

# Security as a Process



An advanced, holistic view of security underpins IGT's patented NextGen instant ticket security system. Here's a closer look at how this innovative process was designed to uniquely support lotteries' core value of game integrity.

"The mantra of any good security engineer is: 'Security is not a product, but a process,'" observed world-renowned security technologist Bruce Schneier. "It's more than designing strong cryptography into a system; it's designing the entire system such that all security measures, including cryptography, work together."

The distinction between the two approaches is important, especially given that instant games are inherently complex creations themselves — involving multiple disciplines as they advance through design, printing, and the distribution of tickets to their final sale to a player.

Recognizing several years ago that the system for producing instants was ripe for total reimagining, IGT invested in designing a revolutionary, patented new security system, NextGen, in which all the aspects, including state-of-the-art cryptography, work together.

By virtue of IGT's process-oriented approach, NextGen provides the highest levels of security and unprecedented transparency throughout the instant ticket development and manufacturing process. It is now used to generate secure instant games for IGT customers worldwide.

Keith Cash, IGT Vice President Global Instant Ticket Services, discussed the features and advantages of NextGen:

**One way to innovate is to change the model entirely. How did IGT's NextGen do this for instant ticket security?**

**Keith Cash:** Unlike legacy systems, which have evolved over time and typically "kludge" separate security products

Benefits of NextGen Security vs. Industry Legacy		IGT NextGen	Industry Legacy
	Encrypts Genesis/Shuffle Seed		
	Ciphertext Decryption Seed Managed by at least one "Trusted Party"		
	Enables Multiple Parties to Manage and Approve a Game Reconstruction		
	Forensic Audit Trail Maintained in an Unalterable Blockchain		
	Forensic record of both Game Generation as well as Ticket Reconstruction		
	Enables audit of distribution or arrangement of Winning and Losing Tickets in the Development Phase		
	Database Architecture for secure storage of all Game Elements		

throughout the instant game-generation process, we created NextGen from the ground up to offer the industry an end-to-end system that takes security beyond what was previously possible.

We harnessed IGT's investment in developing the advanced digital printing platform used to create our Infinity Instants™ games and went on to develop this new and superior game-programming platform and security process, which can be used for all instant tickets, not just Infinity games.

In plain terms, our NextGen system unifies dissimilar aspects of the instant ticket game-generation process — including ticket artwork, game rules, and game prize structure — into a single coherent process that delivers more robust levels of security than are possible with one-dimensional legacy systems.

## Why do you call NextGen “database-centric?”

**Keith Cash:** Because it's the first and only instant ticket game generation system that stores all pertinent elements in a single, multidimensional database for each game.

By linking every process in instant ticket development to **a common, coherent database and an associated blockchain for each game**, the system automatically logs every process in an instant ticket's development.

The blockchain associated with each instant game's unique database **protects not only the entire game development process, but also the reconstruction process** (for details on the NextGen process and its use of blockchain, **please see the related article, “A Leap Forward in Instant Ticket Security,” in PGRI March/April 2023**).

This process-oriented type of instant ticket security is unique to NextGen and is not readily adapted to legacy systems. It's one of the reasons we received several United States patents for NextGen.

## NextGen can be used for all instant games, but how does it specifically come into play with Infinity Instants?

The state-of-the-art quality of NextGen's security features allows it to produce more complicated games with the confidence that **complexity doesn't add risk, only more enjoyment for the player.**

With the combined capabilities of our NextGen game-programming platform and Infinity Instants digital printing platform, we can **provide players with new, highly engaging play mechanics** that can't be replicated with traditional printing technologies.

**that can appear** in a single Crossword game. It also allows for **adding color** to the Crossword symbols beneath the scratch-off coating — a key feature of Infinity Instants games. The shape and configuration of the Crossword grids can now feature **unlimited variety**, no longer constrained by the number of versions that could be represented using traditional flexographic plate technology.

Another recent launch demonstrating how these combined technologies give us

**CROSSWORD GEMS**

YOUR LETTERS

WIN UP TO \$XXX,XXX!

**BONUS GEMS**

High-resolution, digitally imaged gems are distributed throughout the puzzle in the blank spaces that do not house letters

**PRIZE LEGENDS**

Two prize legends award prizes for word completion (traditional crossword play) and gem collection (the secondary bonus feature)

**BONUS COORDINATES**

Coordinates allow players to collect the gems distributed within the puzzle

**PRIZE LIST**

12 words	\$100,000
11 words	\$50,000
10 words	\$25,000
9 words	\$10,000
8 words	\$5,000
7 words	\$2,500
6 words	\$1,000
5 words	\$500
4 words	\$250
3 words	\$100
2 words	\$50
1 word	\$25

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In 2023, for example, we released the first Infinity Instants Crossword game, which **adds a secondary level of play** by placing colorful gems within the unoccupied spaces in the Crossword grid. In addition to offering traditional Crossword gameplay, a set of coordinates is also provided to players, **allowing them to collect gems interspersed in the grid spaces that are typically left blank** and receive bonus awards based on which gems have been collected.

The combination of NextGen and Infinity Instants technologies **increases the number and types of game symbols**

new means to innovate is Ghostbusters™ with Infinity Instants, developed by IGT specifically for the Michigan Lottery. This 12-scene game is the latest reimagining of a franchise with tremendous staying power over the past 30+ years. It features iconic graphics and full-color Infinity Instants enhancements to the play symbols and the uncovered art.

When you factor together the 12 different scenes, the color underneath the coating, and the specific game rules, it requires a tremendous amount of computing power to calculate what each ticket is worth, shuffle them, float them, and match the background



scenes with what's going on around them. Only the NextGen database could have accomplished this and produced these graphics.

Ghostbusters with Infinity was the highest-performing licensed property in the Michigan Lottery's focus-group testing, and after three weeks in market was the Lottery's sixth best \$5 game ever, excluding holiday games. At nine weeks, it has an index of 116. There are video clips on YouTube of players scratching the tickets to reveal what's beneath the coating, with viewers adding comments like "cool," "fun tickets," and "these cards look ace."

With the combination of NextGen and Infinity, a lottery gets the benefit of the new programming with new games that not only look better, play better, and offer more play options, but are also more secure. IGT has been nimble enough to leapfrog over what has come before to add value for lottery customers and players.



Michigan launched a 12-scene Ghostbusters™ game in September 2023 (one scene pictured, uncovered), a high-performer that benefits from the power of both NextGen and Infinity Instants technologies.

## Has IGT implemented any other new security technologies?

**Keith Cash:** IGT has been working on implementing security as a process tightly integrated into instant ticket production for some time, though it may not have been known in the industry (see sidebar).

IGT implemented end-to-end, hardware-encrypted hard drives in 2018, for example. This innovation ensured that live game data was never stored unencrypted "at rest," and it was operational and in the market years before other technology suppliers.

We prefer an incremental "build a little, test a little" approach, especially with something as complex as instant ticket production. We conduct an internal audit whenever we integrate a new security feature into our production process. Of course, whenever we integrate new technology into our production security process, we ensure that our internal auditors review the new technology and the overall security process.

Thus, passing external audits is essentially a *fait accompli* thanks to the intense effort and testing that has come before.

All instant ticket manufacturers agree that we must provide security and that game programming is critical. IGT simply thinks we should provide that security using modern technology to deliver unparalleled transparency and accountability.

Or, to put it another way, IGT employs NextGen's patented technology daily to monitor the instant game programming process for every game we produce, automatically generating unalterable blockchain-protected forensic files in a manner not done with legacy one-dimensional game generation systems.

This automated, forensic documentation of each step of the process for each game generated is available to our



lottery customers, providing unprecedented transparency at any time in addition to any occasional assessments performed by outside auditors that are routine in our industry.

I've said before that we're driven to innovate because we're not vested in the status quo but in how groundbreaking technologies can bring further innovation to the instant ticket business.

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