



Myrio* Middleware Maximizes the 'Wow-Factor' in Intel® Architecture IP-Digital Set Top Boxes

Summary

Service provider middleware enables implementation of the software that broadband operators need to generate new revenue from the rollout of new services, including digital video on demand, Web services, digital content and games.

Myrio* Corporation is a leading provider of middleware designed to "put broadband operators in the video business." Myrio's strategy is to maximize flexibility and choice for service providers by developing end-to-end middleware solutions supporting video standards and independent of underlying IP-digital set top box operating systems.

Myrio is porting its middleware to flexible and highly scalable IP-digital set top boxes based on Intel® Architecture and designed for large-scale deployment.

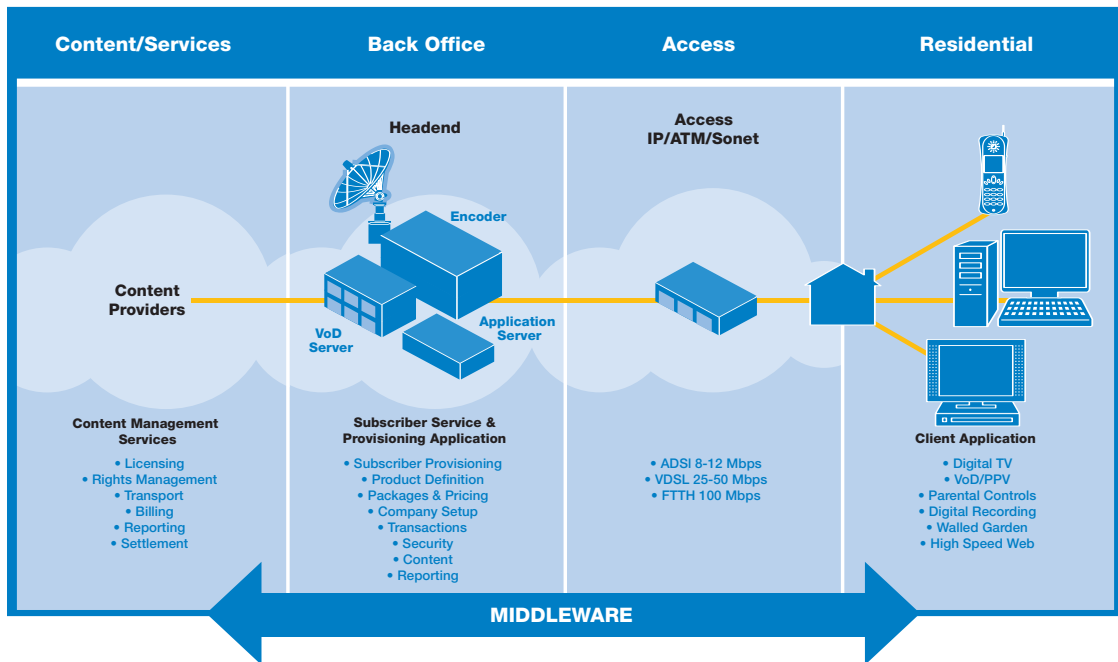
Intense competition to provide high-revenue digital content and services to the digital home is creating unique opportunities and challenges for broadband service providers. The challenge for these operators is how to complete the 'triple-play' of voice, video and data by adding differentiated IP-TV and video services.

The goal of Myrio Corporation is to help broadband operators stay a step ahead of the competition by implementing unified IP services with end-to-end middleware for back-office servers in addition to IP-digital set top boxes (IP-DSTB) in the living room.

By keeping its solutions agnostic to operating systems, application servers, and databases, Myrio offers broadband operators the flexibility to choose the set top box, VoD server, application server, and database that best fits their unique requirements for new high-revenue services, including digital video on demand (VoD), Web services, digital content and games.

According to Myrio, IP-DSTB designs based on Intel® Architecture provide service providers with a combination of flexibility, application processing performance and the ability to help keep operating expenses to a minimum.

Figure 1 Middleware spans the video distribution system, from content management to service provisioning, access and client applications.¹



“Myrio® is helping broadband operators take advantage of the exponential revenue potential of bundled services. Robust and full-featured IP-DSTB platforms based on Intel® Architecture enable operators to deploy a wide variety of services that they could not otherwise offer.”

Kelly Smith
Vice President of Business Development
Myrio

Pioneering Support for IP Digital TV Services

Based on its direct experience as a former Internet service provider, Myrio pioneered the development of end-to-end IP video solutions beginning in 1996. Now serving 50 service providers worldwide, Myrio provides middleware solutions designed to help telcos maximize average revenue per unit (ARPU) while building customer loyalty.

- Myrio TotalManage® is head-end middleware for packaging, provisioning and delivering IP services. It is built on a Java® 2 Enterprise Edition (J2EE) architecture which enables interoperability with other J2EE-compliant servers, in addition to legacy infrastructure including service provider billing and operation support systems.

- Myrio Interactive® is client middleware for the digital set top box that supports the overall consumer experience, including applications, user interfaces and parental control solutions. This small-footprint Java-based application is designed to maximize flexibility and scalability in a variety of IP-DSTBs with a choice of operating systems. According to Myrio, Intel® Architecture-based IP-DSTB platforms provide the processing intelligence, flexibility and scalability to complement its middleware solutions.

Enhancing the ‘Wow Factor’

Myrio is working with major set top box manufacturers to implement Myrio Interactive middleware on platforms based on the Intel® 830M4 chipset and a variety of Intel® processors, providing the processing performance to meet a variety of important service provider requirements.

These platforms, which can range from a basic set top box to a configuration with personal video recording (PVR) capability, have the local intelligence to operate autonomously from the application and video servers. This capability helps to free available bandwidth and optimize server resources. In addition, high levels of resident application performance help service providers deliver rich user experiences and expanded functionality, while offering subscribers compelling choices of available video content and service packages.

“The more processing power and memory available on the set top box the better—higher levels of processing capability enhances the user experience and enables the operator to offer more services than would be possible otherwise. Intel® Architecture processing performance helps service providers enhance the wow factor.”

Kelly Smith
Vice President of Business Development
Myrio

According to Myrio, local processing performance and the storage of persistent data on nonvolatile RAM on the set top box can help to enhance the overall user experience with applications and functions including:

- Demanding “walled garden” Web portal applications
- Flash-based applications and games
- Graphical user interfaces
- Channel changes
- Screen repainting

Myrio also says that Intel® Architecture processing performance can help to create a more responsive interactive program guide (IPG) experience, allowing consumers to press a selection and have the IPG display the requested information without perceived latency.

Overall, Myrio has found that a high-performance set top box needs to communicate with the application server significantly less frequently than a less-capable platform, while supporting a rich mix of services.

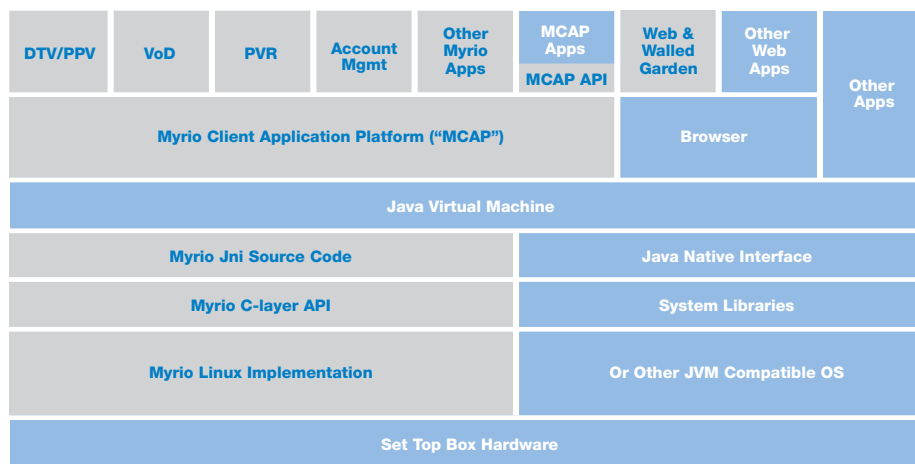
The combination of Intel® Architecture client platforms with Myrio middleware also makes it possible for service providers to customize content for different local service areas.

Support for “walled garden” Web portals lets the operator create and service Web pages and browser interfaces optimized for viewing on a TV display. Users can access local business directories and restaurant menus, or view recorded games from local school sports teams or select from personalized VoD offerings.

Depending on their service provider and the capabilities of their IP-DSTB, subscribers can use these more capable IP-DSTBs to watch digital TV, pause and record live television, download movies and digital music, browse the Web, check stock quotes and make e-commerce transactions.

Myrio Interactive IP-DSTB Middleware

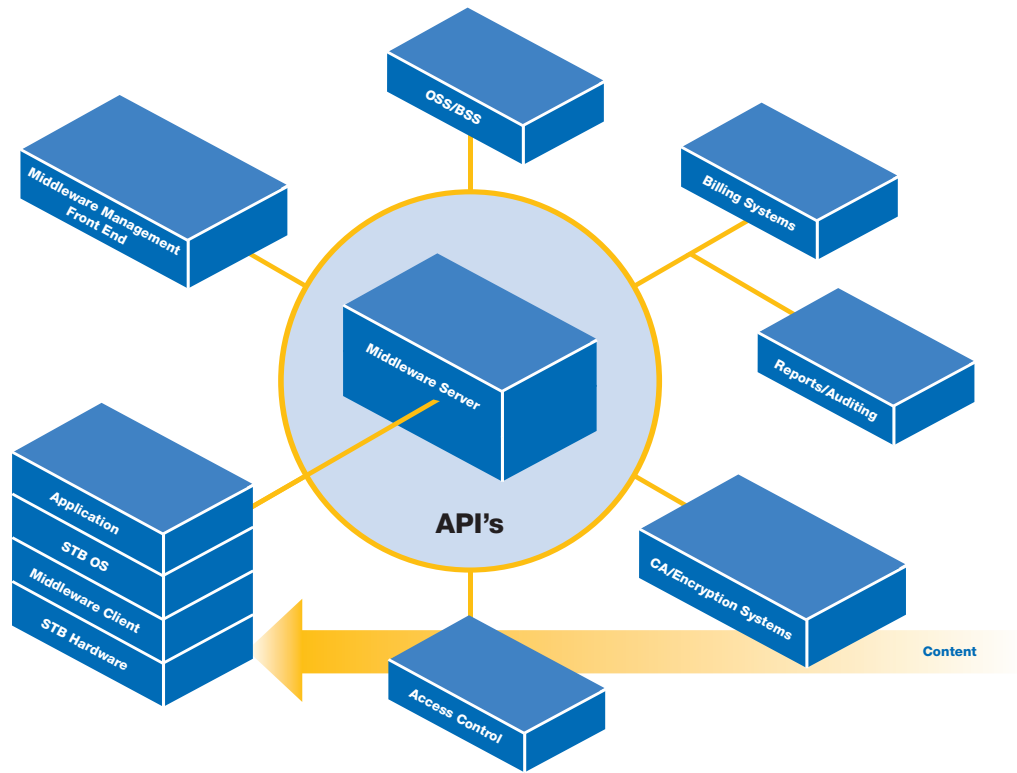
Figure 2 Myrio Interactive* IP-DSTB middleware helps implement a broad range of functionality, supporting the delivery of services including VoD to Web and personalized ‘walled garden’ portals. According to Myrio, Intel® Architecture-based IP-DSTB platforms provide the processing intelligence, flexibility and scalability to complement its middleware solutions.



Supplied by Myrio
 Supplied by Third Party

Middleware Core Functionality

Figure 3 Middleware manages the overall system on many layers, including the network, operational support systems (OSS), billing and security. Middleware must be able to adapt to the unique protocols used by multiple layers.²



Meeting Challenges

Interoperability between IP-DSTBs and the service provider's infrastructure is a major challenge, and one of the core functions of Myrio middleware is to ensure the complete video service operation functions smoothly from the back office to the consumer's living room. Meeting this requirement required Myrio to develop a software architecture designed to easily integrate with video servers together with the portability to run on a wide variety of IP-DSTBs.

The widely adopted Real Time Streaming Protocol (RTSP) is designed to support the efficient delivery of streamed multimedia over IP networks. Another challenge for Myrio is that different vendors tend to implement RTSP in different ways. Myrio has addressed the issue by abstracting RTSP in the Java layer, freeing set top box manufacturers from the burden of integrating their platforms with VoD servers.

Intel® Architecture-based IP-DSTBs have the ability to decode compressed video streams in software, including emerging compression technologies that extend the reach of IP-TV and video services over DSL loops.

Myrio also believes that for the most cost-effective deployments, service providers need to support a variety of CODECs in a single set top box, including MPEG-2, H.264 and the Microsoft Windows* Media 9 series. According to Myrio, it is currently not clear to most operators which of these CODECs will emerge as the prevailing standard. One of the principal reasons cited by set top box manufacturers for choosing Intel® Architecture is the ability to flexibly support a variety of emerging CODECs.

OpEx Savings

According to Myrio, an Intel® Architecture-based IP-DSTB running Myrio Interactive middleware can also lead to ongoing operating expense (OpEx) savings for broadband operators. The IP-DSTB has the intelligence to detect errors, and local storage for multiple error screens can help to avoid customer support calls by suggesting troubleshooting steps to resolve common problems.

The combination of Myrio middleware and Intel® Architecture-based IP-DSTB platforms also supports operating efficiencies through:

- Video multicasting to hundreds of thousands of IP-DSTBs simultaneously
- Easier downloading of software upgrades and new meta-data for the IPG, such as the latest movie lists and video content
- Support for the future roll-out of demanding applications and premium services, without replacing the installed base of IP-DSTBs
- Reliable, field-proven platform architecture

Fast Porting and Development

When a new box comes in for evaluation, Intel® Architecture enables Myrio to flexibly test multiple combinations of applications and platforms by installing the appropriate operating system on the set top box and downloading a Java Virtual Machine (Java VM).

In addition, the multiple software development tools and utilities available for Intel® Architecture platforms enable Myrio engineering teams to conduct rapid prototyping, including view applications and evaluate performance.

“Operators want to provide a mix of services to generate additional monthly revenues. Intel® Architecture-based IP-DSTBs provide quality media support and enhanced user experiences, especially with premium services.”

Kelly Smith
Vice President of Business Development
Myrio

“You cannot underestimate the value of tools written to run on Intel® Architecture for rapid prototyping. Demonstrations go faster and out-to-market more quickly—equating to more software solutions and more choices for service providers.”

Eddie Drake
Vice President of Engineering
Myrio

Conclusion

When it comes to meeting the demand for IP digital services for the digital home, broadband operators are interested in maximizing their available choices, including the ability to meet customer needs by offering a variety of set top boxes with a broad range of applications, services and functionality including PVR capability.

The solution adopted by Myrio is to abstract support for digital services protocols into the middleware layer and to combine its interoperable middleware solution with a wide range of set top boxes that deliver the performance and flexibility of Intel® Architecture.

According to Myrio, Intel® Architecture supports the usability and application flexibility that allows broadband operators to design, develop, evaluate and deploy new services that help generate new revenue and sustain consumer loyalty.

In the words of Myrio's Vice President of Business Development Kelly Smith, “Myrio is making IP-TV a reality, and Intel is helping to set the stage for digital content delivery within the digital home.”

**For more information, visit the Intel Consumer Electronics home page at:
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