

## A. Introduction

1. **Title:** Cyber Security — Systems Security Management
2. **Number:** CIP-007-3b
3. **Purpose:** Standard CIP-007-3 requires Responsible Entities to define methods, processes, and procedures for securing those systems determined to be Critical Cyber Assets, as well as the other (non-critical) Cyber Assets within the Electronic Security Perimeter(s). Standard CIP-007-3 should be read as part of a group of standards numbered Standards CIP-002-3 through CIP-009-3.
4. **Applicability:**
  - 4.1. Within the text of Standard CIP-007-3, “Responsible Entity” shall mean:
    - 4.1.1 Reliability Coordinator.
    - 4.1.2 Balancing Authority.
    - 4.1.3 Interchange Authority.
    - 4.1.4 Transmission Service Provider.
    - 4.1.5 Transmission Owner.
    - 4.1.6 Transmission Operator.
    - 4.1.7 Generator Owner.
    - 4.1.8 Generator Operator.
    - 4.1.9 Load Serving Entity.
    - 4.1.10 NERC.
    - 4.1.11 Regional Entity.
  - 4.2. The following are exempt from Standard CIP-007-3:
    - 4.2.1 Facilities regulated by the U.S. Nuclear Regulatory Commission or the Canadian Nuclear Safety Commission.
    - 4.2.2 Cyber Assets associated with communication networks and data communication links between discrete Electronic Security Perimeters.
    - 4.2.3 Responsible Entities that, in compliance with Standard CIP-002-3, identify that they have no Critical Cyber Assets.
5. **Effective Date:** The first day of the third calendar quarter after applicable regulatory approvals have been received (or the Reliability Standard otherwise becomes effective the first day of the third calendar quarter after BOT adoption in those jurisdictions where regulatory approval is not required).

## B. Requirements

- R1. Test Procedures — The Responsible Entity shall ensure that new Cyber Assets and significant changes to existing Cyber Assets within the Electronic Security Perimeter do not adversely affect existing cyber security controls. For purposes of Standard CIP-007-3, a significant change shall, at a minimum, include implementation of security patches, cumulative service packs, vendor releases, and version upgrades of operating systems, applications, database platforms, or other third-party software or firmware.
  - R1.1. The Responsible Entity shall create, implement, and maintain cyber security test procedures in a manner that minimizes adverse effects on the production system or its operation.

- R1.2.** The Responsible Entity shall document that testing is performed in a manner that reflects the production environment.
  - R1.3.** The Responsible Entity shall document test results.
- R2.** Ports and Services — The Responsible Entity shall establish, document and implement a process to ensure that only those ports and services required for normal and emergency operations are enabled.
  - R2.1.** The Responsible Entity shall enable only those ports and services required for normal and emergency operations.
  - R2.2.** The Responsible Entity shall disable other ports and services, including those used for testing purposes, prior to production use of all Cyber Assets inside the Electronic Security Perimeter(s).
  - R2.3.** In the case where unused ports and services cannot be disabled due to technical limitations, the Responsible Entity shall document compensating measure(s) applied to mitigate risk exposure.
- R3.** Security Patch Management — The Responsible Entity, either separately or as a component of the documented configuration management process specified in CIP-003-3 Requirement R6, shall establish, document and implement a security patch management program for tracking, evaluating, testing, and installing applicable cyber security software patches for all Cyber Assets within the Electronic Security Perimeter(s).
  - R3.1.** The Responsible Entity shall document the assessment of security patches and security upgrades for applicability within thirty calendar days of availability of the patches or upgrades.
  - R3.2.** The Responsible Entity shall document the implementation of security patches. In any case where the patch is not installed, the Responsible Entity shall document compensating measure(s) applied to mitigate risk exposure.
- R4.** Malicious Software Prevention — The Responsible Entity shall use anti-virus software and other malicious software (“malware”) prevention tools, where technically feasible, to detect, prevent, deter, and mitigate the introduction, exposure, and propagation of malware on all Cyber Assets within the Electronic Security Perimeter(s).
  - R4.1.** The Responsible Entity shall document and implement anti-virus and malware prevention tools. In the case where anti-virus software and malware prevention tools are not installed, the Responsible Entity shall document compensating measure(s) applied to mitigate risk exposure.
  - R4.2.** The Responsible Entity shall document and implement a process for the update of anti-virus and malware prevention “signatures.” The process must address testing and installing the signatures.
- R5.** Account Management — The Responsible Entity shall establish, implement, and document technical and procedural controls that enforce access authentication of, and accountability for, all user activity, and that minimize the risk of unauthorized system access.
  - R5.1.** The Responsible Entity shall ensure that individual and shared system accounts and authorized access permissions are consistent with the concept of “need to know” with respect to work functions performed.
    - R5.1.1.** The Responsible Entity shall ensure that user accounts are implemented as approved by designated personnel. Refer to Standard CIP-003-3 Requirement R5.

- R5.1.2.** The Responsible Entity shall establish methods, processes, and procedures that generate logs of sufficient detail to create historical audit trails of individual user account access activity for a minimum of ninety days.
- R5.1.3.** The Responsible Entity shall review, at least annually, user accounts to verify access privileges are in accordance with Standard CIP-003-3 Requirement R5 and Standard CIP-004-3 Requirement R4.
- R5.2.** The Responsible Entity shall implement a policy to minimize and manage the scope and acceptable use of administrator, shared, and other generic account privileges including factory default accounts.
  - R5.2.1.** The policy shall include the removal, disabling, or renaming of such accounts where possible. For such accounts that must remain enabled, passwords shall be changed prior to putting any system into service.
  - R5.2.2.** The Responsible Entity shall identify those individuals with access to shared accounts.
  - R5.2.3.** Where such accounts must be shared, the Responsible Entity shall have a policy for managing the use of such accounts that limits access to only those with authorization, an audit trail of the account use (automated or manual), and steps for securing the account in the event of personnel changes (for example, change in assignment or termination).
- R5.3.** At a minimum, the Responsible Entity shall require and use passwords, subject to the following, as technically feasible:
  - R5.3.1.** Each password shall be a minimum of six characters.
  - R5.3.2.** Each password shall consist of a combination of alpha, numeric, and “special” characters.
  - R5.3.3.** Each password shall be changed at least annually, or more frequently based on risk.
- R6.** Security Status Monitoring — The Responsible Entity shall ensure that all Cyber Assets within the Electronic Security Perimeter, as technically feasible, implement automated tools or organizational process controls to monitor system events that are related to cyber security.
  - R6.1.** The Responsible Entity shall implement and document the organizational processes and technical and procedural mechanisms for monitoring for security events on all Cyber Assets within the Electronic Security Perimeter.
  - R6.2.** The security monitoring controls shall issue automated or manual alerts for detected Cyber Security Incidents.
  - R6.3.** The Responsible Entity shall maintain logs of system events related to cyber security, where technically feasible, to support incident response as required in Standard CIP-008-3.
  - R6.4.** The Responsible Entity shall retain all logs specified in Requirement R6 for ninety calendar days.
  - R6.5.** The Responsible Entity shall review logs of system events related to cyber security and maintain records documenting review of logs.
- R7.** Disposal or Redeployment — The Responsible Entity shall establish and implement formal methods, processes, and procedures for disposal or redeployment of Cyber Assets within the Electronic Security Perimeter(s) as identified and documented in Standard CIP-005-3.

- R7.1.** Prior to the disposal of such assets, the Responsible Entity shall destroy or erase the data storage media to prevent unauthorized retrieval of sensitive cyber security or reliability data.
- R7.2.** Prior to redeployment of such assets, the Responsible Entity shall, at a minimum, erase the data storage media to prevent unauthorized retrieval of sensitive cyber security or reliability data.
- R7.3.** The Responsible Entity shall maintain records that such assets were disposed of or redeployed in accordance with documented procedures. (Retirement approved by FERC effective January 21, 2014.)
- R8.** Cyber Vulnerability Assessment — The Responsible Entity shall perform a cyber vulnerability assessment of all Cyber Assets within the Electronic Security Perimeter at least annually. The vulnerability assessment shall include, at a minimum, the following:
  - R8.1.** A document identifying the vulnerability assessment process;
  - R8.2.** A review to verify that only ports and services required for operation of the Cyber Assets within the Electronic Security Perimeter are enabled;
  - R8.3.** A review of controls for default accounts; and,
  - R8.4.** Documentation of the results of the assessment, the action plan to remediate or mitigate vulnerabilities identified in the assessment, and the execution status of that action plan.
- R9.** Documentation Review and Maintenance — The Responsible Entity shall review and update the documentation specified in Standard CIP-007-3 at least annually. Changes resulting from modifications to the systems or controls shall be documented within thirty calendar days of the change being completed.

### C. Measures

- M1.** The Responsible Entity shall make available documentation of its security test procedures as specified in Requirement R1.
- M2.** The Responsible Entity shall make available documentation as specified in Requirement R2.
- M3.** The Responsible Entity shall make available documentation and records of its security patch management program, as specified in Requirement R3.
- M4.** The Responsible Entity shall make available documentation and records of its malicious software prevention program as specified in Requirement R4.
- M5.** The Responsible Entity shall make available documentation and records of its account management program as specified in Requirement R5.
- M6.** The Responsible Entity shall make available documentation and records of its security status monitoring program as specified in Requirement R6.
- M7.** The Responsible Entity shall make available documentation and records of its program for the disposal or redeployment of Cyber Assets as specified in Requirement R7.
- M8.** The Responsible Entity shall make available documentation and records of its annual vulnerability assessment of all Cyber Assets within the Electronic Security Perimeters(s) as specified in Requirement R8.
- M9.** The Responsible Entity shall make available documentation and records demonstrating the review and update as specified in Requirement R9.

### D. Compliance

- 1. Compliance Monitoring Process**

**1.1. Compliance Enforcement Authority**

- 1.1.1 Regional Entity for Responsible Entities that do not perform delegated tasks for their Regional Entity.
- 1.1.2 ERO for Regional Entity.
- 1.1.3 Third-party monitor without vested interest in the outcome for NERC.

**1.2. Compliance Monitoring Period and Reset Time Frame**

Not applicable.

**1.3. Compliance Monitoring and Enforcement Processes**

- Compliance Audits
- Self-Certifications
- Spot Checking
- Compliance Violation Investigations Self-Reporting
- Complaints

**1.4. Data Retention**

- 1.4.1 The Responsible Entity shall keep all documentation and records from the previous full calendar year unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.
- 1.4.2 The Responsible Entity shall retain security-related system event logs for ninety calendar days, unless longer retention is required pursuant to Standard CIP-008-3 Requirement R2.
- 1.4.3 The Compliance Enforcement Authority in conjunction with the Registered Entity shall keep the last audit records and all requested and submitted subsequent audit records.

**1.5. Additional Compliance Information.**

**2. Violation Severity Levels (To be developed later.)**

**E. Regional Variances**

None identified.

**Version History**

Version	Date	Action	Change Tracking
2		Modifications to clarify the requirements and to bring the compliance elements into conformance with the latest guidelines for developing compliance elements of standards. Removal of reasonable business judgment and acceptance of risk. Revised the Purpose of this standard to clarify that Standard CIP-007-2 requires Responsible Entities to define methods, processes, and procedures for securing Cyber Assets and other (non-Critical)	

		Assets within an Electronic Security Perimeter. Replaced the RRO with the RE as a responsible entity. Rewording of Effective Date. R9 changed ninety (90) days to thirty (30) days Changed compliance monitor to Compliance Enforcement Authority.	
2	05/06/09	Adopted by NERC Board of Trustees	Revised
2a	11/05/09	Added Appendix 1 — Interpretation of R2 approved by BOT on November 5, 2009	Interpretation
2a	03/18/10	Interpretation of CIP-007-1 Requirement R2 — FERC Approved, per footnote 11 of Order — to be appended to CIP-007-2, Effective Date April 1, 2010	Interpretation
3		Updated version numbers from -2 to -3	
3	12/16/09	Adopted by the NERC Board of Trustees	
3	2/07/13	R7.3 and associated elements approved by NERC Board of Trustees for retirement as part of the Paragraph 81 project (Project 2013-02) pending applicable regulatory approval.	
3a	5/13/13	Added FERC approved interpretation of R2 (should have been appended to CIP-007-3 when the interpretation was approved by FERC)	Interpretation
3b	11/7/13	Adopted by the NERC Board of Trustees	
3b	11/21/13	R7.3 and associated elements approved by FERC for retirement as part of the Paragraph 81 project (Project 2013-02)	

## Appendix 1

<b>Requirement Number and Text of Requirement</b>
R2. The Responsible Entity shall establish and document a process to ensure that only those ports and services required for normal and emergency operations are enabled.
<b>Question</b>
Does the term "port" mean a physical (hardware) or a logical (software) connection to a computer?
<b>Response</b>
The drafting team interprets the term “ports” used as part of the phrase “ports and services” to refer to logical ports, e.g., Transmission Control Protocol (TCP) ports, where interface with communication services occurs.

## Appendix 2

### Requirement Number and Text of Requirement

#### Requirement Number and Text of Requirement:

**R5.** Account Management — The Responsible Entity shall establish, implement, and document technical and procedural controls that enforce access authentication of, and accountability for, all user activity, and that minimize the risk of unauthorized system access.

**R5.3.** At a minimum, the Responsible Entity shall require and use passwords, subject to the following, as technically feasible:

**R5.3.1.** Each password shall be a minimum of six characters.

**R5.3.2.** Each password shall consist of a combination of alpha, numeric, and “special” characters.

**R5.3.3.** Each password shall be changed at least annually, or more frequently based on risk.

#### Clarification needed:

ITC respectfully requests an interpretation regarding the following:

1. Does each sub-requirement, including R5.3, of R5 require that both “technical and procedural controls” be utilized?
2. Do “technical controls”, utilized in the context of R5.3, mean that each individual cyber asset device within an ESP has to automatically enforce each of the three R5.3 sub-requirements? The three bullets below are part of this question; they are examples if this is interpreted to be true.
  - R5.3.1. Each password shall be a minimum of six characters. Each individual cyber asset device within an ESP has to automatically reject any password that does not conform to a minimum of six characters.
  - R5.3.2. Each password shall consist of a combination of alpha, numeric, and “special” characters. Each individual cyber asset device within an ESP has to automatically reject any password that does not conform to a combination of alpha, numeric and “special” characters.

R5.3.3. Each password shall be changed at least annually, or more frequently based on risk. Each individual cyber asset device within an ESP has to automatically force passwords to be changed at least annually or at a specified interval based on risk.

### Question

ITC Transmission seeks clarification on the meaning of CIP-007-3, Requirement R5 as it relates to both technical and procedural controls.

In its response, the Interpretation Drafting Team will answer:

1. Whether each sub-requirement of R5 requires both “technical and procedural controls.”
2. Whether technical controls in Requirement R5.3 mean that each individual Cyber Asset within the Electronic Security Perimeter (ESP) has to automatically enforce each of the



three R5.3 sub-requirements.

## Response

### **Question 1: Does each sub-requirement of Requirement R5 require use of both "technical and procedural controls"?**

No, it is not necessary for both technical and procedural controls to be used in each sub-requirement of Requirement R5. The use of "and" in Requirement R5 indicates that the responsible entity must implement both technical and procedural controls to achieve collectively the sub-requirements within Requirement R5 and the associated sub-requirements. Both are not necessary for each sub-requirement individually.

Generally, technical controls are carried out or managed by computer systems. That is distinct from a technical aspect that enables or confirms procedural enforcement. While it is possible to have a technical component, tool, or aspect for each procedural control, mere use of technology to enable or support a procedural control is not necessarily a technical control itself. If a control relies on ongoing human intervention, then it is generally a procedural control. Procedural controls are the actions that people take, and they are the process of developing and ensuring compliance with policy and procedures. The responsible entity must look at what's performing the control to determine whether it's technical or procedural: the control is accomplished either by a human being (procedural) or a computer managing or performing the control (technical). The IDT also notes that regardless of control type (technical or procedural) the entity has the compliance requirement of implementing the control and demonstrating evidence of the control.

### **Question 2: Does the use of "technical controls" in Requirement R5.3 mean that each individual Cyber Asset within the Electronic Security Perimeter (ESP) has to automatically enforce each of the three R5.3 sub-requirements.**

No, the IDT interprets the three sub-requirements within R5.3 no differently than the other sub-requirements of R5. As requested under the request for interpretation, the concept of automatically enforcing controls is viewed by the IDT as the need to enforce the combination of the technical and procedural controls that are implemented to satisfy the three sub-requirements of R5.3. The automatic enforcement component could apply to the technical controls that are implemented, however most procedural controls are not automatic. The IDT interprets that the responsible entity would need to demonstrate that controls have been put in place to satisfy the three sub-requirements of R5.3.