	Unauthorized AppId	The application identified by this AppId cannot be controlled or accessed remotely. MirrorLink Client SHOULD NOT retry the action.
812	Cannot Determine Status	The status of the specified application(s) cannot be determined. MirrorLink Client SHOULD retry the action.
813	Launch Failed	Failed to launch the application. MirrorLink Client SHOULD retry the action.
814	Resource Busy	The requested application resource is busy, This error can occur when the resource is already busy and resourceStatus in the AppListing is set equal to "NA". MirrorLink Client SHOULD retry the action. MirrorLink Client SHOULD retry the action only after receiving notification that the resource is becoming free.
815	Device Locked	The action cannot be processed as the device hosting the TmApplicationServer service is locked. User needs to un-lock the device first. MirrorLink Client SHOULD NOT retry the action.
820	Invalid Argument	The argument passed is invalid. The MirrorLink Client SHOULD verify the format of the arguments. MirrorLink Client SHOULD NOT retry the action with the same arguments.
830	Invalid Profile ID	The profile identifier does not exist or the application cannot use the specified profile identifier. MirrorLink Client SHOULD check the client profile (GetClientProfile) and its application support from the GetApplicationList response, and retry the action. MirrorLink Client SHOULD NOT retry the action with the same arguments.

Chapter 2.5.9, Page 26, Line 3-5

Add text entry

The MirrorLink Client SHOULD give up after 3 retry attempts. Notification about (finally) failing a UPnP action MAY be necessary. The specification of notification requirements is outside the scope of this specification.

Chapter 3.1, Page 27, Line 12/13

Add text entry

Note: A MirrorLink 1.0 compliant Client MAY incorrectly include the "" quotation marks within an AppListingFilter parameter. A MirrorLink Server SHOULD ignore those.

Chapter 3.2.3, Page 27, Line 3-9

Add text entry

Note: MirrorLink 1.0.1 Server device MAY omit the audioType entry for BT HFP, BT A2DP and RTP Clients and Servers. Therefore BT HFP MUST be considered as <audioType> being equal to "phone" and BT A2DP as <audioType> being equal to "application". For RTP Clients and Servers the <audioType> MUST be considered being equal to "application".

Note: MirrorLink 1.0.1 Server device MAY omit the direction entry as well as the appCategory entry. To safely distinguish between an RTP Server and Client, consider the direction's entry default value. "out".

Chapter 3.2.3, Page 27, Line 16-18

Add text entry

In case a Bluetooth component's resource status is marked as "busy" or "NA" in the A_ARG_TYPE_AppList response, the MirrorLink Client SHOULD subscribe to the AppListUpdate status variable to receive the information, when the resource will be become "free". \

Chapter 3.2.4, Page 28, Line 20 & 22

Rephrased sentence (add endpoint)

If the MirrorLink Server supports the Common Data Bus, it MUST include the Common Data Bus endpoint as an application within A_ARG_TYPE_AppList. In that list it MUST set the following entries, so that the Common Data Bus endpoint can be identified from the MirrorLink client

Chapter 3.2.4, Page 28, Line 28

Replaced "Common Data Bus Server" by "Common Data Bus Endpoint"

Chapter 3.4, Page 29, Line 33 & 46

Replaced "GetCertifiedApplications" by "GetCertifiedApplicationsList"

Chapter 3.4, Page 30, Line 5-11

Removed text; the action does not return XML, but a comma-separated list of appIDs

If the AppCertFilter parameter is equal to "*", all elements and attributes (including OPTIONAL ones, when present) and their values, are returned in CertifiedAppList.

Elements and attributes REQUIRED by the A_ARG_TYPE_ AppCertificateInfo schema to be present in the CertifiedAppList output argument are always returned. Optional elements and attributes are only returned if AppListingFilter is set equal to "*" or the CertifiedAppList explicitly specifies the OPTIONAL element or attribute to be returned.

Chapter 3.5.4, Page 32

Add text to line 41-43

<audioInfo>

```
            <audioType>application</audioType>
         </audioInfo>
```

Add text to line 55-57

```
         <audioInfo>
            <audioType>phone</audioType>
         </audioInfo>
```

Chapter 4.3, Page 40

Add text to line 10-20

```
      <xs:element name="appID" minOccurs="1" maxOccurs="1">
       <xs:simpleType>
        <xs:restriction base="xs:string">
         <xs:pattern value="0[Xx][A-Fa-f0-9]{1,8}"/>
        </xs:restriction>
       </xs:simpleType>
      </xs:element>
      <xs:element name="appUUID" type="xs:string" minOccurs="0"
      maxOccurs="1"
      <xs:element name="nonce" type="xs:string" minOccurs="1"
      maxOccurs="1"/>
```

Chapter 5, Page 42

Line 13, bug fix; replace "AppListingFilter" by "AppCertFilter"

Chapter 5, Page 44

Line 13, bug fix; replace "AppListingFilter" by "AppCertFilter"

10 CCC-TS-026: UPnP Client Profile Service

10.1 Revision 1.1.4 from 05 November 2013

Chapter 2.2.2, Page 10, Table 2.2

Changed Default value of the payloadType entry from "0,99" to "99".

Chapter 4, Page 21, Line 39-40

Replace

```
<xs:element name="payloadType" type="xs:string"
minOccurs="0" default="0,99"/>
```

By

```
<xs:element name="payloadType" type="xs:string"
minOccurs="0" default="99"/>
```

10.2 Revision 1.1.3 from 05 March 2013

General document

Editorial changes throughout the document

Chapter 2.2.2, Page 9, Table 2.2

Added

```
Depreciated
```

To the following element descriptions

contentRules, rule, rule value

Chapter 2.2.2, Page 9, Table 2.2

Added

```
Depreciated; MirrorLink Server SHOULD ignore value.
```

To the following element descriptions

ruleId

Chapter 2.2.2, Page 10, Line 2

Add paragraph

```
UPnP Client Profile Service MUST provide a valid MirrorLink
minor and major version, not higher than the supported version
in the UPnP TmServerDevice device description. The MirrorLink
Server device MUST use the MirrorLink version provided from the
UPnP Client Profile Service.
```

Chapter 3.2.2, Page 18, Line 3-11

Remove lines

```
<contentRules>
      <rule>
            <ruleId>0</ruleId>
            <ruleValue>0.1</ruleValue>
      </rule>
      <rule>
            <ruleId>1</ruleId>
```

```
                </rule>
            </contentRules>
```

Chapter 3.2.2, Page 18, Line 9

Replace

```
<notiBodyMaxLength><100</notiBodyMaxLength>
```

By

```
<notiBodyMaxLength>100</notiBodyMaxLength>
```

Chapter 4, Page 19, Line 27, 30, 42 & 45
Chapter 4, Page 20, Line 18, 23, 27, 30, 33, 45 & 48
Chapter 4, Page 21, Line 3, 6, 12, 31, 34, 37 40, 48, 53 & 56

Replace

```
namespace="##other"
```

by

```
namespace="##any"
```

Chapter 4, Page 36, Line 57

Replace

```
<xs:element name="ruleId" type="xs:positiveInteger"
```

by

```
<xs:element name="ruleId" type="xs:nonNegativeInteger"
```

10.3 Revision 1.1.2 from 20 December 2012

Chapter 4, Page 19, Line 27, 30

Bug fix; replace the ending quotation mark of the default value.

```
<xs:element name="mimetype" type="xs:string" minOccurs="0"
default="image/png”/>
```

By

```
<xs:element name="mimetype" type="xs:string" minOccurs="0"
default="image/png"/>
```

Chapter 4, Page 19, Line 53/54

Bug fix; replace wrong tag in XSD definition; replace

```
<xs:element name="roles" type="xs:string" minOccurs="0"
Default="AP,Client,P2P"/>
```

By

```
<xs:element name="roles" type="xs:string" minOccurs="0"
default="AP,Client,P2P"/>
```

Chapter 4, Page 20, Line 5/6

Bug fix; remove obsolete XSD definition; replace

```
<xs:element name="protocol" type="xs:string"
minOccurs="1">
```

By

```
<xs:element name="protocol" minOccurs="1">
```

Chapter 4, Page 21, Line 24, 26, 28, 30

Bug fix; replace "`>`" by "`/>`"

Chapter 4, Page 21, Line 25

Add missing beginning quotation mark to `type="xs:positiveInteger"`

Chapter 4, Page 21, Line 43-52

Add missing version information to XSD

```
<xs:element name="mirrorLinkVersion" minOccurs="0" maxOccurs="1">
 <xs:complexType>
  <xs:sequence>
   <xs:element name="majorVersion" type="xs:nonNegativeInteger"/>
   <xs:element name="minorVersion" type="xs:nonNegativeInteger"/>
   <xs:any namespace="##other" minOccurs="0" maxOccurs="unbounded"
   processContents="lax"/>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

10.4 Revision 1.1.1 from 16 October 2012

Chapter 2.2.2, Page 8, Table 2-2

Replace "`(with "0x" prefix)`" by "`(without any "0x" prefix)`" in the description of bdAddr element

Chapter 2.2.2, Page 8, Table 2-2

Add `wifi` elements

Element	Description	Parent	Availability
wifi	WiFi settings of the device	connectivity	Optional
macAddr	WiFi MAC address (A UTF-8 encoded string representing an unsigned 48-bit integer in hexadecimal format (without any "0x" prefix, and without any grouping using ":", "." or "-")	wifi	Mandatory
ssid	Service Set Identifier (SSID), Base64 encoded (A_ARG_TYPE_String)	wifi	Optional
roles	Comma separated list of supported roles. Allowed values are • AP (Access Point role) • Client (Client role) • P2P (Infrastructure-less) (A_ARG_TYPE_String) **Default**: AP,Client,P2P	wifi	Optional
protectionList	List of WiFi access protection	wifi	Optional
protection*	Access protection	protectionList	Optional
protocol	Security protocol used to protect WiFi access. Allowed values are • WEP • WPA • WPA2	protection	Mandatory

Element	Description	Parent	Availability
	• WPS Note: WEP/WPA is listed for legacy reasons, and SHOULD NOT be used (A_ARG_TYPE_String)		
passkey	Passkey/Shared key, Base64 encoded MUST be left empty, if transmitted over an unprotected or shared transport channel (e.g. WiFi) (A_ARG_TYPE_String)	protection	Mandatory

Chapter 2.2.2, Page 10, Table 2-2

Add `mirrorLinkVersion` elements

Element	Description	Parent	Availability
mirrorLink Version	MirrorLink Client version	clientProfile	Optional
majorVersion	Major Version A_ARG_TYPE_INT	mirrorLink Version	Mandatory
minorVersion	MinorVersion A_ARG_TYPE_INT	mirrorLink Version	Mandatory

Chapter 2.2.2, Page 10, after Table 2-2

Replace

> It is highly RECOMMENDED that the MirrorLink client provides a Bluetooth MAC address (bdAddr). This will help MirrorLink services to identify the correct Bluetooth device for pairing.

By

> The MirrorLink Client MUST provide a Bluetooth MAC address (bdAddr) using the UPnP Client Profile Service, if the MirrorLink Client has a Bluetooth module and cannot initiate a Bluetooth connection (`startConnection = "false"`). The MirrorLink Client MUST always provide a Bluetooth MAC address (bdAddr), if the MirrorLink Client supports the UPnP Client Profile Service and the MirrorLink Client has a Bluetooth module, even if that module is not used within a potential MirrorLink connection.

Chapter 2.5.5, Page 15, Table 2-11

Add

> `MirrorLink Client SHOULD retry the action.`

to the description of the 701 and 814 error codes.

Chapter 2.5.5, Page 15, Table 2-11

Add

> `MirrorLink Client SHOULD NOT retry the action.`

to the description of the 815 error code.

Chapter 2.5.5, Page 15, Table 2-11

Add

> `The MirrorLink Client SHOULD verify the format of the argument.`
>
> `MirrorLink Client SHOULD NOT retry the action with the same argument.`

to the description of the 825 error code.

Chapter 2.5.5, Page 15, Table 2-11

Add

MirrorLink Client SHOULD check the client profile (GetClientProfile) and its application support from the GetApplicationList response, and retry the action.

MirrorLink Client SHOULD NOT retry the action with the same arguments.

to the description of the 830 error code.

Chapter 3.2.2, Page 17

Replace

```
<bluetooth>
   <bdAddr>0x1A2B3C4D5E6F</bdAddr>
   <startConnection>false</startConnection>
</bluetooth>
```

By

```
<bluetooth>
   <bdAddr>1A2B3C4D5E6F</bdAddr>
   <startConnection>false</startConnection>
</bluetooth>
```

Chapter 3.2.2, Page 18

Add new elements to XSD file

```
<services>
   <notification>
      <notiUiSupport>true</notiUiSupport>
      <maxActions>3</maxActions>
      <actionNameMaxLength>15</actionNameMaxLength>
      <notiTitleMaxLength>25</notiTitleMaxLength>
      <notiBodyMaxLength><100</notiBodyMaxLength>
   </notification>
</services>
<mirrorLinkVersion>
   <majorVersion>1</majorVersion>
   <minorVersion>1</minorVersion>
</mirrorLinkVersion>
```

Chapter 4, Page 19/20

Add Wifi elements to XSD schema

```
<xs:element name="wifi" minOccurs="0" maxOccurs="1">
 <xs:complexType>
  <xs:sequence>
   <xs:element name="macAddr" type="xs:string" minOccurs="1"/>
   <xs:element name="ssid" type="xs:string" minOccurs="0"/>
   <xs:element name="roles" type="xs:string" minOccurs="0"
    Default="AP,Client,P2P"/>
   <xs:element name="protectionList" minOccurs="0" maxOccurs="1">
    <xs:complexType>
     <xs:sequence>
      <xs:element name="protection" minOccurs="0"
       maxOccurs="unbounded">
```

```
            <xs:complexType>
             <xs:sequence>
              <xs:element name="protocol" type="xs:string"
               minOccurs="1">
               <xs:simpleType>
                <xs:restriction base="xs:string">
                 <xs:enumeration value="WEP"/>
                 <xs:enumeration value="WPA"/>
                 <xs:enumeration value="WPA2"/>
                 <xs:enumeration value="WPS"/>
                </xs:restriction>
               </xs:simpleType>
              </xs:element>
              <xs:element name="passkey" type="xs:string"
               minOccurs="1"/>
              </xs:sequence>
             <xs:anyAttribute namespace="##other"
              processContents="lax"/>
            </xs:complexType>
           </xs:element>
          </xs:sequence>
          <xs:anyAttribute namespace="##other" processContents="lax"/>
         </xs:complexType>
        </xs:element>
```

Chapter 6

Add reference

```
Car Connectivity Consortium, "MirrorLink 1.1 – Handling of Appli-
cation Certificates", Version 1.1; CCC-TS-036
```

11 CCC-TS-028: UPnP NOTIFICATION SERVER SERVICE

11.1 Revision 1.1.4 from 05 November 2013

Chapter 2.3.4, Page 13, Table 2-2

Replaced in Signature description

```
The SignatureMethod SHOULD be RSA with SHA1.
```

By

```
The SignatureMethod MUST be RSA with SHA1.
```

Chapter 2.6, Page 15, Table 2-4

Changed obligation for GetNotification action from REQUIRED to OPTIONAL.

Chapter 2.6.1, Page 15, Line 13-15

Added paragraph

```
The MirrorLink Client MUST clear any active notification, using
InvokeNotiAction with ActionID = 0x00, if the XML signature within
the Notification response (A_ARG_TYPE_Notification) is fail-ing
validation.
```

Chapter 3.2.1, Page 21, Line 3-5

Added paragraph

```
In case the MirrorLink Client does not launch an application, using
LaunchApplication action, it MUST use the InvokeNotiAction action
with the actionID = 0x00, in order to clear the notification, as
shown in Figure 3.
```

Chapter 3.2.1, Page 21

Added Figure 3

Chapter 3.2.2, Page 22, Line 21-22

Added paragraph

```
In case the MirrorLink Client does not handle the notification, it
MUST use the InvokeNotiAction action with the actionID = 0x00, in
order to clear the notification, as shown in Figure 5.
```

Chapter 3.2.2, Page 23

Added Figure 5

Chapter 3.4, Page 24

Added Chapter `XML Signature Minimum Set.`

Chapter 4, Page 25, Line 46-53

Replaced

```
    <xs:element name="appID" type="xs:string"/>
```

By

```
    <xs:element name="appID" minOccurs="1" maxOccurs="1"/>
     <xs:simpleType>
      <xs:restriction base="xs:string">
       <xs:pattern value="0[Xx][A-Fa-f0-9]{1,8}"/>
```

```
          </xs:restriction>
         </xs:simpleType>
        </xs:element>
```

Chapter 4, Page 25, Line 54

Replaced

```
<xs:element name="actionList">
```

By

```
<xs:element name="actionList" minOccurs="0" maxOccurs="1">
```

11.2 Revision 1.1.3 from 29 August 2013

Chapter 2.3.5, Page 13

Added Paragraph

The MirrorLink Server MUST use the unsigned integer value of a variable of this type within any action. I.e. comparing the values of two A_ARG_TYPE_AppID variables MUST be done based on the unsigned integer value and not based on a specific character representation.

Therefore, the following two A_ARG_TYPE_AppID values are identical:

- 0x45ab and 0x45AB (case insensitivity of the hexadecimal numbers)
- 0x45ab and 0X45ab (case insensitivity of the 0x)
- 0x00001234 and 0x001234 (leading zeros do not matter)

Chapter 2.3.7, Page 13

Added Paragraph

The MirrorLink Server MUST use the unsigned integer value of a variable of this type within any action. I.e. comparing the values of two A_ARG_TYPE_ActionID variables MUST be done based on the unsigned integer value and not based on a specific character representation.

Therefore, the following two A_ARG_TYPE_ActionID values are identical:

- 0x45ab and 0x45AB (case insensitivity of the hexadecimal numbers)
- 0x45ab and 0X45ab (case insensitivity of the 0x)
- 0x00001234 and 0x001234 (leading zeros do not matter)

11.3 Revision 1.1.2 from 05 March 2013

Chapter 2.3, Page 9, Table 2.1

Added State Variable

NotiAppListUpdate (R, string, Undefined, Empty string, N/A)

Chapter 2.3.3, Page 10, Line 16

Added section on NotiAppListUpdate

NotiAppListUpdate is an evented state variable of type A_ARG_TYPE_String, which contains a comma separated list of applications identifiers of applications, supporting notifications. Each application identifier is of type A_ARG_TYPE_AppID.

The state variable is evented, implying that clients can subscribe to receive notifications every time the variable changes using UPnP standardized eventing mechanisms. It is important to note that this variable only contains the application identifiers of those applications, whose entries in supported applications list have changed since the last time an event notification was sent out (i.e. applications which either have added or removed notification support).

On receiving a NotiAppListUpdate event, a MirrorLink UPnP Control Point can retrieve the supported ap-plication list by invoking the GetSupportedApplications action, to validate, whether an application has re-moved or added notification support.

NotiAppListUpdate value MUST consist of a comma separated list of all application identifiers from applications supporting notification, when the event is issued by the TmNotification-Server service for the first time.

Chapter 2.3.8, Page 13, Line 18

Added Examples

Valid examples, all referring to the same notification identifier, are given below

- 0x00000001@0x0000000a
- 0x00000001@0x0000000A
- 0x01@0x0a
- 0X01@0X0a
- 0x1@0xa
- 0x1@0xA

Chapter 2.4, Page 14, Table 2.3

Added State Variable

NotiAppListUpdate (Yes, No, N/A, N/A, N/A)

Chapter 3.1, Page 20

Removed text below Figure 1.

Chapter 4, Page 24, Line 9

Added text

```
<xs:import schemaLocation="xmldsig-core-schema.xsd"
namespace="http://www.w3.org/2000/09/xmldsig#"/>
```

Chapter 4, Page 24, Line 17

Replaced

```
<xs:pattern value="0[Xx][A-Fa-f0-9]{1,8}"/>
```

by

```
<xs:pattern value="0[Xx][A-Fa-f0-9]{1,8}@0[Xx][A-Fa-f0-
9]{1,8}"/>
```

Chapter 4, Page 24, Line 34, 37 & 43

Chapter 4, Page 25, Line 19, 22, 29, 32, 35, 41, 46 & 49

Replaced

```
namespace="##other"
```

by

```
namespace="##any"
```

Chapter 5, Page 27, Line 40

Added text

```
<stateVariable sendEvents="yes">
  <name>NotiAppListUpdate</name>
  <dataType>string</dataType>
</stateVariable>
```

11.4 Revision 1.1.1 from 27 September 2012

To be done

12 CCC-TS-030: UPnP Server Device

12.1 Revision 1.1.4 from 05 November 2013

Chapter 2.1.1, Page 7, Line 25

Replace

```
UPnP Control Point
```

to

```
UPnP Server
```

Chapter 2.3, Page 9, Table 3

In description of "`mandatory`" replace

```
Depreciated
```

to

```
Deprecated
```

Chapter 2.3, Page 10, Table 3

In description of "`X_Signature`" replace

```
SHOULD
```

to

```
MUST
```

Chapter 2.3, Page 10, Table 3

Change obligation of "`X_Signature`" from

```
OPTIONAL
```

to

```
MANDATORY
```

Chapter 2.3.1, Page 10/11

Add new chapter.

Chapter A,3, Page 26, Line 5

Replace

```
<xs:element name="X_Signature">
```

to

```
<xs:element name="X_Signature" minOccurs="1">
```

Chapter A,3, Page 26, Line 8

Replace

```
< xs:element ref="ds:Signature">
```

to

```
< xs:element ref="ds:Signature" minOccurs="1">
```

12.2 Revision 1.1.3 from 05 March 2013

General document

Editorial changes throughout the document

Chapter 2.3, Page 8, Table 3

Change obligation for element `bdAddr` from

`Conditional`

to

`Mandatory`

Chapter 2.3, Page 9, Table 3

Added text into description to element `mandatory`

`Depreciated; MirrorLink Client MUST use default value.`

Chapter 3, Page 11, Line 2

Added paragraphs

When processing XML, MirrorLink Clients MUST ignore any unknown elements and their sub elements or content and any unknown attributes and their values. MirrorLink Clients MUST NOT expect any particular order of XML elements located at the same level of the XML tree, unless specifically mandated (e.g. via xs:sequence). MirrorLink Client MUST understand xml namespace as specified in W3C "Namespaces in XML 1.0".

The MirrorLink Server MUST provide a well-formed XML and a correct parent children relationship of xml elements and correct xml namespaces URI for each element. If the MirrorLink Server provides MirrorLink extension elements (X_...) then those elements SHOULD be valid according their XSD provided in Appendix A. If the MirrorLink Server declares conformance to UPnP DA 1.1 in the specVersion element then it MUST provide XML Device Description that is valid according to XSD presented in Appendix A. Otherwise the MirrorLink Server SHOULD provide XML Device Description that is valid according to XSD presented in Appendix A.

The MirrorLink Client SHOULD be as permissive as possible when consuming XML.

As a general recommendation for better interoperability, the MirrorLink Servers SHOULD use the order of XML elements presented in the listing below, and declare XML namespaces as default to allow interoperability with Clients without XML namespaces support. MirrorLink Servers SHOULD add any element unspecified below after the specified ones and put it in a namespace that isn't specified below. MirrorLink Clients SHOULD be able to handle elements in wrong or any xml namespace if the element wasn't found in the correct one.

Chapter 3, Page 11, Line 28

Replace

`<device>`

by

```
<device xml:id="mlServerDevice">
```

Chapter 3, Page 12, Line 34

Replace

```
<X_connectivity>
```

by

```
<X_connectivity   xmlns="urn:schemas-carconnectivity-org:ml-1-
0">
```

And moved the structure after <presentationURL>

Chapter 3, Page 13, Line 1

Replace

```
<X_deviceKeys>
```

by

```
<X_deviceKeys xmlns="urn:schemas-carconnectivity-org:ml-1-0">
```

And moved the structure after <X_connectivity>

Chapter 3, Page 13, Line 26

Replace

```
<X_mirrorLinkVersion>
```

by

```
<X_mirrorLinkVersion xmlns="urn:schemas-carconnectivity-
org:ml-1-1">
```

And moved the structure after <X_deviceKeys>

Chapter 3, Page 13, Line 31

Add X_Signature element

```
<X_Signature xmlns="urn:schemas-carconnectivity-org:ml-1-1">
 <Signature Id="deviceSignature"
 xmlns="http://www.w3.org/2000/09/xmldsig#">
  <SignedInfo>
   <CanonicalizationMethod
   Algorithm="http://www.w3.org/2006/12/xml-c14n11"/>
   <SignatureMethod Algorithm=
    "http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
   <Reference URI="#mlServerDevice">
    <Transforms>
     <Transform Algorithm=
      "http://www.w3.org/2006/12/xml-c14n11"/>
    </Transforms>
    <DigestMethod Algorithm=
     "http://www.w3.org/2000/09/xmldsig#sha1"/>
    <DigestValue>
     dGhpcyBpcyBub3QgYSB
     zaWduYXR1cmUK...
    </DigestValue>
   </Reference>
  </SignedInfo>
  <SignatureValue>...</SignatureValue>
  <KeyInfo>
```

```
                <KeyValue>
                 <DSAKeyValue>
                  <P>...</P>
                  <Q>...</Q>
                  <G>...</G>
                  <Y>...</Y>
                 </DSAKeyValue>
                </KeyValue>
               </KeyInfo>
              </Signature>
             </X_Signature>
```

Appendix A, Page 17

Entire chapter added

12.3 Revision 1.1.2 from 29 November 2012

To bed done

12.4 Revision 1.1.1 from 11 October 2012

To bed done

13 CCC-TS-035: DAP AUDIT REQUIREMENTS AND CERTIFICATE MANAGEMENT

13.1 Revision 1.1.2 from 05 November 2013

Chapter Terms and Abbreviations, Page 7

Added ACMS, CTS and OCSP abbreviations

Chapter 1, Page 8, Line 2
Chapter 3, Page 11, Line 17

Removed "1.1"

Chapter 3.2, Page 12, Line 18/19

Replace

> If the private device key leaks, the server manufacturer MUST inform CCC about the key leakage, immediately revoke the private key…

By

> If the private device key leaks, the server manufacturer MUST inform CCC about the key leakage, MUST NOT renew the device certificate…

Chapter 4, Page 13, Line 2-3

Added sentence

> A MirrorLink Server device manufacturer is subject to the MirrorLink Manufacturer Audit when DAP functionality is implemented into any of their MirrorLink enabled devices.

Chapter 5, Page 15, Line 1

Added sentence

> All MirrorLink Server devices, implementing DAP functionality, are subject to the MirrorLink Server Audit.

Chapter 5, Page 15, Line 6-12

Added sentence

> A MirrorLink Server device MUST NOT pass DAP related MirrorLink Device Certification, if either the MirrorLink Server Manufacturer or the MirrorLink Server Device Audit is not successfully completed (allowed Audit Verdicts: PASSED or CONDITIONAL.
>
> MirrorLink Building Blocks MAY NOT need to pass any DAP related audits, if the audit will be done as part of final product certification. A MirrorLink Server Building Block MUST only use DAP certificates (very short lived, for testing purpose), pointing to the CCC root, if the manufacturer has successfully passed the DAP Manufacturer Audit.

Chapter 5, Page 15, Line 25-29

Added sentence

> In addition, certificates are used to control the operation of applications within a MirrorLink session, and must be signed

by the CCC's root Certificate authority. These certificates are distributed using the Application Certification Management System (ACMS) via HTTP Get responses, and their revocation status is checked via OCSP query. The OCSP query includes a random nonce provided by the MirrorLink server device.

Chapter 5, Page 16, Line 4-7

Added sentence

In addition, MirrorLink Server devices must validate certificate provided by the ACMS. This validation includes verifying that the trust chain is based on the known CCC trust root. The trust root, does not constitute any secrets, i.e. leakage of the trust root, does not create any harm. But any attacker, being able to override the trust root, can redirect the trust chain.

Chapter 5.3, Page 17, Table 3

Added table entries

Aspect:	Creation of OCSP requests
Audit Analysis:	Mechanism to create a random nonce

Aspect:	ACMS Root Certificate Key
Audit Analysis:	Mechanism to protect the root certificate key

Chapter 5.4, Page 18, Line 6-8

Replace

- DAP signing key HW protected
- DAP signing key access control by OS

By

- DAP private key HW protected
- DAP signing HW protected
- DAP signing access control by OS

Chapter 6, Page 19, Line 1

Added sentence

All MirrorLink Client devices, implementing DAP functionality, are subject to the MirrorLink Client Audit.

Chapter 6, Page 19, Line 6-9

Added sentence

A MirrorLink Client device MUST NOT pass DAP related MirrorLink Device Certification, if the MirrorLink Client Device Audit is not successfully completed (allowed Audit Verdicts: PASSED or CONDITIONAL).

MirrorLink Building Blocks MAY NOT need to pass any DAP related audits, if the audit will be done as part of final product certification.

Chapter 6.2, Page 19, Table 5

Added text to the Audit Analysis section of the Integrity of the public root key row

Note: For the purposes of performing conformance testing, the CCC root certificate key must be changed to the CTS root certificate key. Changing this value MUST NOT be user-accessible.

Chapter 7, Page 21, Line 8-9

Added reference

Car Connectivity Consortium, "MirrorLink – Application Certificate Handling", Version 1.1, CCC-TS-036

13.2 Revision 1.1.1 from 05 March 2013

Chapter 3.1, Page 11

Replace

The CCC root certification authority MUST allow for overlapping periods and renew a manufacturer certificate 12 months prior the original certificate's expiration.

The lifetime of the manufacturer certificate MUST be at least 6 months but not more than 12 months longer than the allowed manufacturer certificate's lifetime.

By

The CCC root certification authority MUST allow for overlapping periods and renew a manufacturer certificate 12 months for short-lived certificates and 24 months for long-lived certificates prior the original certificate's expiration.

The lifetime of the manufacturer certificate MUST be at least 6 months but not more than 12 months for short-lived certificates and 24 months for long-lived certificates longer than the allowed manufacturer certificate's lifetime.

Chapter 5.5, Page 17

Added chapter on Testing Considerations

In order to perform developmental testing of their devices, MirrorLink Server manufacturers need the ability to install legitimate DAP certificates in devices during development. For the purposes of testing, MirrorLink Server manufacturers are allowed to issue a small number (≤100) of device certificates with an expiration of ≤3 months from the date of signing before successful completion of their Server Device Audit. MirrorLink Server manufacturers must still have a PASSED/CONDITIONAL result for their Server Manufacturer Audit in order to receive a Manufacturer Certificate.

14 CCC-TS-036: HANDLING OF APPLICATION CERTIFICATES

14.1 Revision 1.1.4 from 05 November 2013

Chapter 3.2.2, Page 14, Table 1

Change obligation of the restricted and nonRestricted elements from `Optional` to `Required`.

Chapter 3.2.3, Page 16, Line 1-6

Replace

The MirrorLink Server MAY consider an CCC member entity entry as non-existent,

- if the "manufacturer" entry is either not set in the UPnP Client Profile or not matching the certificate's signing entity in the A_ARG_TYPE_CertificateInfo entry and
- if none of the "name" entries in the certificate' s signing entities is matching the certificate's signing entity in the AppCertFilter.

By

The MirrorLink Server MUST only consider a CCC Member certified application as a certified application,

- if the "manufacturer" entry set in the UPnP Client Profile is matching the certificate's signing entity in the A_ARG_TYPE_CertificateInfo entry and
- if any of the "name" entries in the certificate' s signing entities is matching the certificate's signing entity in the AppCertFilter.

Chapter 4.3.2, Page 21, Line 39

Remove sentence

Chapter 4.3.2, Page 21, Line 40-41

Add sentence

The MirrorLink Server MUST follow the procedures defined in section 4.1 about the retrieval and installation of a new application certificate.

Chapter 4.4.1, Page 23, Line 17-19

Add sentence

The MirrorLink Server MUST update the certification status of the updated application through the relevant entries (e.g. AppList and CertifiedApplicationList) through the UPnP Application Server Service immediately.

Chapter 5.1, Page 23, Line 14-16

Add sentence

The MirrorLink Server MUST update the certification status of the re-installed application through the relevant entries (e.g. AppList and CertifiedApplicationList) through the UPnP Application Server Service immediately.

14.2 Revision 1.1.3 from 12 September 2013

Chapter 3.2.3, Page 15, Table 2

Replace description of Developer

```
MirrorLink Aware Application
```

by

```
MirrorLink Developer Application
```

Add to description of Developer

```
, as specified in [8]
```

Add to "ACMS" entry

```
MirrorLink Aware Application

The application is a self-signed MirrorLink aware application.

The MirrorLink Server MUST check with the ACMS for a CCC or
Member-signed certificate.
```

Add to "<Empty String> OR Tag missing OR Unknown entity name" entry

```
MirrorLink Aware Application

The application is a self-signed MirrorLink aware application.

The MirrorLink Server MUST NOT check with the ACMS for a CCC
or Member-signed certificate.
```

Chapter 4, Page 7

Add paragraph

```
The Application Certificate Life Cycle of applications, coming
with a self-signed Application Certificate, containing an "en-
tity" tag with a "name" tag value of "DEVELOPER", are specified
in [8].

The high-level Application Certificate life-cycle is given be-
low, the detailed specification is described in the following
sections.

  1. The MirrorLink Server checks for the application certif-
     icate with the ACMS on application down-load for self-
     signed certificates with "ACMS" entity.
  2. On failure to retrieve the application certificate, the
     MirrorLink Server checks for the certificate again within
     a query period7 days.
  3. The MirrorLink Server will continue to perform step 2,
     until it can retrieve a certificate or after 6 month
     (whatever comes first); after 6 month, the MirrorLink
     Server will stop performing step 2 and the application
     is considered uncertified.
  4. If a certificate is successfully retrieved by the Mir-
     rorLink Server, it performs OCSP checks within a query
     period
  5. On failure to perform the OCSP check the MirrorLink
     Server performs the OCSP check again with-in the query
     period.
  6. The MirrorLink Server will continue to perform step 5,
     until it can perform the OCSP check; after a grace period,
     the application will be considered unchecked; after a 6
```

month, the MirrorLink Server will stop performing step 5 and the application is considered uncertified.

Chapter 4.1, Page 17, Line 22

Replace

SHOULD

by

MUST

Chapter 4.1, Page 17, Line 23/24

Replace

does not contain an “entity” tag

by

does not contain an “entity” tag or an “name” tag with an empty string

Chapter 4.1, Page 17, Line 26/27

Replace

does contain an “entity” tag

by

does contain an “entity” tag with a “name” tag value of “ACMS”

Chapter 4.1, Page 18, Table 5

Replace in Description of 500/800 Error Code

The MirrorLink Server SHOULD retry within the query period

by

The MirrorLink Server MUST retry within 7 days

Add to Description of 500/800 Error Code

Note: the MirrorLink Server MUST perform retries for at least 6 months after application installation. After 6 month, the MirrorLink Server SHOULD stop checking.

Replace in Description of 500/801 Error Code

The MirrorLink Server SHOULD retry within a day

by

The MirrorLink Server MUST retry within a day

Chapter 4.1, Page 18,

Add paragraph

The CCC Error Code is provided in the HTTP response header, as described in the following example for CCC Error Code 800:

```
HTTP/1.0 500 Internal Server Error
Date: Thu, 22 Aug 2013 09:25:10 GMT
Pragma: no-cache
Expires: Thu, 01 Jan 1970 00:00:00 GMT
Cache-Control: no-cache
Cache-Control: no-store
Content-Type: text/plain
```

```
Content-Length: 3
X-Cache: MISS from firewall.HQ
X-Cache-Lookup: MISS from firewall.HQ:8080
Via: 1.0 firewall.HQ:8080 (squid/2.6.STABLE21)
Connection: close

800
```

Chapter 4.1, Page 18, Line 23

Replace in Description of 500/801 Error Code

"ACMS"

by

"ACMS CA"

Chapter 4.2, Page 19, Line 2

Add sentence

• Validate the certificate's trust chain

Chapter 4.2.1, Page 19, Line 26/27

Replace

the MirrorLink Client MUST accept the CTS root certificate

by

the MirrorLink Server MUST accept the CTS root certificate

Chapter 4.3.3, Page 21, Line 42/43

Add sentence

The MirrorLink Server MUST continue checking for the revocation status for at least 6 month after the ap-plication certificate became unchecked. After 6 month, the MirrorLink Server SHOULD stop checking.

Chapter 4.3.6, Page 23, Line 2/3

Replace

the MirrorLink Client MUST accept the CTS root certificate

by

the MirrorLink Server MUST accept the CTS root certificate

Chapter 4.5, Page 24, Line 9-11

Add paragraph

Query and Grace Period updates are governed by the CCC, as described within a separate Process Management Document (PMD). It has to be understood that in case the query and grace period are both set to zero and the MirrorLink Server does not have network coverage, no certified applications are available.

Chapter 6, Page 28

Add reference

[8] Car Connectivity Consortium, "MirrorLink - Handling of Application Developer Certificates", Version 1.1, CCC-TS-044

Appendix B, Page 31, Line 2

Add text

(in a human readable format)

14.3 Revision 1.1.2 from 15 May 2013

Chapter 4.1, Page 17, Line 29

Replace

The HTTP Server MUST return the application certificate, Base 64 encoded otherwise it MUST provide one of the following error codes:

by

The HTTP Server MUST return the application certificate and the entire chain of intermediate certificates, Base 64 encoded. Blank lines separate the certificates, starting from the certificate signed directly by the CCC root CA.

Otherwise it MUST provide one of the following error codes:

Chapter 4.1, Page 17/18, Table 5

Replace "Error Code" header of first column by "HTTP Error Code"

Add Column "CCC Error Code" after "Error Code" with the following values: "N/A", "800" and "801"

Chapter 4.1, Page 18

Add sentence under Table 5

The Intermediate certificate, which signed by the CCC root CA, MUST have a Common Name (CN) in the issuer information, identical to "ACMS"; otherwise the certificate MUST NOT be accepted. A valid example issuer information is given below:

Issuer: O=Car Connectivity Consortium, CN=ACMS CA

Chapter 4.2.1, Page 18, 2nd line

Replace

ACMS TS

By

CTS

Appendix A

Replace entire appendix

Appendix B

Replace entire appendix

14.4 Revision 1.1.1 from 10 April 2013

Chapter 3.2.1, Page 12

Replace

<CCC-MirrorLink Extension Id>

by

41557

Chapter 3.2.2, Page 13, Table 1

Replace description of url element

```
URL where icon is available

MirrorLink Client MUST use HTTP GET to access the icon behind
the URL.
```

by

```
URL where icon is available within the install package (plat-
form specific)
```

Chapter 4.2, Page 18, Line 13

Delete line

```
Note: This step MAY be skipped, if the certificate has been
retrieved from the ACMS
```

Chapter 4.2.1, Page 18

Added paragraph

```
4.2.1  Testing Considerations

For Certification Validation testing purposes during MirrorLink
device certification, the MirrorLink Client MUST accept the
ACMS-TS root certificate to validate application certificates
distributed by the ACMS. This Test Mode MUST NOT be accessible
in production devices.
```

Chapter 4.3.1, Page 19, Line 26/27

Added sentence

```
The MirrorLink Server MUST ignore any OCSP response, if the
Signature is either missing or wrong, or if the key of the
issuing certificate is not the CCC root certificate.
```

Chapter 4.3.4, Page 21, Line 27-29

Added paragraph

```
The Query Period applies to all applications installed on the
MirrorLink Server. Different query periods SHALL NOT be tracked
for individual applications. The MirrorLink Server MUST use the
Query Period provided in the most recent valid OCSP response.
```

Chapter 4.3.5, Page 22, Line 8-10

Added paragraph

```
The Grace Periods applies to all applications installed on the
MirrorLink Server. Different grace periods SHALL NOT be tracked
for individual applications. The MirrorLink Server MUST use the
Grace Periods provided in the most recent valid OCSP response.
```

Chapter 4.3.6, Page 22, Line 11-14

Added chapter

```
4.3.6  Testing Consideration
```

```
For OCSP testing purposes during MirrorLink device certifica-
tion, the MirrorLink Client MUST accept the CTS root certifi-
cate to validate responses from the ACMS. This Test Mode MUST
NOT be accessible in production devices.
```

Chapter 4.5, Box on Page 23

Replace

```
<CCC-MirrorLink Extension Id>
```

by

```
41557
```

Appendix A, Page 28, Line 18, 20, 22

Replace

```
50000
```

by

```
41557
```

Appendix B, Page 30, Line 23

Replace

```
50000
```

by

```
41557
```

15 CCC-TS-038: COMMON API

15.1 Revision 1.1.3 from 05 November 2013

Chapter 4.2.2, Page 13
Chapter 4.2.4, Page 14
Chapter 4.3.4, Page 15/16
Chapter 4.4.2, Page 17
Chapter 4.4.4, Page 18
Chapter 4.4.6, Page 19
Chapter 4.5.2, Page 21
Chapter 4.5.4, Page 22/23
Chapter 4.5.6, Page 23
Chapter 4.6.2, Page 24/25
Chapter 4.6.5, Page 26
Chapter 4.11.2, Page 34
Chapter 4.12.3, Page 38
Chapter 4.12.5, Page 39

Removed sentence that referenced other API call to retrieve the information

Added Table with feature list for Callback

Chapter 4.2.3, Page 13

Corrected identifier from `0x0102` to `0x0103`.

Chapter 4.2.4, Page 14

Corrected identifier from `0x0103` to `0x0104`.

Chapter 4.2.5, Page 14

Corrected identifier from `0x0104` to `0x0105`.

Chapter 4.3.2, Page 15

Added chapter

Chapter 4.3.3, Page 15

Added sentence

```
any later change to the provided information MUST be notified via
the callback function defined in 4.3.4
```

Chapter 4.5.1, Page 21
Chapter 2.5.2, Page 22

Replace in Description of Server Pad Columns

```
Client
```

By

```
Server
```

Chapter 4.6.1, Page 24
Chapter 4.6.2, Page 25

Add entries to table

```
Feature Name:  Keyboard Language
Description:   Language & country codes for Virtual Keyboard
               setting at the MirrorLink Client, e.g. "en/us"
```

```
Type:           string8
Direction:      Read

Feature Name:   UI Language
Description:    Language & country codes for UI Language
                setting at the MirrorLink Client, e.g. “en/us”
Type:           string8
Direction:      Read
```

Chapter 4.10.1, Page 32, Line 6
Chapter 4.10.3, Page 32, Line 17
Chapter 4.10.5, Page 33, Line 1

Replaced

```
Callback
```

By

```
Get
```

Chapter 4.10.1, Page 32, Line 6
Chapter 4.10.3, Page 32, Line 17
Chapter 4.10.5, Page 33, Line 1

Replaced

```
Callback
```

By

```
Get
```

Chapter 4.10.5, Page 32, Line 28
Chapter 4.10.6, Page 33, Line 6
Chapter 4.10.7, Page 33, Line 11

Add text

```
over RTP
```

Chapter 4.10.5, Page 32
Chapter 4.10.6, Page 33

Add entry to table

```
Feature Name:   Voice Input
Description:    Flag whether voice input is enabled
Type:           bool
Direction:      Read
```

Chapter 4.10.7, Page 33

Add entry to table

```
Feature Name:   Voice Input
Description:    Flag enabling voice input on the MirrorLink
                Client
                The application MUST set the Mic Input flag to
                TRUE, if the Voice input flag is set to TRUE.
Type:           bool
Direction:      Write
```

Chapter 4.11.7, Page 35, Line 22

Replaced

```
Set
```

By

```
Callback
```

Chapter 4.13.1, Page 41, Line 22

Chapter 4.13.2, Page 41, Line 12

Chapter 4.13.2, Page 41, Line 19

Removed Line

15.2 Revision 1.1.2 from 04 September 2013

General

Add reference identifier to all API calls and definitions.

Chapter 4, Page 11, Table 5

Replace Common API Module name

```
Virtual Keyboard
```

By

```
Client Virtual Keyboard
```

Chapter 4, Page 11, Line 5-8

Replace

```
Any application using the Common API MUST implement all given
Callback functions.
```

by

```
Any application using the Common API MUST implement all given
Callback functions required for the operation of the applica-
tion; the platform specific specification MAY provide condi-
tions for the obligation of individual callback functions.
```

Chapter 4, Page 11, Line 10-13

Replace

```
Any application using an optional module of the Common API MUST
implement all given Callback functions of that module.
```

by

```
Any application using an optional module of the Common API MUST
implement all given Callback functions required for the opera-
tion of the application; the platform specific specification
MAY provide conditions for the obligation of individual
callback functions.
```

Chapter 4.4.3, Page 17

Add table entry

```
Feature Name:
  IPL
Description:
  Initial Playback Latency value (in ms)
  Defines the expected initial latency (e.g. due to audio buffer
  filling at the MirrorLink client), before any audio is heard
  via the MirrorLink Client's speaker system.
Type:
```

```
    uint32
  Direction:
    Read
```

Chapter 4.5.1, Page 18

Add to Description

```
    The provided framebuffer resolutions are modeling the follow-
    ing framebuffer pipeline:

    1. The applications renders its user interface into a frame-
       buffer available in full to the application (App Horizontal
       / Vertical Resolution)
       Footnote: If the application is using the MirrorLink Serv-
       er's physical framebuffer, then the App Horizontal / Ver-
       tical Resolution is the resolution of the MirrorLink Server
       Device Display.
    2. The MirrorLink Server scales that framebuffer to better
       fit the MirrorLink Client’s framebuffer properties (Server
       Horizontal / Vertical Resolution)
    3. The MirrorLink Server adds pad rows and/or columns to the
       scaled framebuffer (Server Pad Rows / Columns)
    4. The MirrorLink Server transmits that framebuffer to the
       MirrorLink Client
    5. The MirrorLink Client scales the received framebuffer to
       fit into its framebuffer (Client Horizontal / Vertical
       Resolution); the MirrorLink Client may add pad rows or
       columns (but not both) to compensate for differences in
       the frame-buffer aspect ratio. Those pad rows or columns
       to not take away any resolution from the transmitted Mir-
       rorLink Server framebuffer.

    All pixel-based resolutions MUST be based on a pixel aspect
    ratio of 1 (one), i.e. a squared pixel.
```

Chapter 4.5.1, Page 18

Add table entry

```
  Feature Name:
    App Horizontal Resolution
  Description:
    Horizontal resolution in pixel of the framebuffer, the appli-
    cation is rendering into.
    Note: In many cases, the App Horizontal Resolution equals the
    horizontal resolution of the MirrorLink Server’s display.
  Type:
    uint16
  Direction:
    Read
```

Chapter 4.5.1, Page 18

Add table entry

```
  Feature Name:
    App Vertical Resolution
  Description:
    Vertical resolution in pixel of the framebuffer, the appli-
    cation is rendering into.
    Note: In many cases, the App Vertical Resolution equals the
    vertical resolution of the MirrorLink Server’s display.
```

```
Type:
  uint16
Direction:
  Read
```

Chapter 4.5.1, Page 19

Add table entry

```
Feature Name:
  Server Pad Rows
Description:
  Number of pad rows added from the MirrorLink Server to the
  scaled application framebuffer
Type:
  uint16
Direction:
  Read
```

Chapter 4.5.1, Page 19

Add table entry

```
Feature Name:
  Server Pad Columns
Description:
  Number of pad columns added from the MirrorLink Client to the
  scaled application framebuffer
Type:
  uint16
Direction:
  Read
```

Chapter 4.5.1, Page 19

Add table entry

```
Feature Name:
  App Pixels Per Client mm
Description:
  Number of application-level pixels, which will fit into 1 mm
  of Client Display space.
  Note: This value is the same for the horizontal and vertical
  dimension
Type:
  float
Direction:
  Read
```

Chapter 4.5.1, Page 19

Replaced Description of Server Horizontal Resolution

```
  Horizontal resolution in pixel of the MirrorLink Server's
  framebuffer, which gets replicated to the MirrorLink Client
  (after scaling).
```

By

```
  Horizontal resolution in pixel, after the MirrorLink Server
  has scaled the application framebuffer.
```

Chapter 4.5.1, Page 19

Replaced Description of Server Vertical Resolution

```
Vertical resolution in pixel of the MirrorLink Server's frame-
buffer, which gets replicated to the MirrorLink Client (after
scaling).
```

By

```
Vertical resolution in pixel, after the MirrorLink Server has
scaled the application framebuffer.
```

Chapter 4.6.3, Page 21

Added the entire new section

Chapter 4.6.4, Page 22

Replaced Direction

```
Read
```

By

```
Write
```

Chapter 4.7.x, Page 23

Replaced Chapter heading

```
Virtual Keyboard
```

By

```
Client Virtual Keyboard
```

Chapter 4.7.3, Page 23

Added sentence

```
; this callback is used when the text entry is completed on
the MirrorLink Client
```

Chapter 4.9.1, Page 25

Replaced Feature Name

```
Content Category
```

By

```
Video Content Category
```

Chapter 4.9.2, Page 25

Added Sentence

```
The MirrorLink Server will handle the Framebuffer Blocking,
if the application is unable to handle the callback in time.
This MAY include terminating the application.
```

Chapter 4.9.2, Page 25

Add table entry

```
Feature Name:
  Framebuffer Area
Description:
  Framebuffer rectangle for the specified region.
Type:
  Rect
Direction:
  Read
```

Chapter 4.9.2, Page 25

Add table entry

```
Feature Name:
  Blocking Reason
Description:
  Reason for blocking
Type:
  uint16
Direction:
  Read
```

Chapter 4.9.3, Page 26

Replaced Feature Name

```
  Application Category
```

By

```
  Audio Content Category
```

Chapter 4.9.3, Page 26

Replaced Description of Feature Audio Content Category

```
  Category of the application
```

By

```
  Audio Content Category for the audio stream
```

Chapter 4.9.3, Page 27

Remove Sentence

```
  The following table matches the defined application context
  information to the defined audio categories
```

Chapter 4.9.4, Page 27

Added Sentence

```
  The MirrorLink Server will handle the Audio Blocking, if the
  application is unable to handle the callback in time. This
  MAY include terminating the application.
```

Chapter 4.9.4, Page 27

Add table entry

```
Feature Name:
  Blocking Reason
Description:
  Reason for blocking
Type:
  Uint16
Direction:
  Read
```

Chapter 4.10.5, Page 28

Rename Chapter

```
  Open Microphone
```

To

```
  Microphone State
```

Chapter 4.10.5, Page 28

Rename Description

```
        Check status on opening the Microphone from the MirrorLink
        Client; requires established VNC connection
```

By

```
        Check the status of the Microphone from the MirrorLink Client;
        requires established VNC connection
```

Chapter 4.11, Page 30

Added sentence

```
        Theses API functions provide access to Data Services provided
        from the MirrorLink Client. The APIs can-not be used to im-
        plement a data service provided from the MirrorLink Server.
```

Chapter 4.11.1, Page 30

Added paragraph

```
        The MirrorLink Server will need to check for the application's
        certification type and the information regarding service cer-
        tification (using serviceList element in
        A_ARG_TYPE_AppCertificateInfo) before returning the list of
        services to the applica-tion, i.e. an application may not have
        access to a particular data service, if the Mir-rorLink Client
        has limited access to only specific certified applications.
```

Chapter 4.11.7, Page 31

Added sentence

```
        Any update to the value of the data object will be provided
        via the Get Object Callback, specified in 4.11.12.
```

Chapter 4.11.9, Page 32

Added sentence

```
        ; asynchronous response is provided by the callback specified
        in 4.11.10
```

Chapter 4.11.10, Page 32

Added document section

16 CCC-TS-044: HANDLING OF APPLICATION DEVELOPER CERTIFICATES

16.1 Revision 1.1.3 from 05 November 2013

Chapter 3.2.1, Page 12, Line 11 & 16

Replace

```
Set of PrintableString
```

by

```
OCTET STRING
```

Chapter 3.2.1, Page 12, Line 24 & 29

Remove

```
Of printable characters
```

16.2 Revision 1.1.2 from 12 September 2013

Chapter 2, Page 9

Replace section heading

```
APPLICATION DEVELOPER CERTIFICATION CONCEPT
```

by

```
DEVELOPER APPLICATION CONCEPT
```

Chapter 2, Page 9, Line 6

Replace

```
simplify
```

by

```
simplifies
```

Chapter 2, Page 9, Line 14

Replace

```
Dev
```

by

```
Development
```

Chapter 2, Page 10

Replace Figure 1

Chapter 2, Page 10, Line 3

Add paragraph

```
Support for development applications as described above MAY be
restricted to specific MirrorLink Server Developer devices;
those MUST be made available to application developers. There-
fore, a regular MirrorLink Server device MAY NOT be able to run
development applications as certified applications.
```

Chapter 3.1.2.2., Page 11, Line 30

Replace

> The Developer Signing Entity of application development certificates MUST be "CCC".

by

> The Signing Entity Name of application development certificates MUST be "DEVELOPER".

Chapter 3.2.1, Page 12, Line 13

Replace

> CCC-MirrorLink-Client-Manufacturer-Ids Extension:

by

> CCC-MirrorLink-Developer-Manufacturer-Ids Extension:

Chapter 3.2.2.2., Page 12, Line 25/26

Add sentence

> Server IDs are the IMEI/IMEISV number (or equivalent unique identifier) of the MirrorLink Server devices on which development applications can be used.

Chapter 3.2.2.3, Page 12, Line 27

Replace section header

> CCC-MirrorLink-Developer-Manufacturer-Ids

by

> CCC-MirrorLink-Client-Manufacturer-Ids

Chapter 3.2.2.3, Page 12, Line 28

Replace

> MirrorLink Server

by

> MirrorLink Client

Chapter 4, Page 13, Line 28

Replace header

> APPLICATION DEVELOPER CERTIFICATE LIFE CYCLE

by

> DEVELOPER IDENTIFICATION CERTIFICATE LIFE CYCLE

Chapter 4.1, Page 13, Line 15

Add text

> (or equivalent unique identifier)

Chapter 4, Page 13, Table 1

Replace description of Error 500/800

> No certificate available for the given parameter
>
> The MirrorLink Server MUST consider the application as a MirrorLink-Aware Application.
>
> The MirrorLink Server SHOULD retry within the query period.

by

```
No certificate available for the given parameter

The MirrorLink Server MUST consider any development application
linked to the developer ID as a MirrorLink-Aware Application.
```

Replace description of Error 500/801

```
Certification Database currently offline

The MirrorLink Server MUST consider the application as a Mir-
rorLink-Aware Application, if a certificate is not already on
the server.

The MirrorLink Server SHOULD retry within a day
```

by

```
Certification Database currently offline

The MirrorLink Server MUST consider any development application
linked to the developer ID as a MirrorLink-Aware Application,
if a certificate is not already on the server.

The MirrorLink Server SHOULD retry within a day
```

Chapter 4.2.1, Page 14, Line 25/26

Replace

```
MirrorLink Client
```

by

```
MirrorLink Server
```

Chapter 4.3.4, Page 15, Line 14

Replace

```
MirrorLink Client
```

by

```
MirrorLink Server
```

Chapter 5.2, Page 16, Line 11

Replace

```
The validation of Dev ID certificates
```

by

```
The validation of Application Development certificates
```

Chapter 5.2, Page 16, Line 17

Add text

```
In case the certificate has been validated, the MirrorLink
Server MUST treat the application as if the certificate has
been signed by the CCC, i.e.

  • The MirrorLink Server MUST apply all rules specified for
    CCC certified applications in [8]
  • The MirrorLink Server MUST replace the Entity Name
    "DEVELOPER" by "CCC" within any provided
    A_ARG_TYPE_AppCertificateInfo structure
```

- The MirrorLink Server MUST include them into any response, when the MirrorLink Client is looking for "CCC" certified applications.

16.3 Revision 1.1.1 from 18 June 2013

Chapter 4.1, Page 12, Line 7

Replace

```
GET /obtainCertificate.html?
```

by

```
GET /obtainDeveloperCertificate.html?
```

17 REFERENCES

[1] IETF, RFC 2119, “Keys words for use in RFCs to Indicate Requirement Levels”, March 1997. http://www.ietf.org/rfc/rfc2119.txt