NIST
National Institute of
Standards and Technology
U.S. Department of Commerce

NCCoE
NATIONAL CYBERSECURITY
CENTER OF EXCELLENCE

ENERGY SECTOR ASSET MANAGEMENT

The National Cybersecurity Center of Excellence (NCCoE) is addressing the challenge of strengthening operational technology (OT) asset management capabilities for the energy sector. This fact sheet provides an overview of the Energy Sector Asset Management project including challenge, solution, and potential benefits. If you have feedback on the architecture or the relevance and usefulness of this practice guide, please email energy_nccoe@nist.gov with suggestions and comments.

CHALLENGE

There are a wide variety of industrial control system (ICS) assets, such as supervisory control and data acquisition (SCADA) systems, distributed control systems (DCS), programmable logic controllers (PLCs), and intelligent electronic devices, that provide command and control information and functions on OT networks. As the interconnection of industrial networks increase, these assets become greater targets for malicious actors.

To properly assess cybersecurity risk within the OT network, energy companies must be able to identify all assets, especially those that are most critical. Existing asset inventories may be static, one-time, or point-in-time snapshots of auditing activities conducted previously and do not reflect the current status of those assets. As OT systems become interconnected and integrated with other information technology systems, organizations seeking to modernize OT processes will likely identify a need to use automated methods to strengthen their OT asset management capabilities.

SOLUTION

The NCCoE, in collaboration with experts from the energy sector and technology vendors, developed an asset management example solution that includes managing, monitoring, and baselining OT assets to reduce the risk of cybersecurity incidents. This project addresses the following characteristics of asset management:

- Asset Discovery: establishment of a full baseline of physical and logical locations of assets
- Asset Identification: capture of asset attributes, such as manufacturer, model, operating system, Internet Protocol (IP) addresses, Media Access Control addresses, protocols, patch-level information, and firmware versions
- Asset Visibility: continuous identification of newly connected or disconnected devices, and IP (routable and non-routable) and serial connections to other devices
- Asset Disposition: the level of criticality (high, medium, or low) of a particular asset, its relation to other assets within the OT network, and its communication (to include serial) with other devices
- Alerting Capabilities: detection of a deviation from the expected operation of assets

BENEFITS

The NCCoE's practice guide on Energy Sector Asset Management can help your organization:

- reduce cybersecurity risk and potentially reduce the impact of safety and operational risks such as power disruption
- develop and execute a strategy that provides continuous OT asset management and monitoring
- respond faster to security alerts through automated cybersecurity event capabilities
- implement current cybersecurity standards and best practices, while maintaining the performance of energy infrastructures

LEARN MORE ABOUT NCCOE
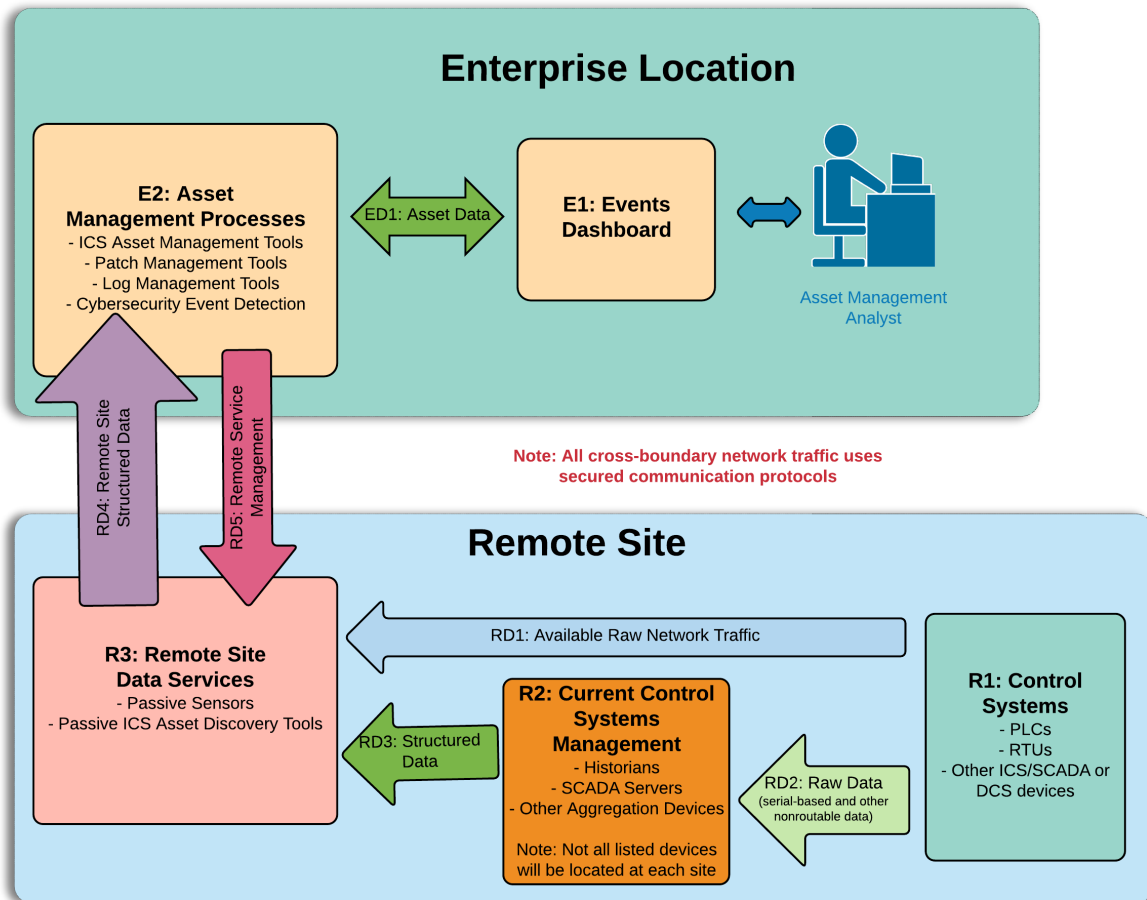Visit https://www.nccoe.nist.gov

CONTACT US
nccoe@nist.gov
301-975-0200

HIGH-LEVEL ARCHITECTURE

The figure below depicts the proposed high-level environment and architecture to help improve asset management within an energy organization.

TECHNOLOGY PARTNERS/COLLABORATORS

The technology vendors participating in this project submitted their capabilities in response to a call in the Federal Register. Companies with relevant products were invited to sign a Cooperative Research and Development Agreement with NIST, allowing them to participate in a consortium to build this example solution. Technology collaborators on this project include:

Certain commercial entities, equipment, products, or materials may be identified in order to describe an experimental procedure or concept adequately. Such identification is not intended to imply recommendation or endorsement by NIST or NCCoE, nor is it intended to imply that the entities, equipment, products, or materials are necessarily the best available for the purpose.

DOWNLOAD THE PRACTICE GUIDE
For more information about this project, visit:
https://www.nccoe.nist.gov/projects/use-cases/energy-sector/asset-management

HOW TO PARTICIPATE
As a private-public partnership, we are always seeking insights and expertise from businesses, the public, and technology vendors. If you have feedback on the architecture or the relevance and usefulness of this Practice Guide , please email energy_nccoe@nist.gov.