



**Department of the Navy  
Performance Plan  
for  
Reduction of Resources Required for Data Servers and Centers  
in Support of The National Defense Authorization Act  
for Fiscal Year 2012**

**20 March 2012**

**Department of the Navy  
Chief Information Officer**

## Executive Summary

The Department of the Navy (DON) continues its effort to reduce the Navy's overall data center footprint, deliver cost and environmental efficiencies and increase the overall information technology (IT) security posture while ensuring Navy and Marine Corps warfighting capability remains strong. This effort aligns directly with the Office of Management and Budget (OMB) Federal Data Center Consolidation Initiative (FDCCI) and the National Defense Authorization Act for Fiscal Year 2012 (NDAA FY12).

The Navy Data Center Consolidation (NDCC) Task Force's primary purpose is to achieve \$1.4B in cost savings across the Future Years Defense Program (FYDP) through a reduction in Navy data center operational costs, accomplished primarily by decreasing the number of data centers. The current Navy Data Center Consolidation (DCC) execution plan includes consolidating 22 data centers in 2012, and consolidating additional data centers through FY17. The NDCC Task Force (TF) was established in October 2011 to execute the consolidation of DON legacy data centers throughout the Continental United States (CONUS) into Navy Enterprise Data Centers (NEDCs). The Navy DCC Task Force (NDCC TF) effort aligns with and supports the OMB's FDCCI and the NDAA FY12. Throughout the consolidation process, the Navy will continue to leverage enterprise services to realize efficiencies and improve service. The Navy is also examining geographically co-located DON data centers and identifying opportunities to combine data centers, leveraging virtualization and consolidation to reduce the total Navy IT footprint where it makes sense fiscally and operationally.

The Marine Corps is executing its Regionalization Strategy in FY12 to transform its current network infrastructure into a tightly integrated, agile, defensible, survivable network that is capable of maintaining a superior security posture. In support of the regionalization construct, the Marine Corps Network Operations Security Center (MCNOSC), ALTNOSC (alternate NOSC continuity of operations site), Marine Corps Enterprise IT Services (MCEITS) and ALT MCEITS are classified as Enterprise Data Centers. Seven sub-regions governed by Marine Air (MITSCs) are classified as Regional Data Centers. The Marine Corps is currently engaged in multiple efforts within the MITSCs to continue identifying and transitioning isolated server- hosting facilities to its Enterprise/Regional Data Centers.

-Ground Task I

The Navy and Marine Corps will continue to work with the DON CIO and participate in the identification, collection, and evaluation of methodologies and metrics to assess the performance of the Department's data centers and to identify remaining candidates for consolidation and closure.

**Navy Performance Plan for Reduction of Resources Required for Data Servers and Centers in Support of the National Defense Authorization Act for Fiscal Year 2012**

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## **1. Introduction**

The Navy Data Center Consolidation (NDCC) Task Force (TF) was established in October 2011 to execute the consolidation of legacy data centers throughout the Continental United States (CONUS) into Navy Enterprise Data Centers (NEDCs). NEDCs will provide a common Navy architecture to satisfy system, application and database hosting requirements. The NDCC TF effort aligns with and supports the Federal Data Center Consolidation Initiative (FDCCI) and the National Defense Authorization Act for Fiscal Year 2012 (NDAA FY12). Enterprise hosting capability is a critical element of Department of the Navy (DON) Chief Information Officer (CIO) and Chief of Naval Operations (CNO) guidance directing information technology (IT) foot print reduction. It is also a force multiplier for preparing for smooth and cost-effective transition to the Navy's Networks and Electromagnetic Spectrum (NES) Roadmap. The NDCC TF effort is focused on systems and applications classified Secret and below.

The NEDC hosting capability will: 1) serve as a catalyst to rapid, enterprise wide reduction of its IT infrastructure; 2) deliver improvements in security, continuity of operations, and disaster recovery postures; and 3) achieve cost and environmental efficiencies. These benefits have been well-established through multiple private industry case studies and, recently, several Navy pilot projects. Of additional benefit to the Navy, DCC will help to facilitate cross-Echelon II cooperation and shared services, thereby contributing to the transformation of Navy IT from a loose federation of roughly 25 independent "business units" to a more mature, centrally managed operation in which true Enterprise IT investment decisions are made.

## **2. Navy Goals for Data Center Consolidation**

The NDCC TF's primary purpose is to reduce Navy data center operational costs by decreasing the number of data centers in order to achieve \$1.4B cost savings across the Future Years Defense Program (FYDP). The primary objective is cost savings; additional objectives include improved continuity of operations (COOP), disaster recovery (DR), physical and cyber security, and standardization of processes and platforms. To realize \$1.4B in cost savings over the FYDP and maximize Return on Investment (ROI), the TF will:

- Virtualize applications/systems as appropriate,
- Maximize use of the NEDC delivery model to achieve economies of scale,
- Maximize re-use of hardware and software assets,
- Continually seek ways to improve efficiency and leverage investments,
- Support application/system rationalization (as a collateral benefit of consolidation, not the main focus or responsibility of the NDCC TF), and
- Identify unreported assets and other opportunities for cost savings.

## **3. Implementing Shared Services/Multi-tenancy**

Throughout the consolidation process, the Navy will continue to leverage enterprise services to realize efficiencies and improve service. As Navy data centers and systems, servers and applications migrate to NEDCs, opportunities for expanding the slate of enterprise services will be evaluated and considered for inclusion for Navy-wide access.

At several Navy data centers, resources have been provided to other Navy Echelon IIs and to customers from other military departments (MILDEPs) as well as other Federal Agencies. For example, a SPAWAR Systems Center Pacific (SSC PAC) data center in San Diego supports multi-tenancy with an NMCI data center as well as a DISA data center. Throughout the NDCC process, the Navy will examine

co-located data centers and identify opportunities to combine data centers, leveraging virtualization and consolidation to reduce total Navy IT footprint where it makes sense fiscally and operationally.

#### **4. Agency Approach, Rationale and Timeline**

The current scope of the program consists of three main activities:

- Assessing each data center identified on the data center closure list, and developing a transition plan for moving each application in that data center to one of the three identified NEDCs until all targeted data centers have been closed;
- Implementing the transition plan for each application, including post-transition testing, to confirm that each application has moved from its former sustainment situation to the new sustainment situation in the NEDCs; and
- Capture efficiencies throughout transition and sustainment.

The NDCC TF is actively engaged in other IT efficiency efforts, including leveraging enterprise software licensing and capturing data to support application rationalization. These efforts support and complement the data center consolidation efforts and goals.

The NDCC TF has developed a plan that includes the incremental implementation of the NEDC architecture. Increment I is scheduled for FY12; Increment II is scheduled for FY13; and Increment III is scheduled for FY14. SPAWAR, as the technical authority for the Navy, is conducting the engineering review and validation of the architecture design and execution. The data center consolidation schedule will align with the NEDC architecture implementation. The current plan for execution involves consolidating 22 data centers in 2012, with the remainder of the data centers scheduled to transition through FY17. The final consolidation plan, including the data centers to be transitioned, is subject to Naval Operations (OPNAV) N2N6/Deputy DON CIO (Navy) and Assistant Secretary of the Navy for Research, Development, and Acquisition (ASN (RDA)) approval.

#### **5. Agency Governance Framework for Data Center Consolidation**

The governance framework provides concise direction regarding the methodology and direction for NDCC TF efforts to subordinate commands. ASN (RDA) identified SPAWAR as the executing agent and technical authority, with direction from OPNAV N2N6/DDCIO (N). SPAWAR stood up the NDCC TF, which has overall responsibility for all data center consolidation efforts and for ensuring these efforts align to the Navy Information Dominance strategy. The NDCC TF reports to the Commanding Officer, SPAWAR, OPNAV N2N6/DDCIO(N), and ASN (RDA) to coordinate the execution of data center consolidation. Roles and responsibilities are as follows:

ASN (RDA)	Provides NDCC acquisition oversight.
DON CIO	Establishes policy related to the Navy NDCC in accordance with SECNAV direction.
OPNAV N2N6	Provides specific requirements for Navy NDCC and the requisite resources to the NDCC TF for successful execution of Navy NDCC.
DDCIO(N)	Establishes policy related to the Navy's NDCC efforts in concert with relevant DON CIO policies and provides formal direction to Navy legacy DC/ application owning commands specific to NDCC execution.

An Integrated Master Schedule (IMS) has been created to outline application transition and data center consolidation schedules. The baseline IMS will be used as a benchmark, once fully approved by all stakeholders. Modification to the data center consolidation list must be approved by DDCIO(N). Changes to baseline schedules must be approved by the Program Manager (PM) and must be communicated to the DDCIO(N). A spend plan will be used to plan and monitor the execution of the

funds provided for each fiscal year. Changes to the cost/spend baseline must be approved by the PM and reported to OPNAV N2N6/DDCIO(N).

## **5.1 Cost-Benefit Analysis**

To support the FDCCI, DON CIO established an Integrated Process Team (IPT) to develop resources to assist in the execution of NDCC. The IPT created the Application and Systems Hosting Requirements Document (ASHRD) template to be completed for each data center or part of a data center that will be part of the migration and consolidation. The NDCC TF has invested resources to ensure that the Facility and Application Consolidation Cost Analysis (FACCA) is accurately captured while engineering site assessments are being completed. The information collected is being used to identify the return on investment (ROI) for data centers that are being considered for consolidation. These tools will assist the NDCC TF in providing the technical assessment and cost estimation for migrating systems.

## **5.2 Risk Management and Mitigation**

The Navy has identified risk management as an important component for the successful execution of a data center consolidation strategy. The NDCC TF has established a risk management plan to identify, track and mitigate risks. Risks will be identified and tracked through IPTs, and adjudicated through a risk review board, using the NDCC TF governance process to elevate significant risks.

## **5.3 Acquisition Management**

The NDCC TF leverages DOD-wide and government-wide acquisition vehicles, including the use of existing DoD MACs. An acquisition strategy (AS) has been put into place with the concurrence of the cognizant Primary Contracting Officer (PCO) to execute NDCC TF funding. The AS includes provisions for the procurement of hardware and software, leveraging DOD Enterprise Software Licenses (ESLs). It also takes into consideration NDCC TF execution requirements, such as schedule. The AS also outlines the plan for services to support NDCC TF execution, including program management, data center and application transition, and NEDC sustainment.

## **5.4 Communications Strategy**

The DoD's communication plan for the FDCCI successful execution involves effectively communicating with key internal and external stakeholders to ensure that all entities are engaged and aligned. The NDCC TF requires coordination across multiple organizations, involved in activities such as: management, oversight, guidance, execution, finance, testing, and Certification & Accreditation (C&A).

Stakeholders are engaged regularly through reoccurring meetings, briefings, and status updates to manage expectations of NDCC TF products and deliverables. Stakeholders who are involved with decision making for NDCC are continually provided updates on NDCC TF progress and achievements to date, changes in strategy, and issues affecting the success of the program. If changes to the NDCC TF's scope or objectives occur that require stakeholder approval, stakeholders will be notified during regularly scheduled or ad hoc meetings. Stakeholders who will be impacted by NDCC, are provided information on what to expect and how to prepare for consolidations, and provided a forum to raising concerns and asking questions to the NDCC TF.

The NDCC TF has implemented a communications plan as part of the overall Program Management Plan (PMP).

## **6. Progress**

### **6.1 NDAA FY12 and FDCCI Consolidation Progress**

Throughout FY11, Navy has been tracking the progress of the DCC efforts as outlined in the FY10 FDCCI plan. Since there were already DCC efforts underway at the Navy Echelon II level, the decision was made to leverage these efforts to support the overall FDCCI goals.

Navy has identified data centers to be consolidated and has developed a notional schedule for closure. At this time, NDCC TF is conducting assessments to determine the technical feasibility and estimated costs to execute the plan. When complete, this analysis will allow Navy to finalize the NDCC plan for FY12 and beyond and document the investment costs and mission risks associated with the plan. From this information, an estimate of future costs savings can be projected.

To successfully execute the NDCC plan, the Navy will need to change its traditional approach to IT and data centers. In the past, when a requirement for a data center was identified at Echelon II, the organization either used existing Echelon II data center holdings to execute, or built their own to accommodate the new requirement. In the current era of shrinking budgets and expanding IT needs, the Navy will leverage NEDCs, to provide the server, system, application, and services needed by the Echelon II commands to fulfill their requirement. The advantages of the NEDCs, including improved disaster recovery, continuity of operations, information assurance, and a common rate structure, will facilitate migration to the NEDCs.

### **6.2 Cost Savings**

Several factors influence the Navy's ability to estimate costs and potential savings to be realized from DCC:

- Personnel/FTE – Many of the personnel involved in management of data centers resources have done so as collateral duties making the elimination of billets difficult to achieve. In other cases, legacy data center personnel were assigned other duties, transferring the personnel expense to some other area within the Navy..
- Power – Most Navy data centers are not independently metered requiring estimating techniques to be applied in calculating power consumption. As a useful technique, the Navy is collecting data from the Uninterruptable Power Supplies (UPSs) during site assessments to determine the power consumed by the computing resources and applying a 2:1 multiplier to account for associated cooling and lighting power consumption. This will provide a reasonable estimate of power consumed at sites being consolidated.
- Buildings – In most cases, Navy data center space will be re-purposed for other use, including office space and telecommunication space. While not a direct cost savings to the Navy, the availability of this space could defray other building costs and provide cost avoidance opportunities for the Navy.
- Hardware/Software – To enable systems to migrate from closing sites to the NEDCs, investments in HW and SW will be required where the use of existing hardware and software proves to be technically inadequate or costly to the government.

Learning from experience, the NDCC TF has taken action to ensure that relevant data is captured during the assessments conducted in FY12 and out. The FACCA data collected by NDCC TF will support the determination of savings and Return on Investment (ROI).

## 7. NDAA FY12 and FDCCI

### 7.1 Data Center Consolidation Plan

The Navy is embarking on an aggressive plan to consolidate 58 data centers into the three NEDCs operated by the Space and Naval Warfare (SPAWAR) Systems Command. The NEDCs are located in San Diego, New Orleans, and Charleston. In FY12, the Navy will complete assessments (thorough and “quick look”) of all Navy DCs (those closing and those being retained) to enable the Navy to have a complete, enterprise view of DC assets, capabilities, systems, and costs. The technical and cost data collected during these assessments will enable the Navy to perform the requisite analyses to engineer/plan system migrations and estimate cost savings and ROI.

Initial estimates, as available are provided below to reflect expected physical asset count reductions.

Savings Metrics	Planned Program Savings 2/2010 through 4Q15
Data Center Count Reduction (#)	58
Gross Floor Area Reduction (sq.ft)	96,084*
Rack Count Reduction (#)	884*
Server Count Reduction (#)	3,447*
Mainframes (IBM or compatible) Reduction (#)	TBD**
Mainframes (Other) Reduction (#)	TBD**
Windows Servers Reduction (#)	TBD**
Linux Servers Reduction (#)	TBD**
UNIX Servers Reduction (#)	TBD**
Other Servers Reduction (#)	TBD**
Energy Usage Reduction (kW)	TBD**
Energy Cost Reduction (\$)	TBD**
Increase in Number of Organizations Using Agency Data Centers (#)	TBD**
Commercial and Government-Developed Applications Reduction (#)	TBD**
Full-time Equivalent Personnel (labor) Reduction (#)	TBD**
Labor Cost Reduction (\$)	TBD**
Percentage of Desktop, Laptop, and Mobile Device Virtualized (%)	TBD**
For Data Centers with excess 100 kilowatt (kW) IT usage:	TBD**
Total Floor (sq. ft.)	TBD**
Total Power usages (kW)	TBD**
Total Storage capacity (Mb)	TBD**
Total Network Capacity (Mb)	TBD**
PUE (Power Usage Effectiveness)	TBD**

\* Figures are pending validation based upon ongoing data center assessments

\*\* Discrete values will be available once data center assessments are complete in FY12



Based on Initial Asset Inventory submission, expected physical asset count reductions are summarized in the table below:

**Department/Agency-Wide Savings Plan**

<b>Dept/Agency Name</b>	<b>DoD/Navy</b>					
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	Calculated from Baseline	Target				
	4Q10	4Q11	4Q12	4Q13	4Q14	4Q15
<b>Data Centers: Total number of Data Centers (#)</b>	<b>114</b>	<b>101</b>	<b>79</b>	<b>67</b>	<b>58</b>	<b>55</b>
<b>Data Centers: Aggregate Gross Floor Area (sq.ft.)</b>	<b>527,773</b>	511,809	495,594	473,798	439,844	431,689

<b>Total Number of Racks (#)</b>	<b>3,958</b>	<b>3,914</b>	<b>3,627</b>	<b>3,551</b>	<b>3,145</b>	<b>3,074</b>
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<b>Total Number of Physical Servers by Type (#)</b>	<b>11,781</b>	<b>11,041</b>	<b>10,292</b>	<b>10,042</b>	<b>8,865</b>	<b>8,334</b>
Mainframes (IBM or compatible)		TBD*	TBD*	TBD*	TBD*	TBD*
Mainframes (Other)		TBD*	TBD*	TBD*	TBD*	TBD*
Windows Servers		TBD*	TBD*	TBD*	TBD*	TBD*
Linux Servers		TBD*	TBD*	TBD*	TBD*	TBD*
UNIX Servers		TBD*	TBD*	TBD*	TBD*	TBD*
Other Servers		TBD*	TBD*	TBD*	TBD*	TBD*

<b>Aggregate Data Center Energy Usage (kWh/year)</b>		TBD*	TBD*	TBD*	TBD*	TBD*
<b>Aggregate Data Center Energy Costs (\$/year)</b>		TBD*	TBD*	TBD*	TBD*	TBD*

<b>Aggregate Data Center Building Operational Cost (\$/year)</b>		TBD*	TBD*	TBD*	TBD*	TBD*
<b>Aggregate FY Construction, Expansion, Consolidation Budget (\$/year)</b>		TBD*	TBD*	TBD*	TBD*	TBD*

<b>Number of multi-organizational utilization of data centers, information systems technologies, and associated resources (#)</b>		TBD*	TBD*	TBD*	TBD*	TBD*
<b>Amount of investment for capital infrastructure or equipment required to support data centers as measured in cost per megabyte of data (\$)</b>		TBD*	TBD*	TBD*	TBD*	TBD*

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<b>Number of commercial and government developed applications running on data servers and within data centers</b>		TBD*	TBD*	TBD*	TBD*	TBD*
<b>Number of government and vendor provided full-time equivalent personnel, and in the cost of labor, associated with the operation of data servers and data centers</b>		TBD*	TBD*	TBD*	TBD*	TBD*

\* Discrete values will be available once data center assessments are complete in FY12

Savings metrics identified below (**per year**).

<b>Savings Metrics</b>	<b>4Q11</b>	<b>4Q12</b>	<b>4Q13</b>	<b>4Q14</b>	<b>4Q15</b>
<b>I) Reduction in the square feet of floor space devoted to information systems technologies, attendant support technologies, and operations within data centers.</b>	2%	10%	10%	5%	15%
<b>II) Reduction in the use of all utilities necessary to power and cool information systems technologies and data centers.</b>	2%	7%	9%	7%	10%
<b>III) An increase in multi-organizational utilization of data centers, information systems technologies, and associated resources.</b>	0%	0%	TBD*	TBD*	TBD*
<b>IV) Reduction in the investment for capital infrastructure or equipment required to support data centers as measured in cost per megabyte of data.</b>	0%	5%	5%	10%	10%
<b>V) Reduction in the number of commercial and government developed applications running on data servers and within data centers.</b>	0%	5%	10%	10%	25%
<b>VI) Reduction in the number of government and vendor provided full-time equivalent personnel, and in the cost of labor, associated with the operation of data servers and data centers.</b>	0%	0%	10%	10%	15%

\* Dependent upon the use of Navy DCs as DoD Core DCs and the distribution of applications across the DoD enterprise. Sites that are co-use will not close. Their IT assets will be relocated, OPNs remain. Personnel will be realigned to assist with Data Center closures and consolidations that explain the 0% metrics for 4Q11 and 4Q12 for Metric #VI.

The Typical and Target Results listed in the table below represent broad industry findings and shall serve as overall utilization benchmark to support data center consolidation decision making.

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Utilization Metrics	Typical Results	Target Results
Average Virtualization (%)	0-10%	30-40%
Average Virtual OS per Host (#)	5-10	15-20
Average Server Utilization (%)	7 – 15%	60 – 70% <i>(application dependent)</i>
Average Rack Space Utilization (%)	50 – 60 %	80 – 90%
Power Usage / Sq Foot (W/Sq Ft)	50 – 100 W/Sq Ft	150 – 250 W/Sq Ft
Power Usage Efficiency (PUE)	3 – 2	1.6 – 1.3

**Dept/Agency-Wide Utilization Plan**

<b>Dept/Agency Name</b>	<b>DoD/Navy</b>
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	Calculated from Baseline	Target*				
	4Q10	4Q11	4Q12	4Q13	4Q14	4Q15
Average Virtualization (%) [Virtual Host Count / Total]		TBD*	TBD*	TBD*	TBD*	TBD*

Average Number of VMs per Virtual Host (#)		TBD*	TBD*	TBD*	TBD*	TBD*
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Average Power Usage Efficiency (PUE)		TBD*	TBD*	TBD*	TBD*	TBD*
Average Rack Space Utilization (%)		TBD*	TBD*	TBD*	TBD*	TBD*
Average Rack Floor Utilization (%)		TBD*	TBD*	TBD*	TBD*	TBD*
Average Power Density Capacity Equivalent (W/sq.ft)		TBD*	TBD*	TBD*	TBD*	TBD*

\*Virtualization information is being collected through site assessments in FY12 and will be validated through technical engineering analyses. Based upon this data, the target can be determined.

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## 1. Introduction

Per the office of Management and Budget (OMB) memorandum dated 26 February 2010, the Federal Data Center Consolidation Initiative (FDCCI) shall:

- Promote the use of Green IT by reducing the overall energy and real estate footprint of government data centers
- Reduce the cost of data centers hardware, software and operations
- Increase the overall information security posture of the Marine Corps Enterprise Network (MCEN)

In order to adapt to an operating environment characterized by declining budgets and widening battlespace (including cyberspace), the Marine Corps must continue to find efficiencies within its Supporting Establishment. Implementing the FDCCI supports the Marine Corps goal of consolidating Information Technology (IT) assets and streamlining IT practices while continuing to deliver services vital to the Warfighter's ability to effectively execute mission requirements.

The FDCCI is catalyst for the Marine Corps' goal of Regionalization, which will enable an enterprise wide reduction of its IT footprint, will support and maintain global command and control operations between forward deployed forces and command/support elements in garrison. The consolidation of the MCEN infrastructure resulting from Regionalization will improve mission readiness, facilitate the introduction of critical advanced technology capabilities, reduce Total Cost of Ownership (TCO), and reduce power and cooling requirements for data centers. Per the FDCCI mandate, the Marine Corps will continue to catalogue and report on proposed enterprise services, applications and data storage, as well as its forward-looking consolidation plan. Tracking the MCEN architecture will assist the Marine Corps with enterprise alignment by identifying areas requiring closer scrutiny for possible consolidation.

The Marine Corps plans to leverage new technologies, including virtualization, thin client, and cloud computing in order to align with the Regionalization vision and strategy. By virtualizing enterprise services and application and deploying them on the MCEN via the Marine Corps Enterprise Information Technology System (MCEITS) the Marine Corps will consolidate physical resources, reach higher equipment utilization rates and achieve greater organizational flexibility within its Supporting Establishment and Warfighter environment.

## 2. Goals for Data Center Consolidation

The desired end-state of the FDCCI for the Marine Corps is to complete the Regionalization of IT Infrastructure assets (i.e. servers, storage, etc.) under the Data Centers that are strategically poised to service the defined regions of the Marine Corps and complete the inclusion of proposed enterprise services, data and applications into MCEITS. Achieving this end-state will result in the achievement of the OMB FDCCI objectives listed above, including the reduction of energy consumption, physical and IT security costs and hardware maintenance costs.

Deploying enterprise services and applications on MCEITS will reduce costs and save manpower by achieving economies of scale for procurement and reducing the acquisition of redundant solutions. Enterprise hosting and deployment on MCEITS will introduce business process efficiencies such as enabling Marine Corps Commands to quickly identify existing solutions to their capability gaps through an inventory of available enterprise systems and applications on MCEITS and enabling them to leverage established Service Level Agreements (SLAs) and unallocated software licenses. This will decrease stove piped solutions and acquisitions, which leads to better standardization across the enterprise.

### **3. Implementing Shared Services/Multi-tenancy**

Throughout the DCC process, the Marine Corps will continue to leverage Enterprise Services to provide for maximum availability of services while reducing the costs for providing them:

1. Local Area Network (LAN) Management
2. Help Desk Services
3. Cyber Security Services
4. Server and Application Hosting Website Hosting
5. Collaboration Tools
6. Email Services

As Marine Corps data centers and the systems, servers and applications migrate to MCEITS Enterprise Data Centers; opportunities for expanding the slate of Enterprise Services will be examined and considered for inclusion for Marine Corps -wide access. Inclusion of new services will be based on user requirements and the cost/benefit of adding more Enterprise Services and review of the Enterprise IT Portfolio.

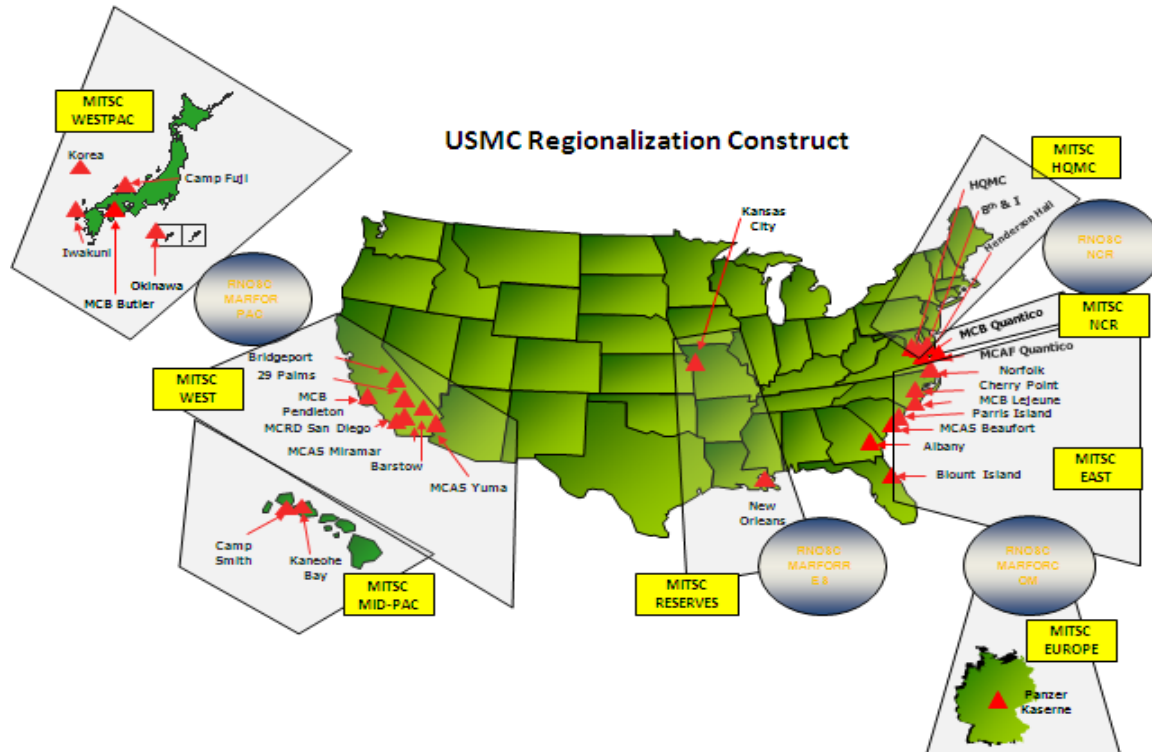
### **4. Agency Approach, Rationale and Timeline**

The Marine Corps is executing its Regionalization Strategy to evolve its current network infrastructure into a tightly integrated, agile, defensible, survivable network that is capable of maintaining a superior security posture. This new network posture will align the Supporting Establishment to be capable of supporting distributed operations and being more responsive to our warfighters and their missions. In support of the Regionalization construct, the Marine Corps established eight regions governed by Marine Air-Ground Task Force (MAGTF) IT Support Centers (MITSCs). Conceptually and operationally, these regional MITSCs form the backbone of all net-centric operations for the Marine Corps Information Enterprise (MCIE). The MITSCs, listed below, serve as support centers for the bases, posts, and stations within their region, providing IT support and enforcing established IT policies.

1. MITSC East
2. MITSC West (co-located with ALTNOSC)
3. MITSC Mid-Pac

4. MITSC West-Pac
5. MITSC Reserves
6. MITSC Europe
7. MITSC HQMC
8. MITSC NCR

Depicted below are MITSC regions defined by the Marine Corps Regionalization construct as well as the Bases, Posts, and Stations that reside within those regions.



The Marine Corps is pursuing the benefits of FDCCI by targeting Data Centers which are composed of facilities and IT assets involved in data processing for USMC enterprise, regional, and local applications/systems. In this context, data processing refers to IT assets, systems, and applications used to organize and manipulate large volumes of data such as fiscal, transactional, and historical data. The IT assets used in data transport are typically not considered a component in data processing and thus are not considered in the Marine Corps FDCCI efforts. In accordance with this characterization of a Data Center, the Marine Corps maintain four Enterprise and seven Regional Data Centers: the eight MITSCs except MITSC-HQMC (the Pentagon IT Center is owned and managed by the Army), MCNOSC, ALTNOSC (co-located with MITSC-West), Marine Corps Enterprise Information Technology Services (MCEITS), and ALT MCEITS.

In addition to tailoring the operation of the MCEN to the needs of the Marine Corps, the Corps' Regionalization Strategy aligns with the Global Information Grid (GIG) Computing Environment (GCE) construct established by the DOD. Under this construct, MCNOSC, ALTNOSC, MCEITS, and ALT MCEITS are classified as Core Computing Centers, the seven Regional Data Centers located at the MITSCs are classified as Regional/Component Computing Centers.

To optimize the operations of its eleven Enterprise / Regional Data Centers, the Marine Corps will leverage identified lessons learned from its Green IT initiatives. The best practices listed below will assist the Marine Corps in improving its energy efficiency and meeting FDCCI objectives:

- Monitor and incorporate energy usage as a Data Center metric and Key Performance Indicator (KPI).
- Reduce power consumption through consolidation and dynamic provisioning of server capacity through virtualization.
- Leverage vendors and partners with energy policies that consider the environmental impact of their products and services.
- Replace lighting, cooling, power supplies, servers, and non-IT support equipment with newer, energy-efficient products.
- Implement Data Center designs and processes that optimize air-flow between racks/aisles to improve cooling.
- Introduce energy-efficiency variables into system monitoring requirements that will allow the Marine Corps to adjust workloads and temporally shut down unused or under-provisioned systems.

In addition to operating its eleven Enterprise / Regional Data Centers, the Marine Corps recognizes the need to be agile: providing additional support to requesting elements within the enterprise, preparing additional resources for Disaster Recovery – Continuity of Operations (DR-COOP) scenarios, and reallocating existing resources and/or deploying new resources on-demand to support the warfighters. To enable this flexibility and support our tactical network, the Marine Corps will continue to deploy and recall Operational Data Centers that will support the eleven Enterprise / Regional Data Centers.

## **5. Governance Framework for Data Center Consolidation**

With the establishment of the eleven Marine Corps Enterprise / Regional Data Centers, the next steps in its Regionalization Strategy are to optimize the utilization of those Data Centers. Going forward, the Marine Corps will exploit opportunities to consolidate communication hubs and other data assets to include isolated servers into the eleven Enterprise / Regional Data Centers and will migrate its enterprise services and applications to MCEITS. To ensure a structured but flexible approach, the following governance framework establishes roles and responsibilities regarding MCEITS migration and facility consolidation tasks, without limiting the individuals or organizations that can occupy those roles. At a minimum, the following roles must be filled for each project:

- A Project Manager (PM) who is responsible for the implementation of the project and will serve as the Point-of-Contact (POC) for the Project Sponsor and Authoritative Working Group.
- A Project Sponsor who is willing to support the project by dedicating manpower and/or financial resources.

Marine Corps Commands will primarily serve as Project Sponsors for facility consolidations. Specifically, they will be responsible for the:



- Acquisition, retirement and/or relocation of IT Assets to their Regional Data centers, including their associated costs (e.g. shipping, installation, removal, etc.).
- Realization of savings and re-purposing of resources.
- Reporting progress of their consolidation projects to the Information Technology Steering Group (ITSG).

FAMs will primarily serve as Project Sponsors for MCEITS migrations, responsible for the:

- Rationalization, virtualization, funding, and migration of their applications.
- Realization of savings and re-purposing of resources.
- Reporting progress of their MCEITS migration efforts to the ITSG.

The Marine Corps will utilize its Application Inclusion Process (AIP) to assess services and applications for inclusion and enterprise deployment on MCEITS. The Marine Corps will also leverage the Capital Planning and Investment Control (CPIC) process to develop relevant metrics to assess the mission alignment, technical performance of applications and compliance to policy, standards, and regulations, which will assist in making informed decisions on the inclusion of applications into MCEITS. The Marine Corps will integrate performance reviews against these developed metrics into established management structures that support strategic decision making for its IT environment.

### **5.1. Cost-Benefit Analysis**

Due to the complexity of the consolidation execution, measurement of increased short-term costs, and measurement of long-term savings, it is not immediately clear whether the consolidation of a Data Center, or one of its facilities, will result in net cost savings. The Marine Corps is participating in working groups with the DON and DOD to develop processes that will assist in estimating the initial funding requirement to close a Data Center (or one of its facilities) and estimating the long-term savings to be realized from closing facilities, including the associated reduction in energy use, real property savings, personnel reductions, and IT infrastructure (network) cost savings. The Marine Corps will also leverage existing processes and templates (e.g. DON CIO Business Case Analysis template) to quantify and evaluate the costs and benefits of consolidation.

### **5.2. Risk Management and Mitigation**

The Marine Corps is developing metrics for tracking Risk at three levels: component, project, and Data Center. Metrics for risk identification will be integrated into the evaluations of service and application transitions to MCEITS and Data Center facility consolidations. Projects with risks above a certain threshold will be reviewed by the Authoritative Working Group to identify a risk mitigation strategy.

### **5.3. Acquisition Management**

The Marine Corps will develop an acquisition strategy that adheres to the requirements established per the FDCCI, aligns with the Marine Corps Regionalization Strategy, and designates MCEITS the enterprise hosting environment for services, data and applications. In addition to utilizing its own strategic-sourcing and commodity-purchasing vehicles (e.g. Marine Corps Software Enterprise License Management System

(MCSELMS)), the Marine Corps will leverage government-wide acquisition vehicles that are negotiated by other Agencies (e.g. GSA - Computer Hardware Enterprise Software and Solutions (CHES)).

To accelerate the consolidation of enterprise services, and data into MCEITS, the Marine Corps will acquire and employ new technologies such as virtualization, cloud computing, and thin client solutions. As these solutions are evaluated against our current capabilities and operational requirements, the Marine Corps will continue to explore the optimal vehicles to leverage their acquisition and deployment.

#### **5.4. Communications Strategy**

To support the strategic communication initiative of the Commandant of the Marine Corps (CMC), the Marine Corps developed an internal Information Paper describing the Marine Corps position and progress made on the FDCCI for Marine Corps Senior Leadership and fact-sheets for distribution to external stakeholders, describing our progress and next steps at a high-level.

- The Marine Corps continues to conduct internal meetings to coordinate the consolidation of Data Center facilities and the migration of enterprise applications and services to MCEITS. In addition, representatives participate in coordination meetings with the DON FDCCI working group to ensure the Marine Corps approach is aligned to the requirements of the DON.

### **6. Progress**

#### **a. NDA FY12 and FDCCI Consolidation Progress**

During FY11 and now in FY12, the Marine Corps will continued to evaluate its communications hubs and other data assets to include isolated servers for opportunities to consolidate server-hosting facilities into its eleven Enterprise / Regional Data Centers. Specifically, the Marine Corps is currently engaged in or has completed consolidation efforts within MCEITS and the following MITSC regions:

- **MCEITS:** Continuing to build the MCEITS migration plan that currently includes 58 applications and systems schedule to migrate into MCEITS between now and the end of FY15
- **MITSC-EAST:** Successfully consolidated all server-hosting facilities within the region to a state-of-the-art, Green IT facility at its Regional Data Center located at Camp Lejeune. **Targeted IOC of facility is first quarter 2013**
- **MITSC-HQMC:** Currently completing the relocation of regional IT assets from the Navy Annex IT Center to the joint facility hosted by the Army in the Pentagon.- **Completed**
- **MITSC-WESTPAC:** Continuing to transition the Network Operations Center (NOC) within the III Marine Expeditionary Force (MEF) Area of Responsibility (AOR) from Camp Courtney to the Regional Data Center at Camp Foster. **Targeted for August 2012**
- **MITSC-RESERVES:** Completed the relocation of all Marine Forces Reserves (MARFORRES) Command IT systems to the Regional Data Center in Federal City. – **Completed in 2011**
- **MITSC-NCR:** Currently transitioning Marine Corps Systems Command (MARCORSYSCOM) and Training and Education Command (TECOM) IT assets to the NCR Regional Data Center in

Quantico and MCEITS. – **Continuing to monitor, MCSC completed VIPER migration in January 2012.**

## 7. Appendix – NDAA FY12 and FDCCI Templates

### a. Final Data Center Consolidation Plan Templates

The Marine Corps will continue to effect best industry practices in capturing opportunities in data center optimization and regionalization to reduce energy costs and system footprints to include Gross Floor Area Reduction with the use of automation and to affect Rack and Server Count Reduction and Energy Usage and Cost Reduction through MCEITS migration and final consolidation.

Savings Metrics	Planned Program Savings 2/2010 through 4Q15
Data Center Count Reduction (#)	0
Gross Floor Area Reduction (sq.ft)	76K sq Ft
Rack Count Reduction (#)	235
Server Count Reduction (#)	768
Mainframes (IBM or compatible) Reduction (#)	
Mainframes (Other) Reduction (#)	
Windows Servers Reduction (#)	435
Linux Servers Reduction (#)	222
UNIX Servers Reduction (#)	16
Other Servers Reduction (#)	95
Energy Usage Reduction (kW)	Note 1
Energy Cost Reduction (\$)	Note 1
Increase in Number of Organizations Using Agency Data Centers (#)	Note 2
Commercial and Government-Developed Applications Reduction (#)	Note 3
Full-time Equivalent Personnel (labor) Reduction (#)	Note 3
Labor Cost Reduction (\$)	Note 3
Percentage of Desktop, Laptop, and Mobile Device Virtualized (%)	Note 4
For Data Centers with excess 100 kilowatt (kW) IT usage:	Note 3
Total Floor (sq. ft.)	
Total Power usages (kW)	
Total Storage capacity (Mb)	
Total Network Capacity (Mb)	
PUE (Power Usage Effectiveness)	

Note 1: Marine Corps plans to reduce by 50% our Data Center Energy Usage

Note2: MCEITS is the primary vehicle with DISA in support

Note 3: Data unavailable at this time

Note 4: Marine Corps currently 43.5% VIRTUALIZED WITH THE GOAL OF BETTER THAN 80%

The Target for savings were set at the same level of Core data centers (11) with 50% reduction in aggregate floor space and racks via optimization and regionalization and movement to MCEITS. Targets are shown in following tables.

**Marine Corps Savings Plan**

**Marine Corps**

	Calculated from Baseline	Target					
		4Q11	4Q12	4Q13	4Q14	4Q15	4Q16
<b>Data Centers: Total number of Data Centers (#)</b>	<b>11</b>						
<b>Data Centers: Aggregate Gross Floor Area (sq.ft.)</b>	<b>152k</b>	137	122	106	91	76	

<b>Total Number of Racks (#)</b>	<b>470</b>	423	376	329	282	235
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<b>Total Number of Physical Servers by Type (#)</b>	<b>1535</b>	1382	1229	1076	923	770
Mainframes (IBM or compatible)						
Mainframes (Other)						
Windows Servers	870					
Linux Servers	444					
UNIX Servers	32					
Other Servers	189					

<b>Aggregate Data Center Energy Usage (kWh/year)</b>	Note 1					
<b>Aggregate Data Center Energy Costs (\$/year)</b>	Note 1					

<b>Aggregate Data Center Building Operational Cost (\$/year)</b>	Note 1					
<b>Aggregate FY Construction, Expansion, Consolidation Budget (\$/year)</b>	Note 1					

Number of multi-organizational utilization of data centers, information systems technologies, and associated resources (#)	Note 1					
Amount of investment for capital infrastructure or equipment required to support data centers as measured in cost per megabyte of data (\$) Number of commercial and government developed applications running on data servers and within data centers	Note 2					
Number of government and vendor provided full-time equivalent personnel, and in the cost of labor, associated with the operation of data servers and data centers	Note 1					

Note 1: Data unavailable at this time

Note 2: There are currently around 1600 Enterprise Applications

Savings metrics identified below are **cumulative**.

Savings Metrics	4Q12	4Q13	4Q14	4Q15	4Q16
I) Reduction in the square feet of floor space devoted to information systems technologies, attendant support technologies, and operations within data centers.	5%	15%	25%	35%	50%
II) Reduction in the use of all utilities necessary to power and cool information systems technologies and data centers. Note 1	0.3%	0.5%	1.0%	1.5%	2.0%
III) An increase in multi-organizational utilization of data centers, information systems technologies, and associated resources. Note 2	10%	15%	20%	25%	30%
IV) Reduction in the investment for capital infrastructure or equipment required to support data centers as measured in cost per megabyte of data. Note 3	20%	30%	40%	50%	60%

V) Reduction in the number of commercial and government developed applications running on data servers and within data centers. Note 4	10%	15%	20%	25%	30%
VI) Reduction in the number of government and vendor provided full-time equivalent personnel, and in the cost of labor, associated with the operation of data servers and data centers. Note 5	2%	9%	15%	30%	35%

Note 1: We see minimal saving here within or Core Enterprise data centers

Note 2: We see substantial saving here with our regionalization and transition to MCEITS

Note 3: Continual virtualization should get us to these metrics

Note 4: We see these savings within regular rationalization of applications which is currently occurring

Note 5: We see this as we create the Lights out Data Centers of the future (minimal operations personnel in data center)

**Marine Corps-Wide Utilization Plan**

**Marine Corps**

	Calculated from Baseline	Target				
	4Q11	4Q12	4Q13	4Q14	4Q15	4Q16
Average Virtualization (%) [Virtual Host Count / Total]	45	50	60	70	80	

Average Number of VMs per Virtual Host (#)	2.184					
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Average Power Usage Efficiency (PUE)	Note 1					
Average Rack Space Utilization (%)	Note 1					
Average Rack Floor Utilization (%)	Note 1					
Average Power Density Capacity Equivalent (W/sq.ft)	Note 1					

Note 1: Data unavailable at this time