

## Hughes Lottery System Solutions

Lottery systems are a big business around the world and establishing a successful lottery system requires much more than simply selling tickets and processing payment transactions. The backbone of a successful lottery system is a high-performing, reliable and secure network that is easy to deploy and quick to repair, with the ability to provide fast and consistent response times, even during peak traffic periods.

With over 100,000 operational lottery terminals supported worldwide, Hughes is the leader in VSAT lottery networks. The list of lotteries connected by Hughes satellite broadband systems include more than 60,000 locations in the US, more than 28,000 in the UK, and nearly 13,000 across Europe, Asia, and South America.

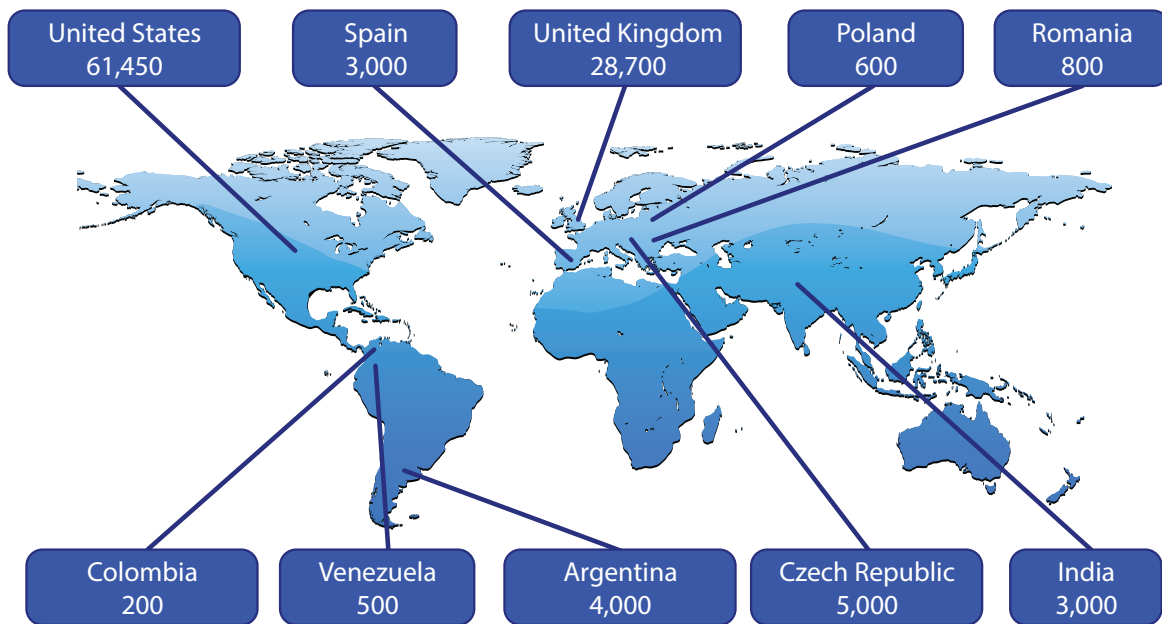


Figure 1

As a proven technology for lottery systems, Hughes satellite-based VSAT lottery solutions are preferred by leading lottery systems around the globe for a number of reasons, including:

- **Network Security** – Highly secure and encrypted network traffic, protected from hackers
- **High Availability and Reliability** – The highest reliability and superior ease of service restoration, as compared to most other networking technologies.
- **Network Simplicity and Scalability** – Easy installation, control, and restoration with virtually ubiquitous coverage, even in rural and remote locations.
- **Fast and Consistent “Send to Cut”** – Consistent Quality-of-Service (QoS) for time-sensitive, high-volume lottery transactions, even during peak traffic periods.

## Network Security:

Two of the key attributes of a successful lottery system are the reliability and security of the network over which it operates. Lottery transactions are highly sensitive, making network security a top priority. The Hughes VSAT system optionally encrypts all user traffic in both the forward and return directions using AES (optional; subject to local government approval). Each terminal has a unique 256-bit encryption key, and the system provides for secure and hitless key update while in operation using an A/B key set.

The system security also provides for authentication of remote terminals. Additionally, the gateway includes provisions for legal interception of traffic to and from designated users under operations control. Furthermore, Virtual Local Area Networks (VLANs) are used to segregate user and management traffic at gateways, and firewalls protect management interfaces and networks. All these features ensure that the network data is protected from hackers.

## High Availability and Reliability

VSAT networks are inherently robust, operating as they do over geostationary satellites and less vulnerable to storms and disasters that can disrupt or take down terrestrial networks—wireline and wireless alike. Furthermore, a failed terminal may cause loss of revenue for the lottery network and incur a penalty for the operator. Service Level Agreements require continuous monitoring and proactive alerts of failed terminals, and operators may face a penalty in case they fail to promptly rectify a failed terminal.

Based on Hughes experience in operating the world's largest satellite service networks, network availability in the 99.95 percent range is achievable. Even higher availability can be reached through means such as the implementation of hub redundancy, whereby a second hub station is available to instantaneously take over operation of the network in the event of service interruption.

While problems at remote sites can occur, VSATs are constantly monitored in a centralized NOC across all locations, faults are quickly diagnosed, and units are restored to service or replaced. As illustrated in Figure 2, the VSAT has only three elements: an indoor modem, an outdoor radio, and a reflector. Of these, the reflector is a passive element and inherently reliable. Most modem or interconnect cabling/power outages can often be diagnosed from the central NOC and either restarted or identified immediately for an onsite technician to arrive with a Field Replaceable Unit (FRU).

The Hughes Network Management System (NMS) makes it simple to monitor, control, and diagnose diverse network components by providing a graphical, Web-based user interface through which operators can manage and monitor both gateways and remote terminals.

In case of downtime in a network over other technologies, such as ADSL or leased line, given the numerous hops to the core, it may be hard to diagnose the cause, making restoration difficult or long-delayed. The reliability of VSATs and the ease of VSAT-based service restoration is superior to most other networking technologies and is a key reason that leading lottery networks around the world utilize VSAT networks.

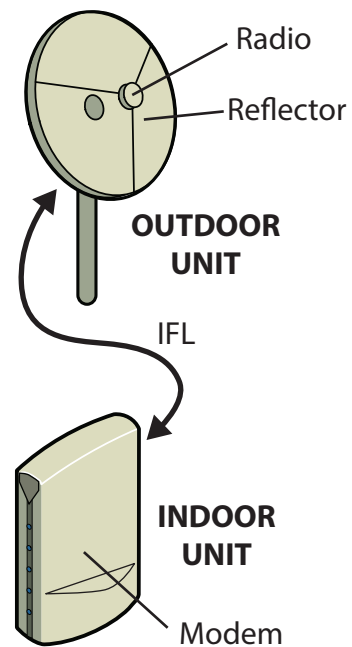


Figure 2

## Network Simplicity and Scalability

As illustrated in Figure 3, the system consists of only the hub station and remote terminals, with all data transmitted over satellite.

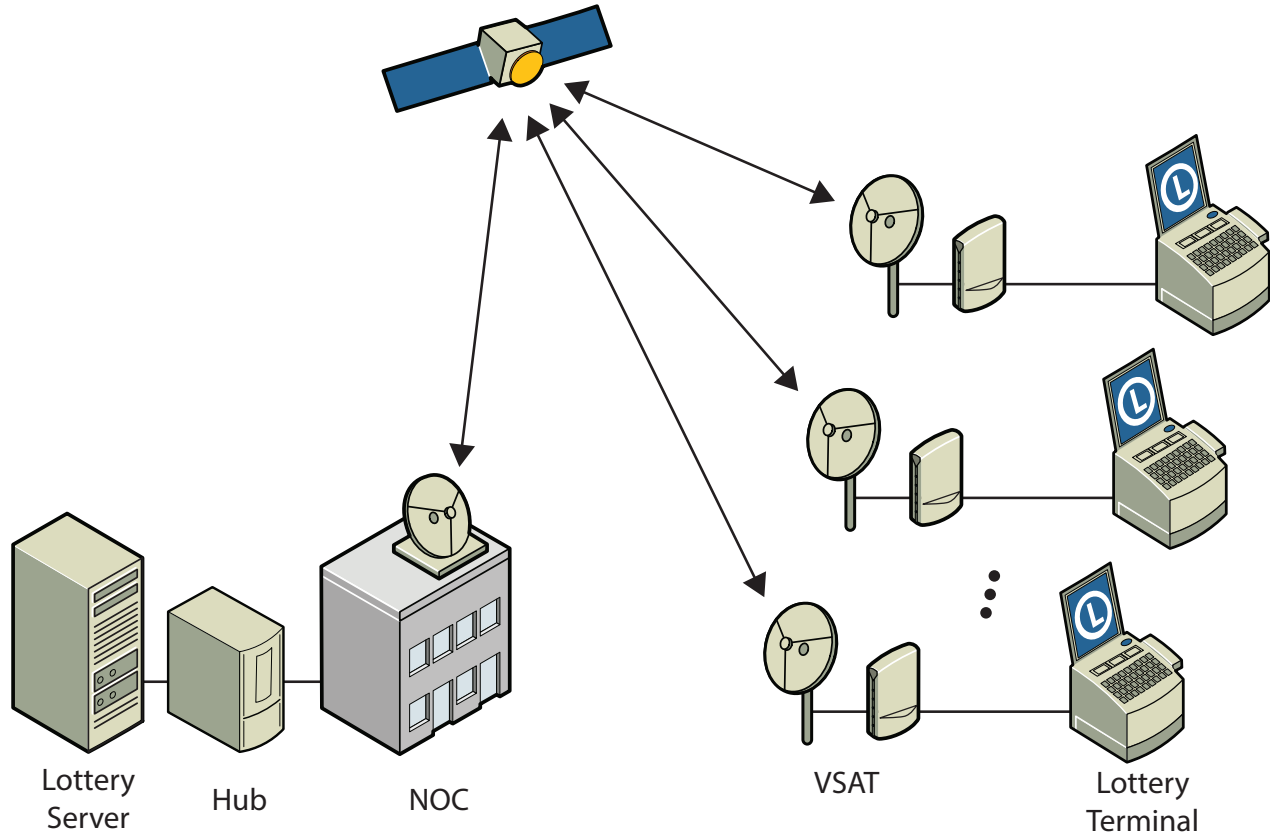


Figure 3

The Hughes VSAT, or remote terminal, is compact and simple to install, requiring the installer to input only two parameters, the coordinates and the site ID. A VSAT can be installed at virtually any location in the coverage of the satellite footprint, making it relatively simple and feasible to scale the network very quickly, as desired.

## Fast and Consistent “Send to Cut”

The network that connects the lottery terminals forms the backbone of a lottery system. Given the volume and sensitivity of lottery transactions, the network must provide reliability and availability at a contractually defined level of guarantee and timeliness for all transactions.

It has been shown that as the purse of a lottery gets bigger, more people are drawn to buy lottery tickets, resulting in large queues and wait times at lottery terminals. The Hughes satellite broadband solution is designed keep wait times low with a sub-4-second “Send to Cut” time, which is the time elapsed from the moment lottery numbers are entered at the terminal to the time the lottery ticket printing is complete. This ensures that customers can purchase lottery tickets in a timely manner, even at peak traffic periods.

## Conclusion

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In summary, building a successful lottery system requires a robust network at its foundation. Hughes lottery solutions are uniquely capable of supporting lottery systems by:

- Securing the data through highly secure encryption
- Ensuring high reliability of the network
- Providing a simple network that is easy to install, control, and restore
- Ensuring last-mile coverage to remote areas, making it possible to install a lottery terminal virtually anywhere
- Allowing easy scalability of the lottery network
- Assuring QoS for entire footprint through high-reliability and a sub-4-second “Send to Cut” time
- Keeping the costs of infrastructure and scalability very low

As the world’s largest provider of satellite networks and services and a leading managed service provider, Hughes stands ready to deliver the most reliable and cost-effective lottery system and outsourced network operations to enable a successful lottery business, no matter the size or location.

## Proprietary Statement

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