TRUTH AND INTEGRITY MATTER:

Scientific Games Successfully Completes GLI Audit

The secure and accurate production of a single instant game is a truly remarkable undertaking. Each game represents thousands of variables, hundreds of coordinated procedures and timely complex synchronization among differing disciplines from Art to Computer Science to Chemistry and more. Expand that scope to more than 2,700 games and over 50 billion tickets annually and one begins to understand the scale and sophistication required by Scientific Games to consistently deliver high quality, secure games from the company's five production facilities to its customers across the globe.

"Game security is the result of years of thoughtful work and a commitment to preventing problems. These systems have become very complex, and it's very important that we make sure that what we have built and use every day are the very best. And that's why Scientific Games has used independent experts to verify our systems since the beginning. We have an obligation to security and auditing is the right thing to do for our lottery customers."

– Joe Bennett
VP of Instant Game Production

When it comes to game security, Scientific Games VP of Instant Game Production, Joe Bennett has firmly established himself as the pre-eminent authority for lotteries around the world. He's worked on game programming and security for more than 30 years with the company's advanced systems that keep lotteries safe and secure. Joe has continuously innovated in the area of security and holds several patents on the processes he developed. Along the way, he's built a dedicated team of security professionals.

We caught up with Joe at Scientific Games' global headquarters in metro Atlanta, where the company's largest of five global instant game manufacturing facilities is located to understand more about game security.

SG recently completed a comprehensive Security Audit. Can you tell us about it?

Joe Bennett
VP of Instant Game Production

Joe: The Security Audit is something we have been doing since 2008. Our goal is to always get the rating of 'Excellent' from the auditor, which I am happy to say we have accomplished. When we began this best practice in 2008, the audit was conducted by Delehanty Consulting. In the past two years, the assessment has been conducted by Gaming Labs International and BULLETPROOF, a GLI Company, as well as Delehanty. One of the interesting components of the audit is that our lottery customers are actually in the building and actively participate. For example, in March of this year, we hosted 25 customers from 12 different lottery jurisdictions. This included professionals with lottery backgrounds in security, product management, IT security, internal audit and executive management. We spend a lot of time with the lotteries – including plant tours, training sessions and Q&A. This allows them to get the most information and greatest benefit during the audit. One thing to note is that SG does not pay Herb Delahanty or GLI. The audit is funded by the lotteries.

"Security and integrity are the cornerstones of every lottery operation. An independent security audit can ensure the mitigation of risk and proactively identify potential vulnerabilities before they cause irrevocable harm. They are integral to our industry's success in ensuring consumer, retailer, and stakeholder confidence."

– Angela Wong, VP of Global Lottery Solutions
Gaming Laboratories International

"Conducting an independent audit is a great way for lotteries to obtain assurance to ensure their own controls and security practices are functioning properly, securely, and effectively. What's more important is when the subject of the audit is game security. The integrity of gaming is paramount when it comes to building public trust and it drives everything we do. It is a pleasure to work with organizations such as Scientific Games that put such an emphasis on security and is extremely transparent during these audits and always looking to improve and strengthen their security posture. At Bulletproof we like to say, 'You can't scratch off security' and SG is a winner in this aspect."

– Gus Fritschie , VP of Security Services
BULLETPROOF, A GLI Company

What is the scope of the audit?

Joe: Primarily this is a security audit focused on game programming security. But it also includes a review of human resources practices, physical security, ticket testing, disaster recovery, business continuity and IT security. And of course, the general process of developing an instant game.

Working with Herb and our lottery customers, we track an instant game from beginning to end. This ensures that SG is following all of the proper procedures from working papers to shipment.

SG's Security Lab is renowned with lotteries for its stringent quality control procedures.

This is a very direct, honest communication with the customers, and there are always a lot of questions that we have the opportunity to answer in a group setting. I also want to mention that during the first day of an audit, Herb presents lottery best practices for the entire life cycle of an instant game. This session lasts about three hours and includes very specific details about instant game production.

SCIENTIFIC GAMES

Instant Game Security Innovation

2023	Immutable Backups
2022	Hardware Encrypted Drives
2021	24/7 Monitored SIEM Solution
2019	Off-site Hot Data Center
2018	Multi Factor Authentication
2018	PSAT Randomizer Certification Tool
2017	KDS360
2014	KDS 3.0
2010	KDS 2.0
2009	International Standards Organization ISO27001 certification
2009	Encrypted Imager Files (end-to-end encryption)
2009	Seed Server
2008	Global GP System
2006	Encrypted GameEngine Workspace (lottery data encrypted from System Administrator)
2006	Encrypted Backups
2004	KDS Live
2003	Keyed Dual Security (KDS) Software Security System Developed
2003	OpMenu Secure Production Environment

Can you share more about the individual areas that are audited?

Joe: There are basically three general areas of examination, or tracks: HR, Process Integrity and IT. In the HR track, SG's hiring practices, employee documentation, training records and other HR policies are examined. In addition, this track includes a thorough review of the building's physical security and our metro Atlanta global headquarters' Business Continuity Planning and Disaster Recovery plans. In the Process Integrity track, all the game's records – from working paper development, game programming, quality assurance, security ticket testing and shipping – are examined and discussed with the auditor and the lottery customer. I will say that the IT Security track is the biggest focus of the audit, and this encompasses all of our IT security practices, including server management, patch management, network security assessment, incident response, logging and other IT-related areas. There is always a big discussion on recovery practices including off site storage, system availability and backup data center capabilities. This is a general and comprehensive review of the facility's ability to recover in the event of a system failure or delay.

So, what do you think is the most important part of the audit?

Joe: By far, the most important and most scrutinized part of the audit is game programming within the IT Security track. Game programming is truly the crown jewel of all of our operations and where SG clearly distinguishes itself from all others. The audit fully examines the comprehensive set of industry-leading security software, along with custom-built technology, tools, applications, reviews, systems, processes and monitoring used to make sure that no one knows or can know the value of an unscratched instant ticket. It is a thorough examination of all of our security procedures and systems that protect each game.

"This part of the audit is where we must demonstrate that these are real systems and real, documented procedures that have been in place and have evolved over the last two decades."
– Joe Bennett
VP of Instant Game Production

How have these components of the SG system evolved over the years?

Joe: Systems and therefore threats have changed tremendously since we built the core of our game programming system in 2004. We've been fortunate that we have hired not only the absolute brightest minds in the business, but trustworthy professionals who enjoy continuous improvement and innovation. Additionally, we use outside security experts and these audits to round out our approach.

Any other general thoughts?

Joe: Well, there is a saying in management that 'You are what the numbers say you are' and this maxim applies directly to our auditing efforts in that 'You are what the audit says you are'. All of the audits we do give us confidence we are working on the right things. And they give our lottery customers confidence that these systems are real and are working for them every single day.

SG sets the gold standard for security with cross-functional teams at its five global production facilities.

Auditing at Scientific Games

Proof that Systems and Controls are Working

Encryption	SG uses multiple types of encryption throughout the process, but one of the most important is end-to-end encryption of lottery game data from the moment it is created to the moment it is imaged on the ticket. This is a very sophisticated use of encryption that is unique in the industry.
Key and Game Seed Management	A layered set of keys is used to protect the seeds that control each game's random number generator. A cascading form of encryption ensures that each game's seeds are isolated and protected by both root, customer and game specific keys.
Keyed Dual Security	KDS security technology was developed by SG in 2004 and its functionality has been upgraded multiple times since then. In general, KDS protects the creation of all production data by allowing SG customers to have a 'key' (or multiple keys if they choose). In this manner, multiple keys are needed for the SG game production system produce any type of game data.
Reconstruction of Game Data	SG does not save game data in a database or any other form. Lottery ticket data only exists for the time it is needed and then deleted. However, the SG systems are able to reconstruct ticket data as required by the authorized parties at the lottery. KDS provides additional security in this process as it only enables access to the encrypted game seeds during a brief time period.
Hash Chain Logs	A hash chain log, a technology equivalent to a private block chain, is a cryptographically secure transaction history to ensure all access to critical systems are recorded and can be mathematically verified to ensure completeness and non-repudiation. SG developed this data-integrity capability with the original KDS system in 2004 and has continued to advance and expand the technology on new systems.
Game Integrity	SG developed multiple systems that ensure that the game software is the actual, audited game software. Automated tools detect and alert any changes to working paper specifications and software updates which would affect the lottery data.
General IT Security Practices	SG's IT personnel work continuously to ensure confidentiality, integrity and availability by using tools and techniques to enforce proper authentication, authorization and accountability. Systems are audited for the proper use of access controls, server management, patch management, separation of duties, logging and monitoring as well as compliance with all applicable laws and regulations. SG consistently performs risk management steps to identify and minimize the potential impact of security breaches should they occur.
Other Audits	SG uses an independent security firm to perform weekly security scans, access reviews, secure system access review, KDS log review, and baseline server security review. They also consult on new system changes, new software products and upgrades, emerging threats and external audit review.