

Bulletin No. 06-02, Consolidation of Agency Data Centers



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON D.C. 20503

1995

OMB BULLETIN NO. 96-02

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Consolidation of Agency Data Centers

1. Purpose. This Bulletin provides guidelines for significantly reducing the number of agency data centers and reducing the total cost of data center operations governmentwide. This Bulletin calls for agencies to:

- Reduce the total number of agency data centers during the next 24 months, by closing many currently operating data centers and concentrating their operations into a smaller number of physical locations.
- Collocate small and mid-tier computing platforms in larger data centers.
- Modernize remaining data centers in order to improve the delivery of services.
- Outsource information processing requirements to other Federal or commercial data centers if the aggregate installed base is below minimum target sizes.

2. Background. The National Performance Review (NPR) report, Reengineering Through Information Technology, includes a recommendation to develop a Governmentwide data processing consolidation and modernization plan. Industry experience suggests operational savings of between 30 percent and 50 percent from consolidation when compared with unconsolidated operations. With the assistance of the NPR and the Council of Federal Data Center Directors, a committee was formed to assist in collecting and analyzing information on today's agency data center environment. The committee's report, Consolidation of Federal Data Centers, recommends a data center consolidation strategy and

provides a plan for implementing the recommended strategy. Information on obtaining copies of the report can be found in Attachment 1.

3. Applicability. This Bulletin applies to all Executive agencies that operate or finance the operation of agency data centers that support Government missions.

4. Policy. Agencies are allowed considerable discretion as to which data center(s) to retain and which to close so long as (1) the selected consolidation scenario is cost-effective and the best value, and (2) minimal data center target sizes are met.

Agencies should strive for revenue neutral consolidation plans with capital and operating expenditure savings being used to fund the consolidation effort. Agencies should conduct business case analyses to determine whether a site should be expanded into a consolidated agency data center or phased out.

5. Exceptions. OMB will consider exceptions to the guidance and policy contained in this Bulletin on a case-by-case basis. All requests for exceptions shall be submitted by the agency's chief operating officer or comparable official. Exception requests should be directed to the OMB policy official with responsibility for the agency requesting the exception. Requests for exceptions should also be noted in summary and progress reports.

6. Definitions. As used in this Bulletin:

- a. *Agency* - The term agency means any executive department, military department, Government corporation, Government controlled corporation, or other establishment in the executive branch of the Federal Government, or any independent regulatory agency.
- b. *Agency Data Center* - Large centralized information processing operations have traditionally been referred to as agency data centers. This bulletin focuses on consolidating small, mid-tier, and large computing platforms into such centralized information processing centers. In order to identify all information technology assets that should be considered for consolidation, this traditional definition is expanded as described below.

In the context of consolidation and modernization, an agency data center is defined as any automated information processing operation with a standing staff of five or more full-time-equivalent (FTE) employees (computer operators, computer systems programmers, telecommunications specialists, administrative support staff, etc.) that performs one or more of the following functions: processes agency-approved automated applications systems, affords time-sharing services to agency personnel, provides office automation and records management services through a centralized processor, and/or provides network management support for agency wide area networks.

Facilities that merely support local area networks (LANs), file servers, or desktop computers are not categorized as agency data centers. Applications programmers are not included in calculating FTE employees.

- c. *Agency Data Center Consolidation* - Agency data center consolidation means concentrating data processing into fewer physical facilities and combining workload onto fewer computers. Agency data center consolidation includes one or more of the following concepts:

Collocation - Moving information processing systems from multiple locations to a single location where they continue to operate as discrete systems.

Hardware Consolidation and Upgrade - Combining hardware components from various locations into centralized, modernized hardware configurations.

Workload Consolidation - Moving software applications workload from two or more computer systems into discrete workload segments that are processed on a single computer system. Workload consolidated in this manner is considered to be "rehosted." Workload consolidation is distinct from consolidation and standardization of software applications that result from reengineering basic functions and services and related systems.

- d. *Agency Data Center Modernization* - Agency data center modernization means upgrading, enhancing, and/or phasing out and replacing outdated facilities, equipment, and operating practices, to keep pace with improvements in information technology and management methods. Modernized facilities, technology, and management practices play a critical role in capturing the economic benefits of agency data center consolidation.
- e. *Outsourcing* - Outsourcing means obtaining data processing services from other Federal agencies or commercial concerns.

7. Responsibilities.

- a. All Federal Agencies. The head of each agency will:
 - a. By March 1, 1996, develop an inventory of agency data centers and identify the FY 1995 end-of-year size and cost of operations of each data center in the format provided in Attachment 1. A good starting point

for most agencies will be found in the Consolidation of Federal Data Centers report.

- b. By June 3, 1996, develop a data center consolidation strategy for meeting the minimum target sizes established in Attachment 2. Agencies with an aggregate installed base below the minimum target sizes must develop a strategy for outsourcing to other Federal or commercial data centers.
- c. By September 2, 1996, develop a detailed Implementation Plan for consolidation in accordance with Attachment 3. The plan should identify all issues that will affect the schedule, including those relating to acquisitions, human resources, funding, and facility improvements. The plan will ensure that agency data centers designated by agencies as receiving sites be given administrative and budgetary priority for facility buildout and upgrade; environmental improvements (e.g., power supply, air conditioning, air purification); adequate security and access provisions; and continuity of operations.
- d. By June 1998, complete consolidations.
- e. Determine if a proper financing mechanism (management fund) exists in the agency's account structure, within which a Federal data center can be efficiently, and effectively operated on a fee-for-service basis. Where the proper financing mechanism does not exist, agencies should provide draft authorization language along with their FY 1998 budget submission.
- f. Assure that data center fee structures adhere to the costing methodologies prescribed in OMB Circular A-130 (subsection 8.b.4.c) and the standardized accounting practices as recommended by the Financial Accounting Standards Advisory Board (FASAB) and issued by OMB and the General Accounting Office (GAO).
- g. Provide summary and progress reports to OMB in accordance with the following schedule.

Inventory of Agency Data Centers -- Due March 1, 1996

Data Center Consolidation Strategy -- Due June 3, 1996

Summary of Implementation Plans -- Due September 2, 1996

Semi-annual Report on the Status of Consolidation -- Due January 30, 1997, and every six months thereafter

- b. General Services Administration. The General Services Administration will:

- a. Review any relevant requests for Delegations of Procurement Authority to verify that agencies are complying with the guidelines contained in this Bulletin.
 - b. Allow the procurement of additional computing capabilities for agency data centers that are offering cross-servicing to other agencies.
 - c. Award and service governmentwide contracts to provide agencies with quick, low-cost alternatives for obtaining commercial data processing services.
- c. Office of Management and Budget. The Office of Management and Budget will:
- a. Review agencies' streamlining plans and budget requests for consistency with this Bulletin.
 - b. Track agencies' semi-annual reporting on progress towards consolidation.
 - c. Review legislation for working capital funds in support of data centers that offer services on a fee-for-service basis.
 - d. Monitor consolidated agency data centers for cost and effectiveness relative to the private sector and for conformance with overall government policies.
 - e. Promulgate additional guidance as appropriate.

8. Submission Requirements. Agencies are asked to provide the required summary and progress reports to Sally Katzen, Administrator, Office of Information and Regulatory Affairs, Room 10236, NEOB, Washington, D.C. 20503.

9. Information Contacts. Specific agency concerns should be directed to the agency's program examiner. General questions regarding Attachments 1-4 of the Bulletin can be directed to Jasmeet Sehra at 202-395-3123.

10. Termination Date. This Bulletin expires three years from date of issuance.

Alice M. Rivlin
Director

[Attachment 1 - Inventory of Agency Data Centers](#)

[Attachment 2 - Data Center Consolidation Strategy](#)

[Attachment 3 - Summary of Implementation Plans](#)

[Attachment 4 - Semi-annual Report on the Status of Consolidation](#)

Attachment 1

Inventory of Agency Data Centers

Agencies will provide for OMB review an aggregate data center inventory for the agency containing the elements identified in section 1.2. In order to develop the aggregate information, agencies will conduct site surveys of data centers to establish the agency's current information processing environment, including technical, staffing, and cost data. Agencies will then develop a single site survey database to accommodate the results of all site surveys. For many agencies, the report of the interagency committee, ***Consolidation of Federal Data Centers***, will be a good starting point for developing an inventory.

1.1 Individual Data Center Inventory. Agencies will collect the following site-level technical, staffing, and cost data for each data center:

- (a) Data center name, location, and primary mission;
- (b) Basic hardware configuration:

1. Mainframe processors including quantity, make/model, and processor rating, and *[Note: The delineation between mid-tier processors and mainframes often blurs on the margins. As defined by this bulletin mainframe processors are large-scale, multi-tasking computers that (1) serve large numbers of concurrent on-line users and/or (2) execute batch applications. These machines generally operate on raised computer room floors and require controlled environmental conditions.]*
2. Small and mid-tier processors including quantity, make/model, and primary use; *[Note: As defined by this bulletin, small and mid-tier processors **do not include** desktop personal computers or scientific work stations. Small and mid-tier processors are those machines that fall in the range between the work station and the mainframe. Examples of their uses include, but are not limited to, client servers, network controllers, process controllers, and dedicated single application processors.]*

(c) Federal and contractor data center staff, including data center management personnel, computer operators, computer systems programmers, communications specialists, and administrative and support staff; and

(d) FY 1995 costs for hardware (purchase, lease, and maintenance); software (purchase, licenses, and maintenance); staffing (direct and indirect); utilities; facilities (purchase, lease, and maintenance); communications (voice and data); and contract services. A suggested format the individual data center inventory is provided below.

Individual Data Center Inventory

Reports are populated with sample data for illustrative purposes.

Department of _____(Department Name)_____

General Information

Data center name	<i>Data Center Name</i>
Data center location	<i>Complete Address</i>
Primary Mission	<i>Briefly describe primary service provided by Data Center</i>

Basic Hardware Configuration

Mainframe Processors

Quantity	Make/Model	Processor Rating	Total Processing Power Quantity X Processor Rating	
--	2	IBM 3090-3095	58 MIPS	116 MIPS
--	2	Unisys 2200-844	53 MIPS	106 MIPS
Total	4	--	--	222 MIPS

Small and Mid-Tier Processors

	Quantity	Make/Model	Primary Use
	4	DEC VAX 4000/70A	Departmental client server
	5	IBM AS/400 Model 9406	Distributed departmental processing
	3	HP 9000 Model 800/H40	Departmental client server
Total	12	--	--

Number of Staff

	Federal	Contractor	Total
Management	3	0	3
Operations/Productions Recovery	5	3	8
Computer System Programmers	2	2	4
Communications/ Network Support	0	3	3
Administrative and Support Staff	4	4	8
Total	14	12	26

Data Center Cost Recovery

Cost Element		Congressionally Appropriated	Revenues Derived From Services
Hardware	Purchases	\$1,000,000.00	\$500,000.00
--	Lease	- 0 -	\$100,000.00
--	Maintenance	\$70,000.00	\$40,000.00
--	Total	\$1,070,000.00	\$640,000.00
Software	Purchases	\$30,000.00	\$42,000.00
--	Licenses	\$42,000.00	\$30,000.00
--	Maintenance	\$40,000.00	\$40,000.00
--	Total	\$112,000.00	\$112,000.00
Staffing (Federal FTEs only)	Direct	\$1,000,000.00	\$500,000.00
--	Indirect	\$200,000.00	\$100,000.00
--	Total	\$1,200,000.00	\$600,000.00
Utilities	--	\$200,000.00	\$100,000.00
Facilities	Purchase	- 0 -	- 0 -
--	Lease	\$200,000.00	\$100,000.00
--	Maintenance	\$70,000.00	\$40,000.00
--	Total	\$270,000.00	\$140,000.00
Communications	Voice	\$70,000.00	\$70,000.00
--	Data	\$100,000.00	\$100,000.00
--	Total	\$170,000.00	\$170,000.00
Contract Services*	--	\$200,000.00	\$100,000.00
Other (Please Specify)	--	- 0 -	- 0 -
Grand Total	--	\$3,222,000.00	\$1,862,000.00

*Contract staffing is reported under contract services

1.2 Aggregate Data Center Inventory. Agencies will provide to OMB in the format shown below a summary report that aggregates the technical , staffing, and data elements at the agency level; total costs for each element for FY 1995, and total agency costs for FY 1995.

AGGREGATE DATA CENTER INVENTORY
(to be provided to OMB)

Department of _____ Department Name _____

Total Mainframe Product Line Processing Power

Product line	Total Processing Power*
Amdahal	325 MIPS
Honeywell	75 MIPS
Digital	200 VUPS
Total	600

* Dissimilar processing power rating units should be aggregated when completing this table (see Attachment 2).

Small and Mid-Tier Processors

Product Line	Quantity
Hewlett Packard	32
Netframe	12
Total	44

Number of Staff

Agency Aggregate Data Center Cost Recovery

Cost Element	Congressionally appropriated	Derived from Services
Hardware	\$5,350,000.00	\$3,200,000.00
Software	\$560,000.00	\$220,000.00
Staffing (Federal FTEs only)	\$8,000,000.00	\$3,000,000.00
Utilities	\$1,000,000.00	\$500,000.00
Facilities	\$1,350,000.00	\$700,000.00
Communications	\$850,000.00	\$850,000.00
Contract Services*	\$1,000,000.00	\$500,000.00
Other (Please specify)	- 0 -	- 0 -
Total	\$16,110,000.00	\$9,310,000.00

*Contract staffing should be reported under contract services

List of Data Centers

Data Center	Computed Data Center Size*
St. Louis	325 MIPS
Seattle, WA	200 MIPS
Washington, D.C.	75 VUPS
Total	600

* Dissimilar processing power rating units should be aggregated when completing this table -- see attachment 2.

Attachment 2 Data Center Consolidation Strategy

Agencies will develop a data center consolidation strategy to meet the target sizes set out below.

2.1 Target Sizes. The following minimum target sizes are established for the various large scale computing product lines. These minimal target sizes are based on the central processing units housed

at a particular center. The targets do not include the processing capacity of the small and mid-tier machines installed at the site. Note that these are minimum targets and that agencies are encouraged to set higher targets where cost-effective.

PRODUCT LINE	DIGITAL	HONEYWELL	IB/IBM COMPATIBLE	UNISYS
Minimal Size	225 VUPS	175 MIPS	325 MIPS	225 MIPS

The minimal target size in a heterogeneous product line environment shall be that of the product line with the highest minimal target sizes. With concurrence of the agency's chief operating officer or comparable official, the minimal target size shall be the numerical average of the several product lines.

Departmental high performance scientific processors (except embedded machines and those used principally for research) should be consolidated (1) into a single location or (2) into the same facilities that house general purpose computers. When consolidated into general purpose computer facilities, these machines **should not** be included in the minimal target size computation. However, housing scientific processors at a particular center may be used to economically justify a center that would otherwise be at least 90 percent of the minimal target size. Similarly, housing of a large number of small and mid-tier processors may be used to economically justify a center that would otherwise be at least 90 percent of the minimal target size.

2.2 Data Center Consolidation Strategy. Each agency will submit by June 3, 1996 a data center consolidation strategy addressing the following elements:

- Alternatives Analysis.** The agency consolidation strategy should be based on analysis of alternatives including outsourcing. Based on the data center inventory, analysis of alternatives should reflect the technical feasibility and probable cost effectiveness of each alternative. Agencies are allowed considerable discretion as to which data center(s) to retain and which to close so long as (1) the selected consolidation scenario is cost-effective and the best value, and (2) minimal data center target sizes are met.
- Architecture Design** - The agency's data center consolidation strategic plan will identify the technical solution--a high-level consolidation architecture that reflects the best approach to consolidating the organization's data centers based on the selected data center consolidation alternative. The technical solution or consolidation architecture will identify the receiving and closing data centers and workload realignment as well as the communications architecture. Agencies should seek commercial disaster recovery solutions rather than dividing their work load into multiple sites for the purpose of disaster recovery, unless (1) each site meets the minimal target size, and (2) the combined capital and operating

costs, less the costs of commercial disaster recovery, is less than the single site operation.

- **Implementation Approach** - The high-level implementation approach identifies major consolidation tasks and presents a schedule, milestones, and resources. Major consolidation tasks include development of the agency's Data Center Consolidation Implementation Plan and supporting documents and plans, and implementation activities such as preparing receiving sites, transitioning workload from closing to receiving sites, performing necessary environmental upgrades or modifications at receiving sites, and conducting acquisition activities.
 - **Funding Plan** - The funding plan identifies and forecasts costs associated with the consolidation process. Funding requirements for all major tasks associated with consolidation are included in this spending plan. Forecast savings from consolidation are offset against expenditures to identify the net cost of consolidation.
 - **Exceptions** - The agency consolidation strategy should identify data centers that, for non-economic, mission-related reasons, cannot be included in the consolidation plan. OMB will consider exceptions on a case-by-case basis only. Requests for exceptions shall be approved by the agency's chief operating officer or comparable official.
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Attachment 3 Summary of Implementation Plans

Each agency should develop an agency-wide Data Center Consolidation Implementation Plan describing how the agency will achieve the objectives of its consolidation strategy. A summary of this plan will be provided to OMB for review by September 2, 1996. The agency's Data Center Consolidation Implementation Plan serves as a project master plan that allows the agency to monitor progress and facilitates semiannual reporting to OMB. The plan, which evolves as the consolidation effort progresses, contains the consolidation strategy, project tasks resources required, roles and responsibilities, and master schedule of consolidation project tasks and milestones.

To ensure the completeness and consistency of supporting documents and plans, which will become attachments to the plan, the agency's Data Center Consolidation Implementation Plan should include the following:

1. Detailed Technical Architecture

2. Transition Plan
3. Concept of Operation Plan
4. Security Plan and Disaster Recovery Plan
5. Resources Management Technical Plan (Funding Plan)
6. Human Resources Plan
7. Acquisition Plan
8. Fee-for-Service Structure
9. Optimization Plan

3.1 Detailed Technical Architecture - The detailed technical architecture for each consolidated data center should describe: (1) the information processing environment, including processor platforms, on-line storage requirements, output devices, terminals, communications and network devices, and other peripheral devices; (2) resource allocation by user environments; (3) commercial-off-the-shelf software, and operating system software; (4) the physical layout including hardware placement, cabling, communications, power distribution, and HVAC requirements; and (5) the configuration of all sites affected by this Bulletin, including network connectivity and output devices.

3.2 Transition Plan - Depending on the size and complexity of the consolidated data center architecture, detailed transition plans may be developed for each receiving or closing site. A Transition Plan outlines the required activities and documents the process for: (1) conducting the final closing site baseline of workload mix and corresponding performance levels that must be met by the receiving site prior to acceptance; (2) reconfiguration of the receiving site to accommodate additional data processing and communications workload requirements; (3) systems integration and testing to ensure that the configuration meets the design specifications; (4) moving the data processing workloads from closing sites to the receiving site; (5) receiving site coordination with closing site customers during the acceptance to ensure, in accordance with mutually agreed-upon criteria, that they are receiving service at least equal to that provided in the closing system environment; (6) close-out activities that will be undertaken after the closing site is successfully transitioned and accepted at the receiving site; and (7) moving the receiving site data processing workloads to an optimal processing configuration. The transition plan includes a schedule showing start and end dates for transition tasks and milestones.

3.3 Concept of Operation Plan - The concept of operation plan should identify the performance goals and objectives of the consolidated data center and define how the consolidated data center will operate to meet those goals and objectives. Consolidated data center policies and procedures should be designed according to best practices, provide service at least equal to that provided by the closing sites, place responsibilities at the lowest workable level, and promote standardization among the agency's consolidated data centers. The concept of operation should define the consolidated data center's approach to: (1) customer support and problem resolution; (2) capacity management, including capacity planning, service level management, and performance management; (3) configuration and

change management; (4) customer and data center security management responsibilities; (5) production scheduling and production problem resolution; (6) tape management; and (7) direct access storage device (DASD) management.

3.4 Security Plan and Disaster Recovery Plan - The agency should review and revise as necessary its information systems security program policies and procedures to reflect the requirements of the consolidated data center environment. Data center security plans should (1) define the security environment, (2) identify security requirements, (3) establish customer and data center security roles and responsibilities, (4) describe core security services provided by the data center and any customer-unique security services, (5) describe how security services will be provided and periodically reviewed and tested, and (6) identify security training and awareness activities. The data center security plan should be supported by documented procedures. The agency should establish a disaster recovery plan that (1) identifies critical agency operations and (2) describes how critical agency operations will be recovered in the event of a disaster. Agencies should consider commercial disaster recovery solutions offered through the GSA.

3.6 Resources Management Technical Plan (Funding Plan) - Detailed consolidation spending plans should reflect all projected consolidation project costs including (1) capital investments, (2) TDY travel and relocation, (3) equipment transportation, (4) software licenses, (5) human resources implementation costs, (6) communications costs, (7) facility improvements, and (8) disaster recovery.

3.7 Human Resources Plan - Agencies should develop a human resources plan with the objectives of retaining necessary personnel at closing sites until the sites are successfully transitioned, establishing qualifications for consolidated data center personnel, and providing options for closing site personnel. The human resources plan should include: (1) data center personnel skills requirements, (2) data center personnel skills inventory, (3) transfer options, (4) training options, and (5) outplacement options.

3.8 Acquisition Plan - Acquisition plans should be developed to support agency data center consolidation and modernization efforts that require upgraded or new hardware, software, and communications equipment; facility improvements; and physical, personnel, and information systems security improvements.

3.9 Fee-for-Service Structure - If the receiving data center has a fee-for-service chargeback structure in place, it should be expanded to include new customers. If the receiving center has not operated on a fee-for-service basis, a chargeback structure and corresponding procedures should be established and implemented as new customers begin using the data center. The fee-for-service structure should (1) track system usage, (2) monitor operational costs, (3) establish service rates, and (4) bill users. For the purposes of the data consolidation plan, data center operations should be considered separate from other non-related business activities supported in the same working capital fund.

3.10 Optimization Plan - Optimization plans encompass the design and implementation activities for building an optimal agencywide processing configuration in all consolidated data centers. An optimization plan should identify efforts to optimize data center operations through standardization of operating systems, database management systems, programming languages, and off-the-shelf software; modernization, including technology insertions and communications and hardware upgrades; automation; and reengineering.

Attachment 4
Semi-Annual Report on Status of Consolidation

Agencies will provide to OMB on a semi-annual basis beginning January 30, 1997, the following Major Consolidation Milestones report. For each milestone contained in the Major Consolidation Milestones report, the agency should develop subordinate consolidation milestones with planned and actual completion dates.

Failure to achieve the planned completion date for Major Consolidation Milestones must be accompanied by a narrative explanation and a recovery plan to return to schedule by the next semi-annual reporting date.

Semi-Annual Reporting
Major Consolidation Milestones

Major Consolidation Milestone	Planned Completion Date	Actual Completion Date
Conduct Data Center Inventory	--	--
Develop Consolidation Strategy	--	--
Develop Implementation Plan	--	--
Insert Agency Specific Milestones from Implementation Plan	--	--
Complete Consolidation	6/30/98	--