DEPARTMENT OF THE NAVY
CHIEF INFORMATION OFFICER
1000 NAVY PENTAGON
WASHINGTON, DC 20350-1000

7 February 2014

MEMORANDUM FOR DISTRIBUTION

Subj: RELEASE OF THE DEPARTMENT OF THE NAVY ENTERPRISE ARCHITECTURE
VERSION 5.0 (DON EA v5.0)

Ref: (a) DON CIO Memorandum, Release of the Department of the Navy Enterprise Architecture
(DON EA) Version 4.0.000, 26 September 2012

Encl: (1) Department of the Navy Enterprise Architecture Version 5.0 (DON EA v5.0) Change
Summary
(2) Department of the Navy Enterprise Architecture (DON EA) DON System & Application
Virtualization

    This memorandum announces the release of the Department of the Navy Enterprise Architecture
(DON EA) v5.0, which updates DON EA v4.0.000, released via reference (a). Enclosure (1) summarizes
the changes implemented with this update. Enclosure (2) provides detailed information on a new DON
EA artifact, "DON System & Application Virtualization."

    The Fiscal Year 2014 assessment of DON EA compliance will begin on 10 February 2014 in the
DON variant of the Department of Defense Information Technology Portfolio Repository (DITPR-
DON). All DITPR-DON records are required to complete this assessment as part of the following
processes:
- DON Information Management/Information Technology Investment and Annual Review,
- Title 40/Clinger-Cohen Act (Title 40/CCA) Confirmation, and
- Public Key Enablement (PKE) Waiver Request.

    Current, authoritative information on DON EA policy and procedures can be found at:
https://www.intelink.gov/wiki/DONEA. The DON point of contact is Mr. Gregory Allen,
gregory.j.allen@navy.mil, (703) 697-0018.

Barbara Hoffman
Department of the Navy
Chief Information Officer (Acting)

Distribution: (see pages 2 and 3)

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Department of the Navy Enterprise Architecture Version 5.0 (DON EA v5.0) Change Summary

DON EA Artifact Name	Change Type	Change
DON System & Application Virtualization (DON EA Reference Code: VIRT) (See Enclosure 2)	New	This artifact determines whether "Server-based IT and national security systems (NSS) (ACAT and Non-ACAT), already deployed, being developed, procured or acquired are virtualized and compliant with the Service technical authority standards for virtualization."
Mandatory Use of Existing DON, DoD or Commercial Enterprise Data Centers Before Investing in Increased Data Storage Capacity (DCC)	Update	1. "NMCI" in the compliance question has been replaced with "NGEN (when available)" 2. A new verification question has been added: "The hosting environment information is accurately captured on the Infrastructure (INFRA) Tab."
DON Enterprise Software License/Enterprise License Agreement/Enterprise Software Agreement/DoD Enterprise Software Initiative or FSSI SmartBuy (ELA)	Update	Associated IT Procurement Request (ITPR) identification number(s) is/are required when applicable and appropriate.
DON Implementation of Public Key Infrastructure (PKI) and Public Key Enablement (PKE)	Update	The applicability scope has been changed to read: "Unclassified information systems hosting information not approved for public release and classified information systems (System Classification: SECRET), including networks, email, and web services with connection to the GIG (Reference DoDI 8520.03)."
Management of Records in DON IM/IT System (MREC)	Update	A question has been added requesting whether a system is in pre-deployment status. This will determine whether the program must answer the additional seven records management related questions.
DON Use of Electromagnetic Spectrum in DON IM/IT Investments (EMS/EMS2)	Update	1. DON EA reference code has been changed to "EMS" from "EMS/EMS2" 2. The acquisition threshold (2009) for the Spectrum Supportability Risk Assessment (SSRA) requirement has been removed. 3. Errors in the 3rd compliance question have been corrected to read: Spectrum supportability guidance from the Inter-department Radio Advisory Committee's (IRAC) Spectrum Planning Subcommittee (SPS) and the Military

		Communications-Electronics Board (MCEB) Frequency Panel's (FP) Equipment Spectrum Guidance Permanent Working Group (ESG PWG) has been or will be implemented."
COTS Software Fielding within DON (COTSF)	Update	1. The verification time threshold has been changed to "prior" from FY13 to read: "Have the COTS software or versions used by the system changed since PM's prior assertion?" 2. Compliance question has been changed to "COTS software is currently supported; support is planned for entire fielded lifecycle; is FAM approved, and free of any security vulnerabilities" to reflect the applicable policies.
DON Records Management Application (RMA)	Removal	This artifact has been removed from DON EA since the applicable software application would be registered in DADMS.
DON Mission Assurance Category Selection (MAC)	Removal	This artifact has been removed from DON EA.
DON IM/IT Investments Selection of Mission Criticality (MCR)	Removal	This artifact has been removed from DON EA.
Navy Conditioned Based Maintenance Plus (NCBM)	Removal	This artifact has been removed from DON EA.

Department of the Navy Enterprise Architecture (DON EA)
DON System and Application Virtualization

General Information	
1. **Artifact Name**	DON System & Application Virtualization
2. **DON EA Layer**	Law, Regulation, Policy and Guidance (LRPG)
3. **LRPG Statement**	Owners of server-based systems registered in DITPR-DON and their associated server-based applications will assert compliance with this policy via the established annual DON Enterprise Architecture (EA) review process.
4. **DON EA Goals and Objectives**	To achieve operational cost reductions and improve flexibility in its existing Information Technology (IT) infrastructure, the Department of the Navy (DON) will virtualize all current server-based systems/applications at a minimum rate of 15 percent of each Budget Submitting Office's (BSO) computing environment per year until 100 percent virtualization is achieved. All new server-based systems/applications that are not already approved for deployment as of 29 July 2013 will be developed to operate in virtualized environments.
5. **Description**	Virtualization is one of multiple efficiency efforts that the DON must pursue to achieve cost reductions. Through virtualization, multiple operating systems and applications can be run on a single physical server. To achieve operational cost reductions and improve flexibility in its existing Information Technology (IT) infrastructure, the Department of the Navy (DON) will virtualize all current servers and server-based systems/applications. All new servers and server-based systems/applications that are not already approved for deployment will be developed to operate in virtualized environments.
6. **Lead SME**	Randy Darrow DON CIO 703.695.1986 randy.darrow@navy.mil
7. **References**	DON CIO memo of 29 July 2013 - Server, System and Application Virtualization
8. **Best Practices**	Virtualization is one of multiple efficiency efforts that the DON must pursue to achieve cost reductions. Through virtualization, multiple operating systems and applications can be run on a single physical server. This must be performed in compliance with the Service technical authority standards for virtualization.

Implementation	
9. Usage Type (Mandatory, Informational, Documentation Required)	Mandatory
10. Effect (Solution Architectures, Design/Functionality, Both)	Both
11. Applicability: - **IT/NSS/IT including NSS)** - **ACAT/Non-ACAT** - **Specific (more restricted applicability of which system/scenarios we plan to review for compliance**	- IT including NSS - ACAT and Non-ACAT - Server-based only
12. Compliance Criteria	Compliant – The DON IT/NSS asset already deployed or being developed, procured, or acquired is virtualized (i.e., all operating systems associated with the system are hosted in a virtual environment) and is compliant with the Service technical authority standards for virtualization. Non-Compliant – The DON IT/NSS asset already deployed or being developed, procured, or acquired is not virtualized (i.e., not all operating systems associated with the system are hosted in a virtual environment) or is not compliant with the Service technical authority standards for virtualization.
13. Waiver Requirements	Systems/applications incapable of virtualization will submit a waiver request via the DON EA, endorsed by: Echelon II CIO (Navy Only); Functional Area Manager (FAM); and either DDCIO (Navy) for Navy systems/applications, DDCIO (Marine Corps) for Marine Corps systems/applications, or by DON/AA for Secretariat systems/applications; with final approval by DON CIO by 30 September 2014. Waiver request must include the number and type of physical servers (e.g., Windows, Unix, Linux, etc.) used to support the system.
14. Documentation - **For compliance verification** - **For waiver request** - **Definitions**	Compliance verification documentation – Owners of systems/applications will assert compliance with the DON CIO memo of 29 July 2013 - Server, System and Application Virtualization policy via the established annual DON Enterprise Architecture (EA) review process.

Waiver request documentation – Owners of systems/applications who deem their systems/applications incapable of virtualization must submit initial waiver requests via the DON EA for consideration no later than 30 September 2014. All waiver requests must be endorsed by the Echelon II CIO (Navy Only); Functional Area Manager (FAM); and either DDCIO (Navy) for Navy systems/applications, DDCIO (Marine Corps) for Marine Corps systems/applications, or by DON/AA for Secretariat systems/applications. Final waiver approval of any waiver will be granted by only DON CIO.

Definitions :

Virtual Environment – A virtual environment describes a means of delivering server-based computing resources that have been decoupled from specific physical server(s). A virtual environment enables the running of virtual servers, virtual systems, and/or virtual applications on a virtual host. The advantage of a virtual environment is that it can more efficiently utilize physical hardware resources while avoiding costly over-provisioning expenses.

Server – A server is a physical hardware device that provides computer processing, random access memory, has access to some form of resilient storage, and is able to support installation of an operating system or operating systems by the server administrator.

Note 1: A "computing appliance" shall not be counted as a server, *see definition for computing appliance.*
Note 2: A physical server that supports installation of multiple operating systems is also called a "virtual host," *see definition for virtual host.*

System – A system is a combination of two or more server-based computing elements (hardware, software) and performs tasks that benefit the user.
Application – An application is a specific instance of server-based software designed to provide the user with a specific capability or function to perform a specific activity that is independent of other applications.

Server Virtualization – Server Virtualization is achieved when multiple operating systems are run on a single physical hardware device (server).

Note: Multiple vendors currently provide support for server

virtualization and many use the term "virtual host" instead of server to describe the physical hardware device running a hypervisor or other virtual container, *see definition for virtual host.*

System Virtualization – System virtualization is achieved when ALL operating systems associated with the server-based system are hosted in virtual environment.

Application Virtualization – Application virtualization is achieved when ALL operating systems associated with the server-based application are hosted in virtual environment.

Computing Appliance – A computing appliance is a physical device or virtual container that contains or consumes compute, but to which the server administrator has no ability to modify or repurpose. Examples of a computing appliance are: Google Search Appliance, Storage Device Controllers (often referred to as Storage Processors, Heads, Nodes, Directors, etc.), network switches, etc.

Note: A "computing appliance" shall not be counted as a server, *see definition for server.*

Virtual Host – A virtual host is a single physical hardware device (server) that runs multiple operating systems. The system(s) and application(s) remain unaware that they reside in a virtual resource instead of a physical one.

15. Required Action Associated with Granted Waiver	No permanent waivers will be granted. Waivers will be valid for one year and reconsidered during subsequent annual reviews by DON CIO. DON CIO will provide annual virtualization waiver updates to the Vice Chief of Naval Operations and Assistant Commandant of the Marine Corps.
16. SME Review	Required
17. Review SME Organization	DON CIO
18. Assertion Review Route	SME -> EII CIO (Navy only) -> FAM -> DDCIO
19. Waiver Request Review Route	SME -> EII CIO (Navy only) -> FAM -> DDCIO -> DON CIO
20. Effective Date	10 February 2014 (FY14 annual review)