



DVB-CIv1 and CI Plus Host Software



Line of Product Description

Why CI Plus?

- **DVB-CI (Common Interface) v1 was designed to create an open retail market in the pay-TV landscape, based on the use of a removable security module**
- **It has had only mitigated success, because major stakeholders (content owners, pay-TV operators and CAS vendors) considered that the solution was not secure enough for the delivery of premium content and so have been reluctant to use it**
- **In an initiative bringing together four first-tier TV set manufacturers (Panasonic, Philips, Samsung and Sony) and two major Common Interface Conditional Access Module (CICAM) makers (SmarDTV and Neotion), CI Plus dramatically enhances the security level of DVB-CIv1**

What is in CI Plus?

- **A backwards compatible superset of DVB-CIv1**
- **Introduces mutual authentication between the CI Plus CAM and the host device (the DTV receiver, i.e. a TV set)**
- **Introduces an encryption mechanism to protect the content carried back from the CICAM to the host**
- **The content is NEVER carried “in the clear”**
- **In addition to the content, the CI Plus CAM transmits the attached URI (Usage Rules Information) to the host**
- **URI transmission is also encrypted**
- **CI Plus mandates an MHEG-5 subset for the man-machine interface**
 - **MHEG-5 apps are stored in the CICAM or retrieved by the CICAM over the broadcast network**
 - **MHEG-5 apps are transmitted to the host to be played / rendered**
 - **This allows delivery of attractive pay TV services**

CI Plus: a Success in Europe

- 2009**
 CANAL+ (Nagra)
 Ziggo (Irdeto)
- 2010**
 Mediaset (Nagra)
 HD+ (Nagra)
 KDG (NDS)
 Comhem (Conax)
 Kabel Noord (Irdeto)
 SKV (Irdeto)
 Volia (Conax)
 N (Conax)
 Mostelecom (Conax)
 Cablecom/UPC (Nagra)
 Boxer (Viaccess)
 La Digital (Conax)
- 2011**
 Unity Media (Nagra)
 KDG (Nagra)
 Skylink (Irdeto)
 ORS (Irdeto)
 Primacom (Conax)
 Canal Digital (Conax)
 Top Up TV (Nagra)
 Telestofa (Irdeto)



- 100 millions certificates shipped as of September 2011 (host devices and CAM)
- More than 50 CI Plus licensees

CI Plus

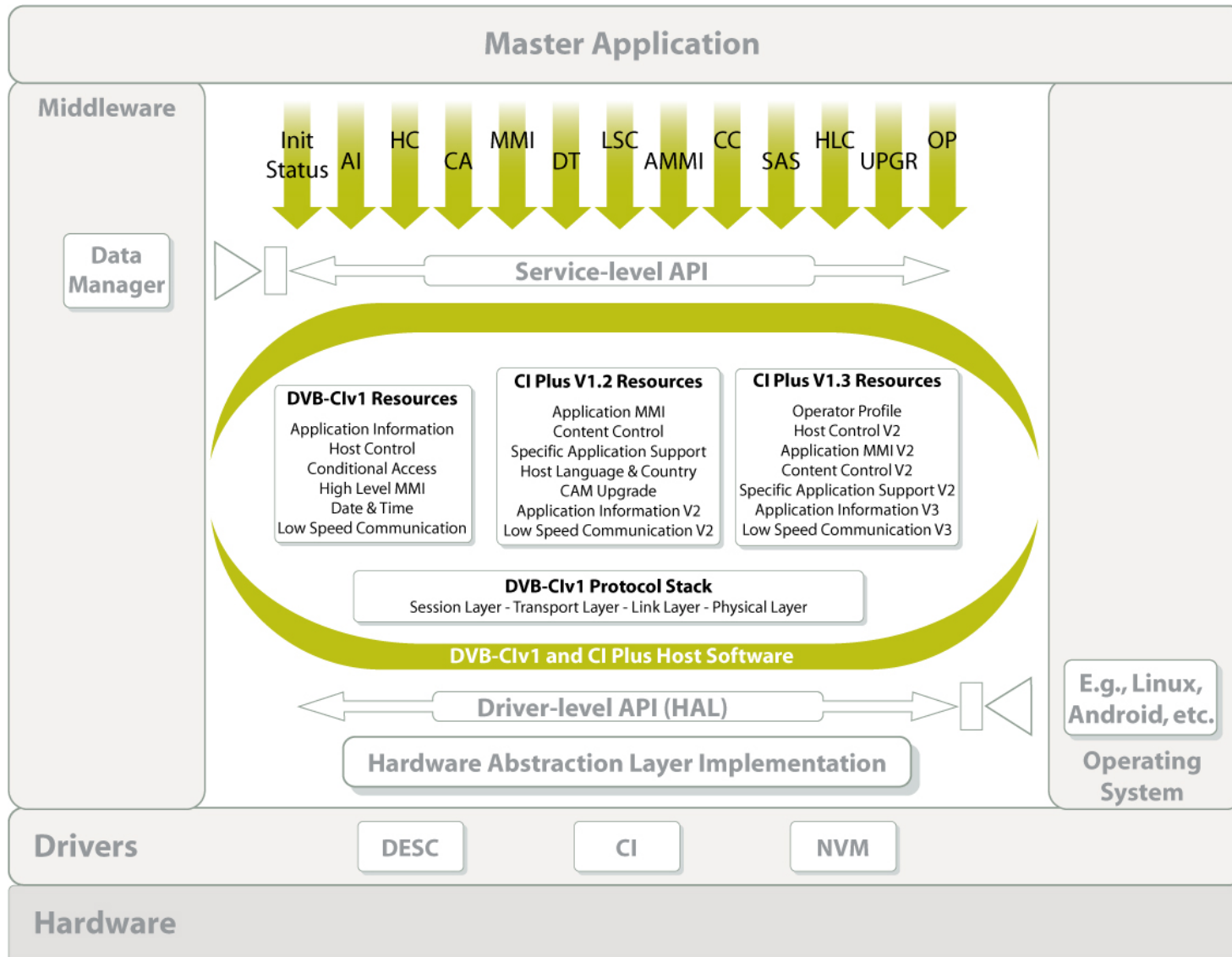
V1.3 Key Enhancements



- The PVR resource that was optional in the V1.2 specification has been replaced by a license-based technology that enables a finer and easier management of the recordings and playback. Now mandatory in the V1.3 specification, this new feature is expected to trigger broad-scale deployments of PVR-equipped host devices
- Optimization of the Low Speed Communication resource and support of IP connection by name: the CAM will now be able to access the internet through the host connectivity with a broader data rate
- Extension to CI Tuning Resource and Application Profile for the support of cable VOD applications
- Introduction of an Operator Profile that enables CAMs to manage the channel listing of the TV set (with the prior agreement of the end-user). This feature should accelerate the launch of CI Plus CAMs by operators that use a “proprietary” signaling
- Parental Control extensions and clarifications based on operators and markets feedback, leading to a single PIN code shared amongst the CAM and the host, in order to avoid potential confusions
- The introduction of High Definition graphics in the MHEG-5 based applications stored in the CAM, enabling sharper user interfaces
- *When will it happen? CI Plus V1.3 will become mandatory for all new CI Plus device registration from August 1, 2012 onwards*

- **February 2011: the DVB project is to take responsibility for the CI Plus standard, following a recommendation from the organization's steering board**
- **This clears the concern of some operators and industry players who feared, when considering the adoption of the technology, they may not have enough input on the CI Plus future development**
- **The specification will progressively become a de jure standard, which will help its adoption**
- **DVB actively participates in the promotion of its standards, which will again help CI Plus to grow further**

DVB-CIv1 and CI Plus Host Software Architecture Overview



- **The CI-related line of product is composed of:**
 - **The DVB-CIv1 Protocol Stack: physical, link, transport, session layers, and resource manager**
 - **The following DVB-CIv1 resources: Application Information, Host Control, Conditional Access, High Level Man Machine Interface, Date & Time, Low Speed Communication**
 - **The following CI Plus V1.2 resources: Application Man Machine Interface, Content Control, Specific Application Support, Host Language & Country, CAM Upgrade, Application Information V2, Low Speed Communication V2**
 - **The following CI Plus V1.3 resources: Operator Profile, Host Control V2, Application Man Machine Interface V2, Content Control V2 (PIN code management, extended URI, license management), Specific Application Support V2 (OIPF), Application Information V3, Low Speed Communication V3**
 - **A driver-level API (aka Hardware Abstraction Layer - HAL)**
 - API documentation
 - Reference implementation in ANSI C source code
 - HAL validation application (test suite) in ANSI C source code
 - **A service-level API**
 - API documentation
 - Service-level API validation application (test suite) in ANSI C source code
 - **The integration guidelines**

DVB-CIv1 and CI Plus Host Software Integration Process (Phase #1 of #2)



- **Step #1: HAL porting on top of target platform**
 - HAL reference implementation may be used as a starting point
 - Newly developed (or adapted) HAL lib is linked with HAL validation application
 - Tests are mainly targeted at PCMCIA communication (interrupt mode shall be supported) and NVRAM access
- **Step #2: acceptance of HAL implementation**
 - Perform the HAL test suite to validate step #1
 - Gate to pass: successfully run the HAL test suite
- **Step #3: CI host SW integration on target platform with validation application**
 - CI lib is linked with HAL lib (output of steps #1 & #2) and service-level API validation application
- **Step #4: acceptance of CI host SW integration**
 - Perform the service-level API test suite to validate step #3
 - Gate to pass: successfully run the service-level API test suite

- **Step #5: CI host SW integration with master application**
 - Master application is adjusted to make use of service-level API
 - Master application is linked with CI lib and HAL lib
- **Step #6: CI “black box” validation**
 - Perform the VTP to validate step #5
 - Gate to pass: successfully run the VTP

- **Typical figures for an integration programme**
 - Typical duration: 6 to 8 weeks
 - Typical manpower: 12 to 16 man weeks

- **Delivering a training and getting started session to Customer team**
- **Handling the integration of the CI components on Customer platform in the course of a fixed price program to be quoted**
- **Providing technical support to Customer during its CI integration project on a time and material basis**
- **Handling at iWedia's labs the CI Plus pre certification of Customer device, in the course of a fixed price program to be quoted**
- **Providing technical support to Customer during its CI Plus certification process on a time and material basis**

- **Reducing risks by leveraging existing CI host software which are robust, reliable, and deployed in millions of units**
- **Accelerating time-to-market by integrating off-the-shelf CI software components with efficient porting, integration, and validation tools and processes**
- **Preparing for the future by relying on the CI offering of a software publisher committed to ensuring its solutions remain compliant with the standard and to guaranteeing interoperability with the various (existing and to be released) CICAM**
- **Minimising the learning curve by sharing iWedia expertise in the field of digital TV security (DVB-Clv1, CI Plus, embedded CAS, etc.)**
- **Managing the integration project thanks to access to “à la carte” iWedia professional services**

DVB-CIv1 and CI Plus Host Software Licensees (Subset)



Chipset Vendors



Set-Top Box Manufacturers



TV Set Manufacturers





iwedia

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of Software Solutions for TV**