



PowerUp™
Browser Solution



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INTERFACES

VOD/PPV

IP DEVICES

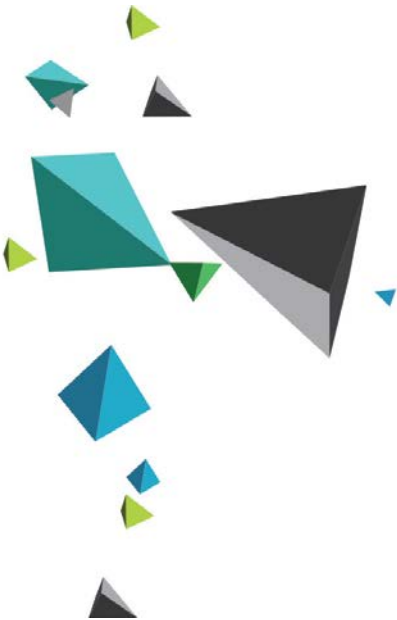
PowerUp **BROWSER** INTRODUCTION

Ever since the number of programming channels superseded the capability of a scroll guide leading to the development of the first interactive programming guide, the interest for more sophisticated applications with better look and feel transcended 'nice to have' and became a 'must have'.

It was at this point Zodiac Interactive was having enormous success with developing games to run on the limited resources of the then standard STB. Out of this sophisticated work and the need to ensure the games ran properly in the STB next to other applications came Zodiac's realization for the need of a presentation engine that would create the ability for sharing resources across applications to make sure all of them ran properly.

Further, the growth of the OTT market and the proliferation of web based mobile devices created a need to have applications run seamlessly across all managed and unmanaged devices in a service operator's ecosystem. This evolution thus becoming the basis for the PowerUp Browser.

A standard that is driving the new STB user experience further is HTML5. HTML5 provides a common markup language, ensuring a consistent web experience on every consumer device. Prior to HTML5, developers were required to author and support separate native applications for every operating system, screen size, device, and environment. The PowerUp browser through its leveraging of HTML5 is now being viewed as a standard for video user interfaces on current and next generation STBs



The PowerUp Browser

The PowerUp Browser solution has been developed as a service-based, layered architecture, providing either a thin or full client front-end supported by a robust service layer that separates the presentation layer from the underlying business logic. This creates the key ability to change the business logic for marketing or pricing needs without lengthy integration needs at the presentation layer.

This PowerUp Browser is based on open standards for increased consumer enhancing ITV functionality, and it is designed and engineered for these key industry requirements for success:

Standards Compliant

PowerUp Browser is an application platform for IP, QAM and hybrid-managed devices. It is compliant with the numerous standards by W3C, OIPF, DLNA, HbbTV, CEA, SCTE, ITU, ETSI and DVB. In addition, full support is provided for multiple media formats, including HTTP Live Streaming, H.264 video and AAC audio codecs.

Interoperability

PowerUp HTML5 can interoperate with the PowerUp Video Broadcast System (VBS) and the PowerUp middleware services layer (The PowerUp Platform) providing HTML5 applications and legacy applications with full access to the services that the underlying IP, QAM and hybrid STB platform offer.

OEM Platforms

The PowerUp Browser's porting layer enables rapid portability to any new target platform and transparent utilization of new services and capabilities available on different OEM platforms.

Next Generation

PowerUp Browser is available for next generation set-top boxes and IP devices. The PowerUp Browser allows for the simultaneous execution of applications of different natures, including native applications, PowerUp scripted applications and HTML5/JavaScript (JS) applications.

Key Features and Advantages

Based on industry standards

The Zodiac PowerUp Browser is based on the industry standard products WebKit and Google V8 and it is optimized for the video service ecosystem. As a result, Zodiac clients have the ability to selectively adopt continuing advancements in the W3C standards.

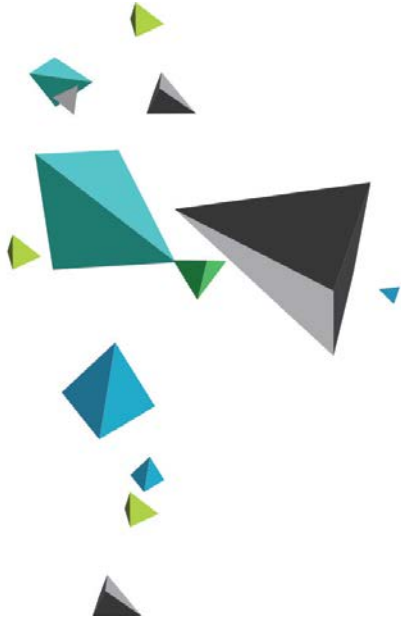
Maximizes graphics and video capabilities

Beneath PowerUp Browser lies a thin Zodiac porting layer designed to deliver maximum power of the managed device's graphics and video capabilities. It also provides PowerUp Browser with transportability across multiple managed device platforms.

HTML5 capability and compliant

PowerUp Browser is highly portable and easily extendable with future HTML5 features supporting most HTML5 web applications.





Integration with full PowerUp Suite

PowerUp Browser is integrated with the Zodiac PowerUp VBS Stack, PowerUp 2.0 Framework and other service layers. This provides full access to all existing STB platform capabilities; QAM video, VOD services, DLNA client discovery, etc. Additionally, PowerUp 2.0 applications have the ability to run HTML5 applications as channel services.

Fastest execution environment for managed devices

Zodiac combines the highly optimized JavaScript engine with a JA compiler to compensate for limited capabilities of managed devices. This delivers the fastest JavaScript execution environment available today for managed devices.

Smart resource cache

The PowerUp Browser has a smart resource cache. The reworked WebKit resource caching mechanism for PowerUp Browser carefully manages the available video memory size and image usage patterns for optimizing animation smoothness.

Improves graphic performance

Utilization and optimization of Google Skia has been improved for efficient usage of the hardware graphics pipeline. As a result, the asynchronous graphics model improves graphics performance of the HTML5 applications

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