# Hardening of the Election Management System

Hardening of the Election Management System (EMS) is the process of configuring servers, workstations, and network equipment to minimize security vulnerabilities and provide a standard configuration of the EMS for each release. Configuration settings are based on security best practices and recommendations from Federal and Industry Standards that provide specific and actionable ways to prevent malicious activity and improve the collective security of EMS systems. This helps achieve acceptable levels of integrity and reliability of voting systems. When an ES&S EMS system or network is hardened, the cybersecurity posture of the network is improved, which lowers the risk of all threats.

EMS hardening configures the EMS systems and network to include only the services, applications, utilities, available ports and settings required to operate the EMS successfully. The hardening process turns the server into a single-use device, dedicated solely to creating and operating elections. By using certified scripts and updates, a standard configuration that has been developed, tested, and certified ensures a secure and reliable voting infrastructure. Moreover, hardening provides many benefits to an EMS system, including security, reliability, and standardization.
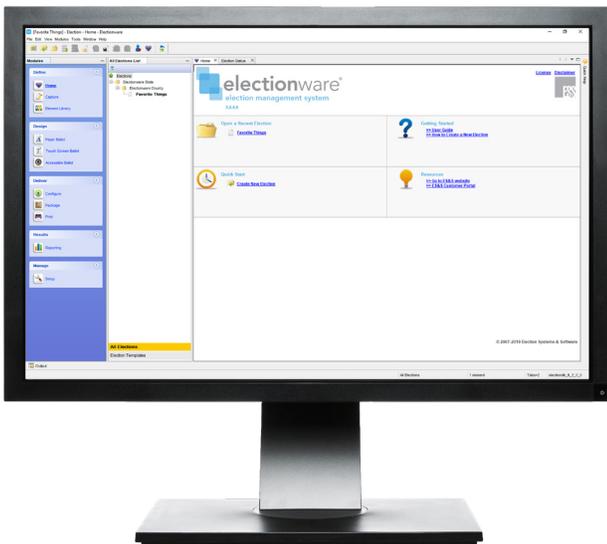
PURPOSE OF HARDENING

Federal Guidelines recommend that security standards of voting systems include the following objectives:

- Protect critical elements of the voting system
- Establish and maintain controls to minimize errors
- Protect the system from intentional manipulation, fraud, and malicious mischief
- Identify fraudulent or erroneous changes to the voting system
- Protect secrecy in the voting process
- Protects critical infrastructure

BEST PRACTICES

Hardening of the EMS helps conform to Federal and Industry Standards. Our latest systems follow the Defense Information Systems Agency (DISA) Security Technical Implementation Guide (STIG) for hardening of critical systems. This is accomplished by configuring and locking down multiple areas of the voting systems. Access and functionality are restricted to only that required to operate the voting systems. Examples of system hardening activities include:

- Modifying the Windows registry
- Configuring group policies
- Configuring software restriction policies
- Removing non-essential Windows components
- Setting permissions on application folders
- Configuring group-based security permissions

- Creating standard configuration of Windows network
- Restricting network traffic to dedicated appliances
- Implementing Encapsulating Security Payload (ESP)
- Deploying two-factor authentication
- Requiring server message block (SMB) signing

ES&S Security Philosophy

Nothing is more important to ES&S than protecting America's democracy through secure and accurate elections. That's why every ES&S product reflects the company's three-part security philosophy:

- **Design:** All products are designed, without compromise, to meet the latest and ever-evolving standards in security, accuracy and reliability.

- **Testing:** In addition to ES&S testing protocols, all tabulation systems are rigorously tested and certified by the federal Election Assistance Commission (EAC), which reflects security and performance standards developed by scientists, academia and election officials. The ES&S testing protocol also involves testing by independent, accredited laboratories. ES&S submitted our end-to-end voting configuration for Cybersecurity and Infrastructure Security Agency (CISA) critical product evaluation (CPE) at Idaho National Labs.

- **Implementation:** The entire ES&S team is devoted to ensuring that each piece of technology performs as expected on election day, helping election officials uphold the laws of their state which mandate strict physical security and tight chain of custody of all voting machines.

Perhaps most importantly, ES&S' essence — its very being — is predicated on providing America with secure, accurate and accessible elections. Every person at ES&S holds themselves, and each other, accountable for this mandate, and is proud to serve a role in this noble purpose.