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F5 NGINX SECURITY TECHNICAL IMPLEMENTATION GUIDE OVERVIEW

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Developed by F5 and DISA for the DoW

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1. INTRODUCTION

1.1 Executive Summary

The F5 NGINX Security Technical Implementation Guide (STIG) is published as a tool to improve the security of Department of War (DoW) information systems. This document is meant for use in conjunction with other STIGs, such as the Web Server SRG and appropriate operating system STIGs.

NGINX is a powerful open-source software used for web serving, reverse proxying, caching, load balancing, media streaming, and more. It is known for its high performance, stability, and ability to handle many concurrent connections efficiently. NGINX was initially designed as a web server to maximize performance and stability. NGINX has evolved from a web server to a comprehensive platform for app delivery, optimization, and security in Kubernetes environments.

This STIG was developed for the F5 NGINX Plus enterprise offering but still applies to the open-source NGINX application.

1.2 Authority

Department of Defense Instruction (DODI) 8500.01 requires that “all IT [information technology] that receives, processes, stores, displays, or transmits DOD information will be [...] configured [...] consistent with applicable DOD cybersecurity policies, standards, and architectures.” The instruction tasks that DISA “develops and maintains control correlation identifiers (CCIs), security requirements guides (SRGs), security technical implementation guides (STIGs), and mobile code risk categories and usage guides that implement and are consistent with DOD cybersecurity policies, standards, architectures, security controls, and validation procedures, with the support of the NSA/CSS [National Security Agency/Central Security Service], using input from stakeholders, and using automation whenever possible.” This document is provided under the authority of DODI 8500.01.

Although the use of the principles and guidelines in these SRGs/STIGs provides an environment that contributes to the security requirements of DoW systems, applicable NIST SP 800-53 cybersecurity controls must be applied to all systems and architectures based on the Committee on National Security Systems (CNSS) Instruction (CNSSI) 1253.

1.3 Vulnerability Severity Category Code Definitions

Severity Category Codes (referred to as CAT) are a measure of vulnerabilities used to assess a facility or system security posture. Each security policy specified in this document is assigned a Severity Category Code of CAT I, II, or III.

Table 0-1: Vulnerability Severity Category Code Definitions

Category	DISA Category Code Guidelines
CAT I	Any vulnerability, the exploitation of which will directly and immediately result in loss of Confidentiality, Availability, or Integrity.

Category	DISA Category Code Guidelines
CAT II	Any vulnerability, the exploitation of which has a potential to result in loss of Confidentiality, Availability, or Integrity.
CAT III	Any vulnerability, the existence of which degrades measures to protect against loss of Confidentiality, Availability, or Integrity.

1.4 STIG Distribution

Parties within the DoW and federal government's computing environments can obtain the applicable STIG from the DoW Cyber Exchange website at <https://cyber.mil/>. This site contains the latest copies of STIGs, SRGs, and other related security information. Those without a common access card (CAC) that has DoW Certificates can obtain the STIG from <https://public.cyber.mil/>.

1.5 SRG Compliance Reporting

All technical NIST SP 800-53 requirements were considered while developing this STIG. Requirements that are applicable and configurable will be included in the final STIG. A report marked Controlled Unclassified Information (CUI) will be available for items that did not meet requirements. This report will be available to component authorizing official (AO) personnel for risk assessment purposes by request via email to: disa.stig_spt@mail.mil.

1.6 Document Revisions

Comments or proposed revisions to this document should be sent via email to the following address: disa.stig_spt@mail.mil. DISA will coordinate all change requests with the relevant DoW organizations before inclusion in this document. Approved changes will be made in accordance with the DISA maintenance release schedule.

1.7 Other Considerations

DISA accepts no liability for the consequences of applying specific configuration settings made on the basis of the SRGs/STIGs. It must be noted that the configuration settings specified should be evaluated in a local, representative test environment before implementation in a production environment, especially within large user populations. The extensive variety of environments makes it impossible to test these configuration settings for all potential software configurations.

For some production environments, failure to test before implementation may lead to a loss of required functionality. Evaluating the risks and benefits to a system's particular circumstances and requirements is the system owner's responsibility. The evaluated risks resulting from not applying specified configuration settings must be approved by the responsible AO. Furthermore, DISA implies no warranty that the application of all specified configurations will make a system 100 percent secure.

Security guidance is provided for the DoW. While other agencies and organizations are free to use it, care must be given to ensure that all applicable security guidance is applied at both the device

hardening level and the architectural level due to the fact that some settings may not be configurable in environments outside the DoW architecture.

1.8 Product Approval Disclaimer

STIGs provide configurable operational security guidance for products being used by the DoW. STIGs, along with vendor confidential documentation, also provide a basis for assessing compliance with cybersecurity controls/control enhancements, which supports system assessment and authorization (A&A) under the DoW Risk Management Framework (RMF). DoW AOs may request available vendor confidential documentation for a product that has a STIG for product evaluation and RMF purposes from disa.stig_spt@mail.mil. This documentation is not published for general access to protect the vendor's proprietary information.

AOs have the purview to determine product use/approval in accordance with (IAW) DoW policy and through RMF risk acceptance. Inputs into acquisition or preacquisition product selection include such processes as:

- National Information Assurance Partnership (NIAP) evaluation for National Security Systems (NSS) (<https://www.niap-ccevs.org/>) IAW CNSSP #11.
- National Institute of Standards and Technology (NIST) Cryptographic Module Validation Program (CMVP) (<https://csrc.nist.gov/groups/STM/cmvp/>) IAW federal/DoW mandated standards.

2. ASSESSMENT CONSIDERATIONS

2.1 Security Assessment Information

This guidance is provided as a foundational security hardening solution for the NGINX application. Because of the complexity and scalability of NGINX, each deployed workload or application may require additional scrutiny or application of appropriate STIG/SRG guidance to fully secure the system. Adherence to additional NGINX configuration guides may be necessary for specific workloads. Some examples include:

- Apply the Web Server SRG to all proxied web content servers outside of the base NGINX server.
- Apply the Application Layer Gateway SRG to configurations distributing applications through the NGINX server.
- Apply the Container Platform SRG or Docker/Kubernetes STIGs to workloads providing container services through the NGINX server.
- Apply the API SRG when providing API management and accessibility to workloads.