Standards Certification:
Opening Doors to Industry Growth

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Executive Summary

Gaming technology is transforming as operators begin to implement networks and business applications based on Internet Protocol (IP) and other technology industry standards. As they seek to achieve their revenue and patron loyalty goals, their operations must be cost-effective and adaptable. However, the complexity associated with proprietary games, systems, and peripherals poses significant cost and time-to-market challenges for operators. Increasingly, the industry is recognizing the value of simplifying game, system, and peripheral integration through the implementation of standards. By establishing standards for communication protocols that enable these systems to work together, the Gaming Standards Association can unleash the full potential of networked gaming floors to stimulate industry growth and profitability.

Market Overview

Historically, each manufacturer viewed its protocols as a unique competitive advantage, enabling it to capture a high percentage of operators' floors and back-office systems. As a result, almost 50 different protocols were being used and supported within the gaming industry. And although proprietary protocols effectively "locked up" a customer opportunity, they also introduced a number of challenges for operators and for manufacturers themselves.

Proprietary Protocols Limit Growth

With the introduction of a new protocol by a systems manufacturer, game manufacturers had to play catch-up to make their games compatible. Although this bought a temporary market advantage for the manufacturer who was first to market, it also limited the universe of games available for a given platform. Systems providers had to be sure that their systems supported existing games and peripherals from a wide range of manufacturers, as well as back-office accounting, tracking, and other systems. Finite development and support resources also forced game manufacturers to choose which systems to support.

As IP technologies and standards-based communication protocols from the personal computing, wireless communication, and networking worlds are enabling new features and capabilities in personal computing and mobile phones, operators want to provide their gaming patrons with experiences that include rich media and personalization capabilities. Traditional gaming protocols and existing networks are not designed to support these requirements for delivering rich media, bi-directional network communication, or automatic updates. And as operators seek to upgrade their offerings and their competitive advantages, they do not want to be limited in their game offering choices, nor can they afford the complexity, high costs, or delay associated with difficult protocol integrations.

> Standard protocols will open the market for our customers, enabling them to purchase the features and capabilities that they want and increasing their—and their patrons'—satisfaction.
>
> —Steve Sutherland, Konami Gaming

Delayed Time to Market and Missed Opportunities

Changes to basic protocols, or incomplete implementations, often result in communication problems. Even when the SAS protocol became widely used for gaming enterprise systems, inconsistent implementations across manufacturers, across product lines, and even within manufacturers' own products created problems. Whether problems occur with games, systems, or devices, the result is delay, re-work cost, and slow time-to-market. With communication protocol issues to be addressed, games risk not being approved or turned on by regulators as quickly. Incompatibilities lengthen deployments and for operators, delays in introducing new games represent lost revenue.

Protocol changes also represent hardship for manufacturers' customers. For operators, protocol changes usually introduce additional cost and risk. Updating flash memory or game features on the gaming floor requires dozens of technicians to physically change out chips on each machine, which is labor-intensive and can take days or weeks. It also introduces human error, resulting in accidentally skipped machines or other oversights. With several thousand slot machines on the floor, it can take up to a week to update all of the machines, limiting operators' marketing flexibility. For example, if on Wednesday, the casino had an opportunity to book a weekend boxing match, it is impossible to update all of the machine displays in time to advertise the match to casino players before the event occurred.

Finally, committing to support numerous existing protocols leaves few extra resources for innovating capabilities and products. Once systems communicate, protocols are invisible. They do not enhance the player experience or deliver a competitive advantage to operators. When complexity slows innovation, manufacturers limit their growth opportunities.

> With protocol standardization, a manufacturer can leverage development resources across more markets. We can address opportunities in more markets with the same product.
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> —Robert Siemasko, WMS Gaming

Ongoing Support and Management

Protocols have extensive support, troubleshooting, and training requirements associated with them, and managing existing protocols, forward extensions, and several prior versions adds up. Manufacturers must maintain staff with different engineering skills for maintenance and support, including people with specialized experience and historical knowledge of prior protocols and versions. Multiple versions often demand a small army of technical experts to help customers with integration and implementation challenges, as well as to pass extensive testing and regulatory approval processes.

> As standardized protocols become widely deployed, we anticipate that our maintenance and support requirements will greatly diminish, freeing us for additional innovation and accelerating time to market for new products.
>
> —Bruce Rowe, Bally Technologies

The High Cost of Complexity

In addition to the cost of supporting support multiple versions of systems and games, manufacturers often incur costs to resolve errors once a system or game is installed on the operator's floor. Fixing SAS communication discrepancies frequently requires manufacturers to go back to re-work their protocol implementations. Complex multi-protocol deployments can also require workarounds or rework, which increase deployment costs and therefore, reduce margins. The cost of developing and supporting systems or games for different protocols is high, especially when there are no new competitive advantages provided by one version over another.

The Industry Vision is Standards-Based

With today's gaming customers clearly accustomed to highly sophisticated visuals, instant access to all forms of entertainment and information, and immediate results or feedback, games and systems must be able to support these needs. This not only requires leading-edge games, it requires the capabilities of a networked gaming floor to support the data- and bandwidth-intensive functionality required for successful operations and growth. While clearly an improvement when introduced, SAS cannot support the bidirectional information needs of today's increasingly networked floors. It is not efficient, cannot support the rich media capabilities of innovative games or player tracking, promotional, and other systems.

Standards Unleash Industry Potential

As the technology industry increasingly established open standards, high levels of interoperability unleashed a flood of device, functionality, media, and content innovation. For example, in 1994, open standards fueled the growth of the Internet and development of capabilities that allow us to email anybody, anywhere; play MP3 music files on any platform; access any web page; live wirelessly with Bluetooth and WiFi; and transform the way we work, live, and play.

Open technology standards are also driving advances in gaming. For example, game and system manufacturers are turning to Extensible Markup Language (XML) and other technology industry standards to simplify integration and support increasingly web-based applications. As the industry moves from game applications such as single-purpose slot machines, to all of the potential associated with client/server-based gaming – standardizing connectivity and communication is crucial.

The Gaming Standards Association

The Gaming Standards Association (GSA) has taken the lead in the migration toward protocol standards. As an international trade association, the GSA facilitates the identification, definition, development, promotion, and implementation of open standards to enable innovation, education, and communication for the benefit of the entire industry.

GSA assumed change management of the SAS protocol in 2001, and by the end of 2009, the industry will no longer extend the capabilities of the SAS protocol. Although the SAS protocol will remain in existence for the foreseeable future, GSA has spearheaded development of three standard protocols that will drive the development of new systems, games, and peripherals.

The GSA Game-to-System Protocol

Game-to-System Protocol (G2S) is the communication protocol that unlocks the power of networked gaming and revolutionizes the way information is exchanged between a gaming device and the back of house systems. Based on proven computer industry standard technologies, such as Ethernet, TCP/IP and XML, the G2S protocol supports software download and remote configuration, which paves the way for downloadable games, client/server games, and intranet and Internet gaming environments. It helps create an agile floor that gives operators the ability to quickly adjust to changing business requirements and new opportunities while maintaining the games of today into the future. The G2S protocol also includes Secure Socket Layer (SSL) encryption for securing floor data and providing auditable configuration changes and remote software verification.

The GSA Gaming Device Standards Protocol

The GSA Gaming Device Standards (GDS) protocol is a Universal Serial Bus (USB)-based protocol used to connect gaming peripheral devices such as printers, note acceptors, and card readers to gaming devices. The GDS protocol combines the powerful plug-and-play capabilities of USB 2.0 with the ability to download new firmware to peripheral devices – enabling operators to immediately reduce labor costs and accelerate updates and refreshes.

A Brief Look at the GSA Certification Process

With advent of GSA standards, new games, peripherals, and systems can be tested and certified for conformance with G2S and GDS protocols. The GSA Certification Program consists of testing requirements developed by GSA members, which thoroughly evaluate GSA protocol implementations. The program also contains a feature unique in gaming certification: a certification feedback loop, which provides operators with a way to interact with, and have input into, the Certification Program.

Testing in accordance with defined testing standards also helps ensure consistent implementations of GSA protocols for all member of the gaming industry, and is expected to minimize or eventually reduce the communication handshake incompatibilities that delay implementation and require extra resources for resolving. Operators can expect to encounter fewer issues associated with implementing, supporting, and maintaining diverse protocols while continuously improving their operations and their players' experiences.

Today's systems are not yet plug-and-play because of the diverse protocols currently implemented in most operators' environments. However, as testing standards are completed and more systems, peripherals, and games adhere to GSA standards, the industry can look forward to complete compatibility. Manufacturers will continue to support several protocol standards as this transition occurs over the next five to seven years. Operators can check the GSA Certification Registry database to identify GSA-Certified products and ensure that the product is compliant with GSA standards before purchasing.

The Benefits of Standardization

Although it is still too early to realize the full benefits of certification, manufacturers expect to gain significant advantages from standardization.

Simplified Implementation and Support

Manufacturers can expect to accelerate deployment of new games and systems with higher rates of first-time success. Standards-based, GSA-certified solutions can be phased in and coexist with existing slot floor networks. The ability to automate downloads also reduces labor and minimizes the amount of support that an operator must provide. Although it may take approximately five years to fully migrate existing installations to GSA-certified solutions, ultimately manufacturers will have fewer versions to maintain, and will simplify troubleshooting. With one interface for games and peripherals, they will not need as many specialized staff to support their systems.

With the GSA S2S protocol, device manufacturers simply implement one protocol and they can plug into many manufacturers' systems. S2S is also being used by Class II operators to connect various server-based systems together to provide a central voucher, player tracking, and accounting solution. S2S resolved the problem of voucher compatibility between different class 2 game and system vendors. S2S is also finding its way into other areas such as hospitality and retail.

Reduced Costs

Development can occur once and utilize consistent interfaces across systems, games, and peripheral devices. In addition, fewer resources will be required to localize games for other countries or to modify game systems or computers for numerous different devices.

For example, today configuring peripheral devices for dual-port connectivity to games and promotional content and other back-office systems typically requires customized connectivity. Standards-based interfaces eliminate the need to customize interfaces, modify game systems, or tailor computers simply to make systems work together. Manufacturers can deploy new installations more quickly with less rework and customization – and therefore, higher margins.

> Standard protocols will greatly simplify integration of peripheral devices across multiple platforms, which translates to lower development and support costs.
>
> **—Brandon Knowles, TransAct Technologies**

Protocol standardization also offers manufacturers a way to help their customers reduce operations costs. Less complex systems need less management and require fewer training and support resources, which translates to lower total cost of ownership. For example, each operator can calculate the cost of upgrading gaming device note acceptors each time a new note is released by a country's currency system. In the state of Nevada alone, changing a U.S. Treasury note would require more

than 200,000 slot machines to be opened, the note acceptor accessed, and new software installed. The cost of lost revenue and the cost of the labor is directly proportionate to the size of the operation. With standards-based peripherals, those costs could be significantly reduced.

Enabling Innovation

Just as in the world of networking and software technology, the impact of protocol standardization in gaming will be seen in a proliferation of rich new functionality. Games and systems will compete on their ability to deliver rich features and support operators' business objectives. Games can provide greater interactivity, rich media, and video capabilities; systems can support automation and simplified management practices. Standardized protocols will also make it easier to add features or upgrade capabilities, enabling manufacturers to respond more quickly to competition and capture new market advantages.

> Certification against communication protocols tests features that are deployed today, as well as features that will be created in the future. Full testing and certification assures full compliance with the protocol and allows future-proof platforms and games to be developed without the need for expensive upgrades and redevelopment of older games.
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> **—Gaming Laboratories International**

Achieve the Gaming Vision

As a result of GSA's work to date, the industry's vision of a fully networked, high-performance gaming floor connected with back-of-house operations, real-time player activity, and guest services is on its way to becoming a reality. Networked floors are based on advanced IP network architectures that deliver data, voice, and video to enable dynamic bidirectional polling, game configuration, and data and content transport to and from digital gaming devices. Data generated by each device can be captured to improve gaming floor performance, understand player and game interaction, and drive marketing, loyalty, and promotional strategies.

Specific benefits of networked gaming infrastructures for manufacturers include:

- Compatibility between games and systems opens market opportunities for both. Games can be marketed to operators with any system and manufacturers can now sell to more markets with the same products and not have to support numerous adaptations.
- Ability to add extensions to GSA protocols for new features and if valuable, could eventually be included in the core protocol and allow innovation to benefit everyone

Simplifies Regulatory Approval

Standards-based systems, games, and peripherals can make it easier to reduce floor errors and collect the data required for supporting regulatory compliance. Regulators can more easily validate and certify systems, games, and devices, building a stronger foundation for moving toward global interoperability.

> We expect that G2S will open up the communication to gaming devices, allowing us better control and increased compliance.
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> **—Scott Norman, BCLC**

Join GSA Today

The benefits of protocol standardization are beginning to be realized as new floors and games are deployed. Manufacturers can help guide the development of standards that meet their business requirements by joining GSA. Our membership is growing and includes manufacturers and operators around the world who are committed to fostering industry growth and opportunity through protocol standardization. For more information, or to join GSA, visit www.gamingstandards.com.