

maCrovision®



Download Acquisition Mode

System overview and DAM time requirements

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Macrovision Overview

Technology provider for digital entertainment

- Recent acquisition of Gemstar-TV Guide
- Top tier customers include Sony, Sanyo; others unannounced
- On-screen guide products, TV metadata
- Services infrastructure for data delivery
- Focus on software and services: not an OEM

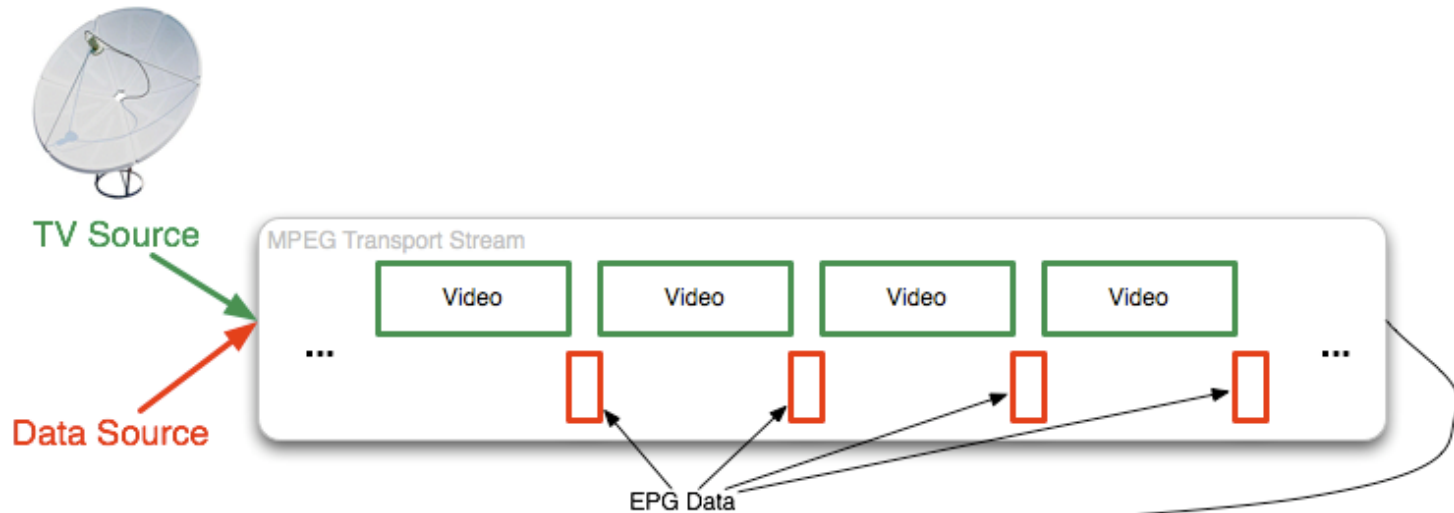
Primary EnergyStar Concern: DAM Time

- Direct impact on EPG software, TV metadata delivery
- Can't speak to power utilization as a software provider
- Coordinating with CE OEMs on DAM power requirements

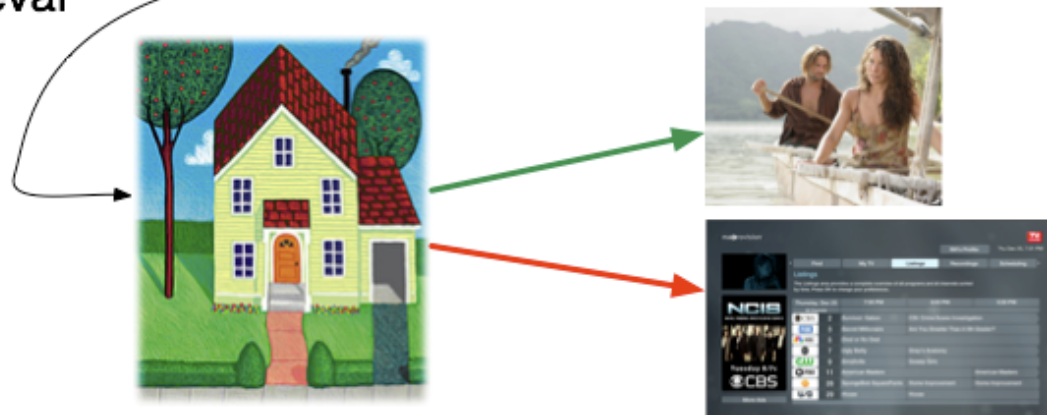


Data Delivery Overview

Data Insertion



Data Retrieval





Data Delivery Overview (cont'd)

- EPG data and other data delivered in parallel with video stream
- Tuner must be tuned to channel with EPG data to receive it; limits data download to when TV isn't in use
- Available bandwidth determined by rate of interleaving data with video
- Errors may require “restart” of data download
- Current estimated maximum DAM time is ~3hrs
 - More detailed measurements are in progress

DAM time is a function of how much data needs to be delivered, and how much bandwidth is available to deliver it



DAM Time and Bandwidth

DAM Time is a Direct Result of Available Bandwidth

- Lower bandwidth requires more download time

Current Bandwidth Allocation

- Purchased from networks (CBS, PBS / National Datacast)
- Purchased from MSOs
- Typically 28Kbps

Inflexibility to Increase Bandwidth

- Bandwidth allocation controlled by partners, not EPG providers or CE OEMs
- EnergyStar STB specifications (2 hour DAM time) feasible due to MSO control of bandwidth and end-to-end system



DAM Time and Data Size

DAM Time is a Direct Result of Data Size

- More data requires more download time

EPG Channel Data

- The number of channels is large (and growing)
 - Switched digital video, cable plants > 1GHz, and other trends are contributing factors
- Overlapping services footprints in some geographies grow data size dramatically
 - Multiple channel lineups delivered to TV, filtered based on actual service available to local TV

Advertising Data

- Currently a small number of ads are delivered multiple times per day



Future Considerations for DAM

Data Size Only Increasing

- Growing cable lineups
- User expectations for richer experience
 - Graphics, Celebrities, Searching, Themes
- Secondary applications developing: advertising, firmware update, emergency alert, etc

Alternate Sources of Bandwidth

- Long term, Internet bandwidth may replace broadcast as the distribution channel for EPG data
- Short term, expect very small percentage of TVs connected to the Internet

Listings Information

The screenshot displays the Macrovision TV Guide interface. Annotations with red boxes and arrows point to various elements:

- Short Description**: Points to the text "Survivor: Gabon 'Say Goodbye to Gabon'".
- Live / Recorded**: Points to the "Live" button.
- Closed Captioning**: Points to the "CC" button.
- Channel Logo**: Points to the CBS logo.
- Date & Time**: Points to the text "Thursday, Dec 25 7:00 - 8:00 PM".
- Channel Number**: Points to the number "2" next to the CBS logo.
- Show Title**: Points to the text "Survivor: Gabon".

The interface includes a "TV GUIDE" logo, the date and time "Thu Dec 25, 7:39 PM", and a list of channels and programs. The "Survivor: Gabon" program is highlighted.

Channel	Program	Time
CBS 2	Survivor: Gabon	7:00 - 8:00 PM
FOX 3	Secret Millionaire	8:00 PM
NBC 5	Deal or No Deal	8:00 PM
EW 7	Ugly Betty	8:30 PM
EW 9	Smallville	8:30 PM
PBS 11	American Masters	8:30 PM
NBC 28	SpongeBob SquarePants	8:30 PM
USA 29	House	8:30 PM

Recommendations – Reality TV

The screenshot shows the Macrovision TV Guide interface. At the top left is the 'maCrovision' logo. At the top right is a 'TV GUIDE' logo and the text 'Marcy's Profile' and 'Thu Dec 25, 7:36 PM'. Below the top navigation bar are tabs for 'My Media', 'Find', 'My TV', 'Listings', and 'Recordings'. The main content area is divided into three columns: 'On Now', 'HDTV', and 'Reality Hot List'. The 'On Now' column lists 'Ugly Betty' (Oct 18 6:00 PM ABC), 'House' (Oct 17 6:00 PM FOX), and 'Reba' (Oct 18 2:00 PM WB). The 'HDTV' column lists 'Kathy & Kim' (Oct 18 7:00 PM NBC), 'Grey's Anatomy' (Oct 18 7:00 PM ABC), and '30 Rock' (Oct 18 7:00 PM NBC). The 'Reality Hot List' column lists 'Kathy Griffin: Everybody Can Suck It' (Oct 17 9:00 PM), 'Hogan Knows Best' (Oct 18 2:00 PM VH1), and 'Kid Nation' (Oct 17 6:00 PM CBS). On the left side, there is an 'eHarmony' advertisement with a 'Get Matched' button and a 'More Ads' link. Annotations with red boxes and arrows point to specific elements: 'Advertising Banner Ad' points to the eHarmony ad; 'Editorial Hot List' points to the 'Reality Hot List' header; 'Show Photo' points to the photo of Kathy Griffin; and 'Title, Time, Channel' points to the text of the 'Kathy Griffin' entry.

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TV GUIDE

Marcy's Profile Thu Dec 25, 7:36 PM

My Media Find My TV Listings Recordings

Advertising Banner Ad

Editorial Hot List

On Now HDTV Reality Hot List

Ugly Betty Oct 18 6:00 PM ABC

House Oct 17 6:00 PM FOX

Reba Oct 18 2:00 PM WB

Kathy & Kim Oct 18 7:00 PM NBC

Grey's Anatomy Oct 18 7:00 PM ABC

30 Rock Oct 18 7:00 PM NBC

Kathy Griffin: Everybody Can Suck It Oct 17 9:00 PM

Hogan Knows Best Oct 18 2:00 PM VH1

Kid Nation Oct 17 6:00 PM CBS

eHarmony

Get Matched

More Ads

Show Photo

Title, Time, Channel

Show Information – Synopsis

macrovision®

TV GUIDE

Bill's Profile Thu Dec 25, 7:31 PM

Series Art

Call Letters

Source

Synopsis

Long Description

NCIS
NAVAL CRIMINAL INVESTIGATIVE SERVICE
Tuesday 8/7c
CBS

More Ads

Back

Synopsis

Past Episodes

Cast

Series Photos

Browse Network

Page Up

Page Down

CSI: Crime Scene Investigation
Thu Dec 25 8:00 - 9:01 PM CBS 02 CABLE

Las Vegas criminologists use scientific methods to solve grisly murders in this unusually graphic (and hugely popular) drama, which inspired a host of other cop-show 'procedurals.' Methodical Gil Grissom heads the team, assisted by Catherine Willows. An immediate ratings smash for CBS, the series adroitly mixes painstaking deduction, gritty subject matter and intriguing characters. The network quickly capitalized on its megahit with spin-offs 'CSI: Miami' and 'CSI: NY.'

Celebrities – Biography

maCrovision®

TV GUIDE

Thu Dec 25, 7:31 PM

Bill's Profile

Celebrity Photo

William Petersen

Celebrity Biography

William Petersen has a distinguished background in film, theater and television. His television credits include the films "Long Gone," "The Rat Pack," "The Kennedys of Massachusetts," which won a Golden Globe Award, "The Beast" and "Keep the Change." Petersen also serves as executive producer on CSI and was nominated in 2003 for a Golden Globe Award for his portrayal of Gil Grissom, the lead investigator.

His feature film credits include "To Live and Die in L.A.," "Manhunter," "Cousins," "Young Guns II," "Fear," "Hard Promises," which he also produced, and "The Contender."

Celebrity Cross-referencing

Back

Biography

TV Listings

Add to Favorites

Page Up

Page Down

More Ads

NCIS
NAVAL CRIMINAL INVESTIGATIVE SERVICE
Tuesday 8/7c
CBS

Search – Title, Actor, etc

The screenshot displays the Macrovision TV Guide interface. At the top left is the 'maCrovision' logo. At the top right is a 'TV GUIDE' logo and the date/time 'Thu Dec 25, 7:31 PM'. Below the logo is a navigation bar with buttons for 'Settings', 'My Media', 'Find', and 'Listings'. The 'Find' button is highlighted, and a red box is drawn around it with a red arrow pointing to a text box that says 'Search for: Title, Actor, Director, etc.'. Below the navigation bar is a 'Find' section with the text 'The Find area allows you to search for your favorite program by category, alphabet or personal keyword.' Below this is a 'Search' section with a 'Search' button and a 'HDTV' button. To the left of the 'Search' section is a 'Favorites (Generic)' section with a list of search criteria: 'Title', 'Actor', 'Director' (highlighted), 'Guest Star', and 'Writer'. To the right of the 'Search' section is a numeric keypad with letters A-Z and numbers 1-0, and buttons for 'CLEAR', 'SPACE', and 'SEARCH'. On the left side of the interface is a large advertisement for 'NCIS' (Naval Criminal Investigative Service) featuring the show's cast and the text 'Tuesday 8/7c CBS'. Below the advertisement is a 'More Ads' button.

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TV GUIDE

Thu Dec 25, 7:31 PM

Bill's Profile

Settings My Media Find Listings

Find

The Find area allows you to search for your favorite program by category, alphabet or personal keyword.

Alphabetical Search HDTV

Favorites (Generic)

Title

Actor

Director

Guest Star

Writer

Search for: Title, Actor, Director, etc.

A B C D E F

G H I J K L

M N O P Q R

S T U V W X

Y Z 1 2 3 4

5 6 7 8 9 0

CLEAR SPACE SEARCH

NCIS

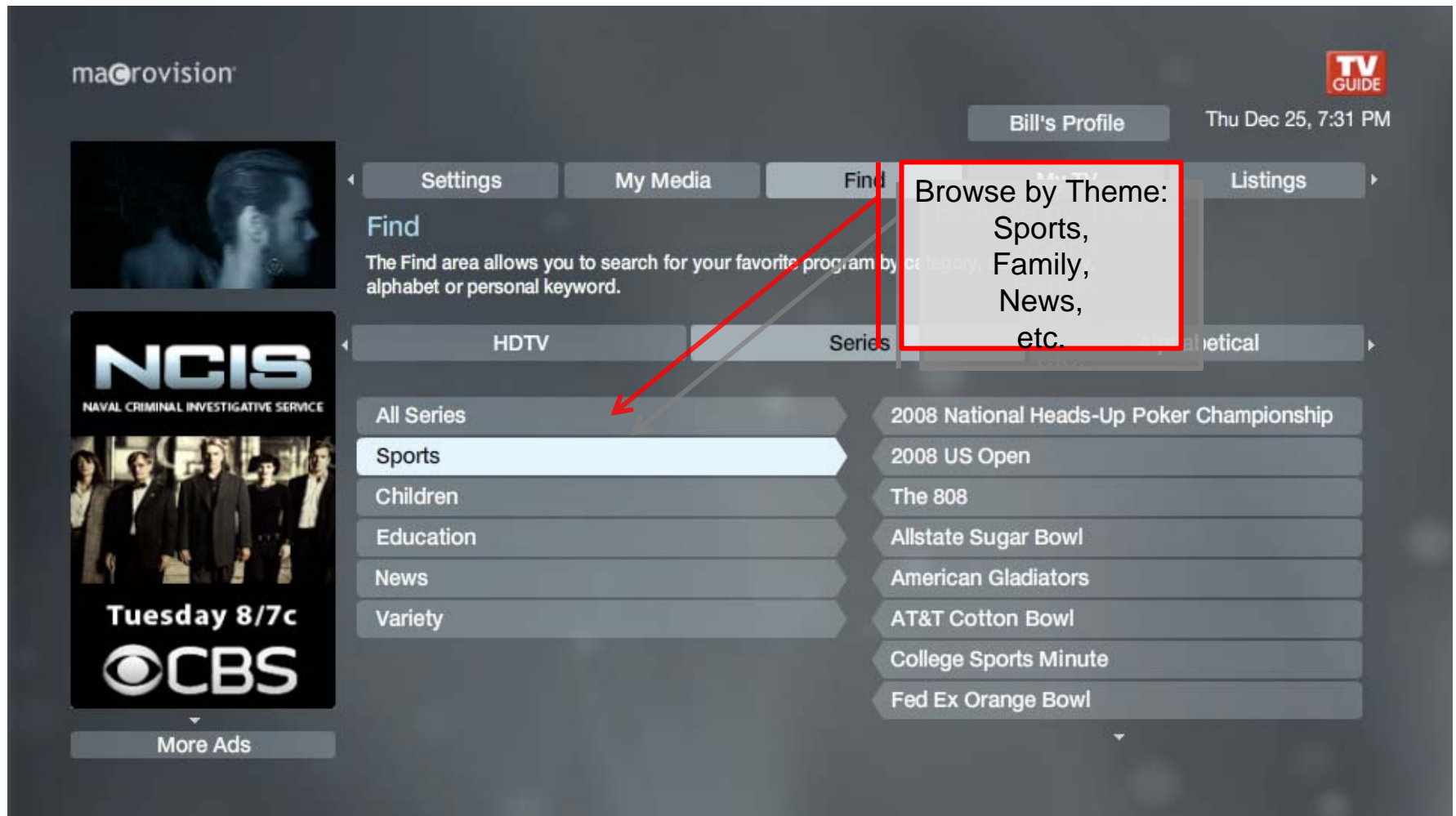
NAVAL CRIMINAL INVESTIGATIVE SERVICE

Tuesday 8/7c

CBS

More Ads

Search – Themes



The screenshot displays the Macrovision TV Guide interface. At the top left is the 'maCrovision' logo. At the top right is a 'TV GUIDE' logo and the date/time 'Thu Dec 25, 7:31 PM'. Below the logo is a 'Bill's Profile' button. The main navigation bar includes 'Settings', 'My Media', 'Find', and 'Listings'. The 'Find' section is active, showing a search bar and the text: 'The Find area allows you to search for your favorite program by category, alphabet or personal keyword.' Below this is a 'Browse by Theme' menu with options: 'All Series', 'Sports', 'Children', 'Education', 'News', and 'Variety'. A red arrow points from the 'Sports' option to the '2008 National Heads-Up Poker Championship' in the list of programs. The 'Sports' option is highlighted in blue. The list of programs includes: '2008 National Heads-Up Poker Championship', '2008 US Open', 'The 808', 'Allstate Sugar Bowl', 'American Gladiators', 'AT&T Cotton Bowl', 'College Sports Minute', and 'Fed Ex Orange Bowl'. On the left side, there is a promotional banner for 'NCIS: NAVAL CRIMINAL INVESTIGATIVE SERVICE' airing 'Tuesday 8/7c' on 'CBS', with a 'More Ads' button below it.

maCrovision

TV GUIDE

Thu Dec 25, 7:31 PM

Bill's Profile

Settings My Media Find Listings

Find

The Find area allows you to search for your favorite program by category, alphabet or personal keyword.

HDTV Series

Browse by Theme:
Sports,
Family,
News,
etc.

All Series

Sports

Children

Education

News

Variety

2008 National Heads-Up Poker Championship

2008 US Open

The 808

Allstate Sugar Bowl

American Gladiators

AT&T Cotton Bowl

College Sports Minute

Fed Ex Orange Bowl

NCIS
NAVAL CRIMINAL INVESTIGATIVE SERVICE

Tuesday 8/7c

CBS

More Ads



Other Metadata Types

Sports

- League logos, team logos, records, team profiles, athlete / coach profiles, etc

Awards

- Emmys, Grammys, Oscars, Peabodys, Nominees, etc

Celebrity

- Fast-facts, Relationships, etc

Other Recommendation Hot Lists

- Family, Teen, Spanish, etc

Each of the above will provide a more entertaining user experience

Also contribute to overall data size and total required DAM time



Considerations for DAM

Limit DAM to 4 hours per day

- 3 hours per day for current applications
- 1 hour per day to allow growth for future applications

Provide DAM “opt-out” in Initial Setup and Setup menu

- Don't consume power if user isn't using integrated on-screen guide

Special provisions for Internet connected TVs

- Don't consume power in sleep mode if data can be retrieved from Internet while powered on

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Thank you.
For more information...

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