

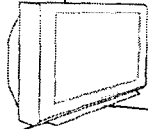


2002 Copyright by Alticast Corp

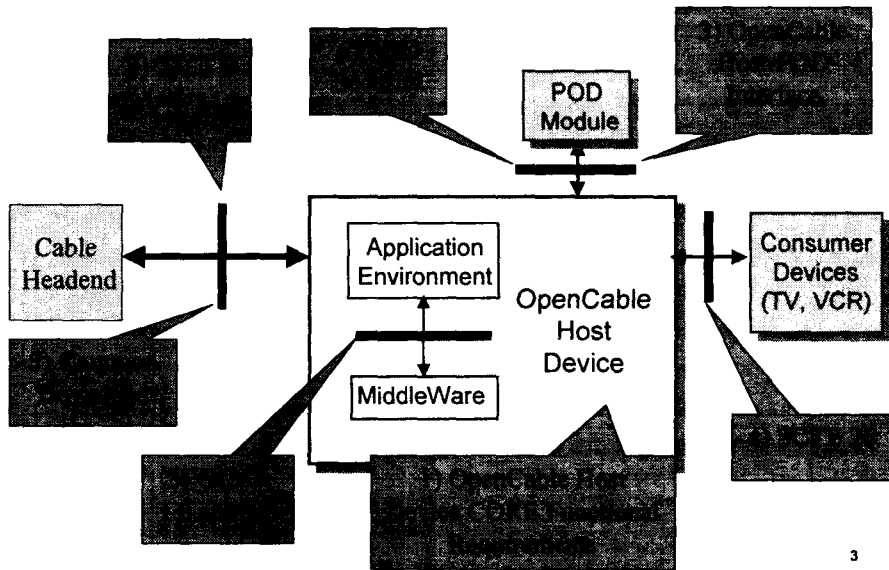


OpenCable and OCAP | 2003-06-09

2003년 6월 9일 한국방송공학회의 방송기술 워크샵 jhyu@alticast.com



OpenCable Specifications

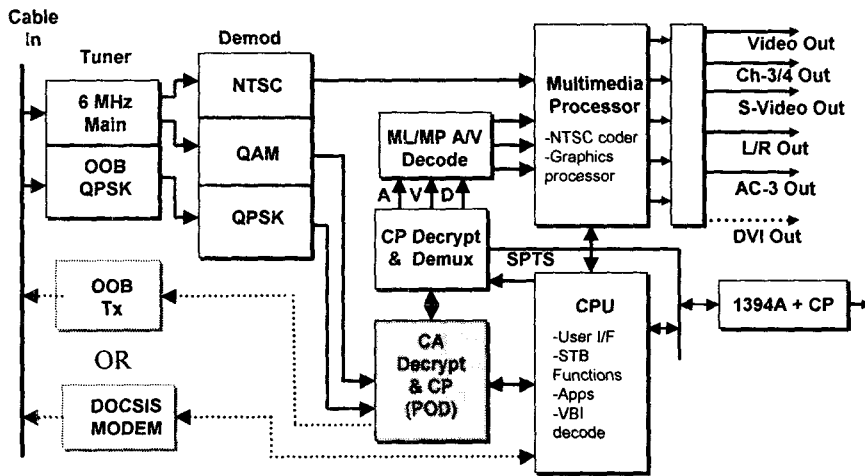


**OpenCable Host Device Core Functional Requirements
(OC-SP-HOST-CFR-I12-030210)**

Defines 'Profiles' of a Host Device:

- Bidirectional STB Host
- Bidirectional Integrated Terminal Host (TV)
- Unidirectional Integrated Terminal Host (TV)
- Unidirectional STB Host
- High Definition STB Host
- Advanced (DOCSIS-based) Host (STB or TV)

Host Architecture



5

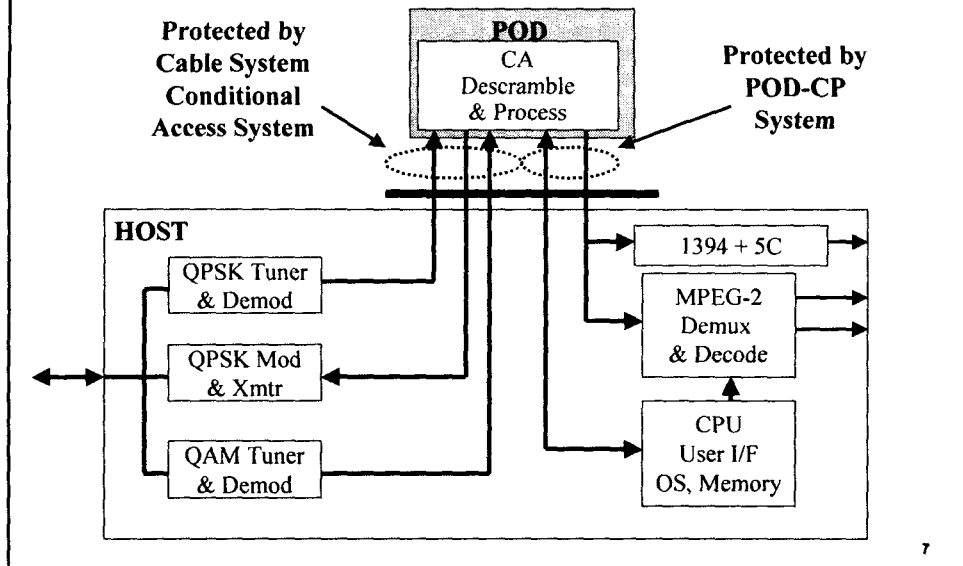
DVS/313 Network Interface

- Physical Layer Characteristics
- Communication Channels
 - NTSC Analog; FAT Channel; FDC; RDC
- Transport Layer Protocols
- Service & Protocol Stacks

6

SCTE 28 POD-Host Interface

Multicast
Proprietary and Confidential



SCTE 28 Overview

Multicast
Proprietary and Confidential

- Enables Separation of Security from Navigation to Meet Retail Navigation Order
- Supports Legacy Conditional Access Systems
- Provides Renewable, Replaceable Encryption
- Unifies OOB Signaling Systems
- Built upon NRSS-B (EIA-679B, part-B)
 - Adds extensions, constraints and changes
- Defines POD physical interface based on PC-Card (PCMCIA)
 - Defines initialization, signal timing, link interface, application interface, MMI, etc.

8

POD-CP Features

- Protects content de-scrambled by the POD
- DES based security
- Based on secrets held by trusted devices
- Licensed technology and secrets enable legal remedies to piracy (DFAST)
- No hard 'revocation'
- Content will be CA deauthorized to Hosts not trusted by the content provider.
- POD-Host License Agreement (PHILA) is signed with CableLabs to acquire secret keys

9

SCTE 26 Home Digital Network Interface

- Built upon IEEE-1394, EIA-775a, EIA-799
- Provides *COMPRESSED* digital video in the form of a MPEG-2 SPTS (isochronous)
- Provides bit-mapped graphics over asynchronous connections (EIA-799)
- Provides Copy Protection with DTCP
- Provides Command and Control by AV/C

10

OCAP Required Updates

- OpenCable Host Device CORE Functional Requirements (OC-SP-HOST-CFR-I12-030210)
- OpenCable Host-POD Interface Specification (OC-SP-HOSTPOD-IF-I12-030210)
 - Modification of the DRX pin and Extended Data Channel Resource
- OpenCable POD Copy Protection Specification (OC-SP=PODCP-IF-I09-030210)
 - X.509 Certificate Management
- OpenCable Common Download Specification (OC-SP-CDS-IF-I04-021126)

You MUST use these versions in order to support OCAP!

OpenCable - Specifications - Microsoft Internet Explorer

http://www.opencable.com/specifications/

CableLabs
...Revolutionizing Cable Technology™

About CableLabs Members' Area Current Projects Certification & Qualification Join CableLabs News Room Conferences CableNET®

OpenCable™

Specifications

The OpenCable issued technical specifications that are now publicly available for manufacturers to reference are provided in PDF format only.

OpenCable Host Device Core Functional Requirements

- OpenCable Host Device Core Functional Requirements (OC-SP-HOST-CFR-I12-030210)

OpenCable Interface Specifications

- OpenCable Host Device Core Functional Requirements (OC-SP-HOST-CFR-I12-030210)
- OpenCable Host Device Core Functional Requirements (OC-SP-HOST-CFR-I12-030210)
- OpenCable Host Device Core Functional Requirements (OC-SP-HOST-CFR-I12-030210)
- OpenCable Host Device Core Functional Requirements (OC-SP-HOST-CFR-I12-030210)
- OpenCable Host Device Core Functional Requirements (OC-SP-HOST-CFR-I12-030210)
- OpenCable Host Device Core Functional Requirements (OC-SP-HOST-CFR-I12-030210)

Security Specifications

- OpenCable Host Device Core Functional Requirements (OC-SP-HOST-CFR-I12-030210)
- PKI and certificate documents and references are located in a separate document for the OpenCable Host Device Core Functional Requirements - documents to be posted shortly

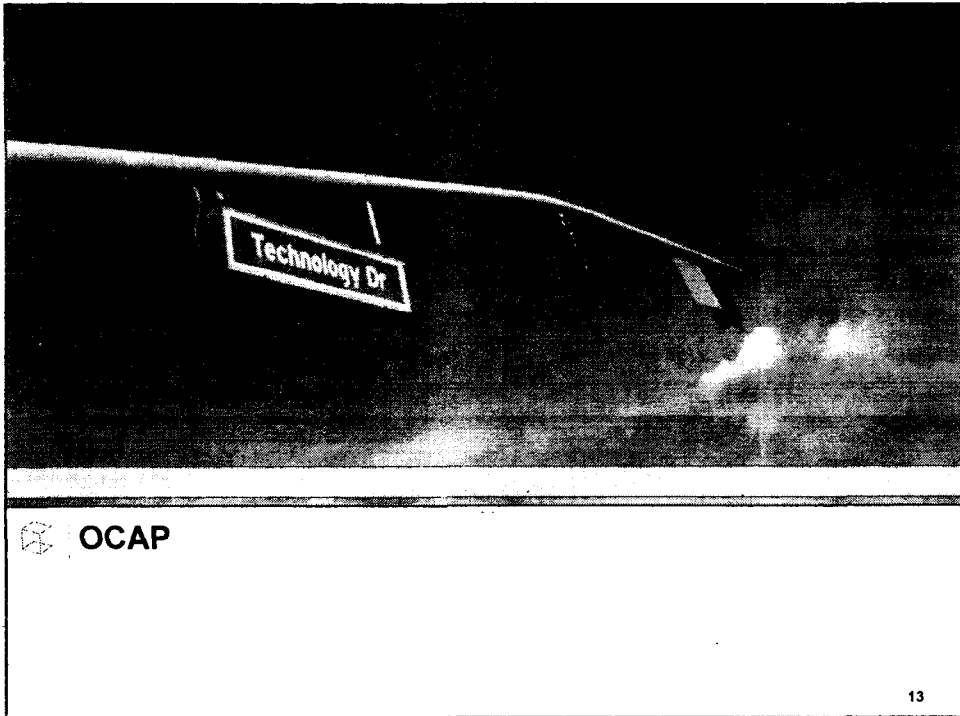
Additional References

- OpenCable Host Device Core Functional Requirements (OC-SP-HOST-CFR-I12-030210)
- OpenCable Host Device Core Functional Requirements (OC-SP-HOST-CFR-I12-030210)
- OpenCable Host Device Core Functional Requirements (OC-SP-HOST-CFR-I12-030210)
- OpenCable Host Device Core Functional Requirements (OC-SP-HOST-CFR-I12-030210)

Participants Login

- » Project Home
- » Specifications
- » Documents
- » Certification & Qualification
- » News & Events
- » How to Participate
- » OCAP Developers
- » FAQ
- » Careers
- » Contact OpenCable

SAI 衛星부터 다운로드 시작: <http://www.nsatorea.co.kr/default.asp> 인터넷



OCAP: What it Provides



- Host Portability between networks
- Application portability among Hosts (Write once, Run Anywhere)
- OS independence
- Hardware independence
- Does NOT necessarily allow a single application to run on Any Network.

OCAP 1.0 and 2.0

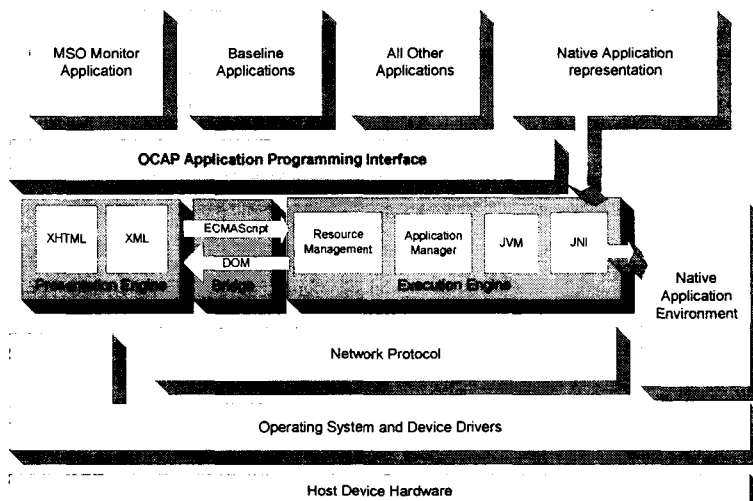
→ OCAP 1.0

- Execution Engine (EE)
 - JVM, JDK 1.1.8, pJAE 1.2, JavaTV, JMF
- Based on MHP 1.0.2

→ OCAP 2.0

- Extends 1.0
- Presentation Engine (PE) and Bridge to EE
 - XML 1.0, XHTML 4, CSS 2, DOM 2, ECMAScript
- Based on MHP 1.1

OCAP 2.0 API



Application Support

- **pJAVA - Execution API**
- **JavaTV - Service Information and Channel Selection**
- **Java Media Framework - Media control**
- **MHP DSMCC - Broadcast data**
- **Java Native Interface - Native application interface**

17

Application Lifecycle

- **OCAP Uses the MHP Application Listing and Launching APIs**
- **OCAP Extends MHP APIs to Unbound Applications**
 - Uses XAIT, extension to MHP 1.0.2 AIT
- **Special Unbound App: The Monitor Application**
 - Can control lifecycle of other applications

18

Monitor Application

- **Optional Operator-defined Unbound Application**
- **Validates Allowed Unbound Applications Through Application Filtering**
- **Control of Copy Control Bits and Output Resolution Reduction**
- **Resource Contention Management**
- **Management of Persistent Storage for Unbound Applications (MHP 1.0.2)**
- **Default Settings for Each Function in the Absence of a Monitor Application**

19

OCAP-ARIB-MHP Harmonization

- **ITU Identifies Common Procedural Environments**
 - See ITU Documents 6M/117 and 6M/49-E
- **MHP Umbrella Group (MUG) Working to Unify MHP, OCAP and ARIB**
 - Goal is to create globally executable MHP (GEM) which runs anywhere
 - MUG will try and work with ITU as well

20

Common CORE APIs to OCAP, MHP and ARIB

java.awt	java.util	javax.tv.serviceguide	java.math	org.dvb.application
java.awt.event	java.util.zip	javax.tv.servicenavigation	java.rmi	org.dvb.dsmcc
java.awt.image	javax.media	javax.tv.service.selection	java.security.spec	org.dvb.event
java.beans	javax.media.protocol	javax.tv.service.transport	javax.net	org.dvb.io.ixc
java.io	javax.tv.graphics	javax.tv.util	javax.net.ssl	org.dvb.io.persistent
java.lang	javax.tv.locator	javax.tv.xlet	javax.security.cert	org.dvb.lang
java.lang.reflect	javax.tv.media	org.davic.media	org.davic.mpeg	org.dvb.media
java.net	javax.tv.media.protocol	org.davic.resources	org.davic.mpeg.sections	org.dvb.net.ui
java.security	javax.tv.net	org.havi.ui	org.davic.net	org.dvb.net.rc
java.security.cert	javax.tv.service	org.havi.ui.event	org.davic.net.dvb	org.dvb.test.ui
Unique to OCAP				
org.ocap.application	org.ocap.hardware.pod	org.ocap.resource	org.ocap.system.error	
org.ocap.event	org.ocap.media	org.ocap.service	org.ocap.ui.event	
org.ocap.hardware	org.ocap.net	org.ocap.system		
Unique to MHP 1.0				
org.davic.mpeg.dvb	org.davic.net.tuning	org.dvb.net.tuning		
org.davic.net.ca	org.dvb.net.ca	org.dvb.si		
Unique to DASE-1				
com.sun.awt	org.atsc.carousel	org.atsc.graphics	org.atsc.si	org.w3c.dom.css
com.sun.lang	org.atsc.data	org.atsc.management	org.atsc.system	org.w3c.dom.events
java.text	org.atsc.dom	org.atsc.net	org.atsc.trigger	org.w3c.dom.html
java.util.jar	org.atsc.dom.environment	org.atsc.preferences	org.atsc.user	org.w3c.dom.stylesheets
javax.tv.carousel	org.atsc.dom.html	org.atsc.registry	org.atsc.xlet	org.w3c.dom.views
org.atsc.application	org.atsc.dom.views	org.atsc.security	org.w3c.dom	

21

OCAP-DASE Harmonization

- **ATSC T3/S17 has identified goals for potential harmonization**
 - Enable an OCAP receiver to process DASE content
 - Reduce cost of receivers by having greater commonality
- **CableLabs meeting with T3/S17 in June**
- **ATSC was invited to join MUG but declined**
- **DASE over cable transport not currently defined**
- **DASE only supports broadcast, no return channel**

22

Thank you

Malticast
Interact with the Future
The Next Step in Digital Broadcasting