

National Aeronautics and Space Administration



Stennis Space Center / NASA Shared Services Center Site Visit IT Infrastructure Integration Program (I³P)

Office of the Chief Information Officer

May 7, 2009

VISION: Integrated, secure, and efficient information
technology and solutions that support NASA



Administrative Remarks

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- *Safety*
 - *Fire exits & Muster point*
 - *Tour Escorts*
- *Facilities*
 - *Restrooms*
 - *Refreshments*
- *Visit Wrap-up*
 - *Traffic*
 - *Badge turn-in*
 - *Dinning*
- *Questions/Comments*



Agenda

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- Welcome / Site Visit Objectives
- SSC Overview
- NSSC Overview
- I³P Overview
- NSSC IT Infrastructure Today
 - Communication Environment
 - End User Environment
 - Data Center Environment
- SSC IT Infrastructure Today
 - Communication Environment
 - End User Environment
 - Data Center Environment
- Center Tour



Site Visit Objectives

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- What we are planning to do
 - Explain the Center: facilities & people (who we are)
 - Explain involvement with major programs, projects, and missions (what we do)
 - Explain the current state of IT infrastructure at the Center
 - End-user services (desktop/laptop/workstations)
 - Communications (networks, phones)
 - Data centers
- What we are NOT planning to do
 - Explain further the five I³P acquisitions or associated strategy
 - Explain the content of the draft RFPs
 - Entertain questions on the acquisition strategy or draft RFPs
 - Discuss future state/plans for Center IT infrastructure

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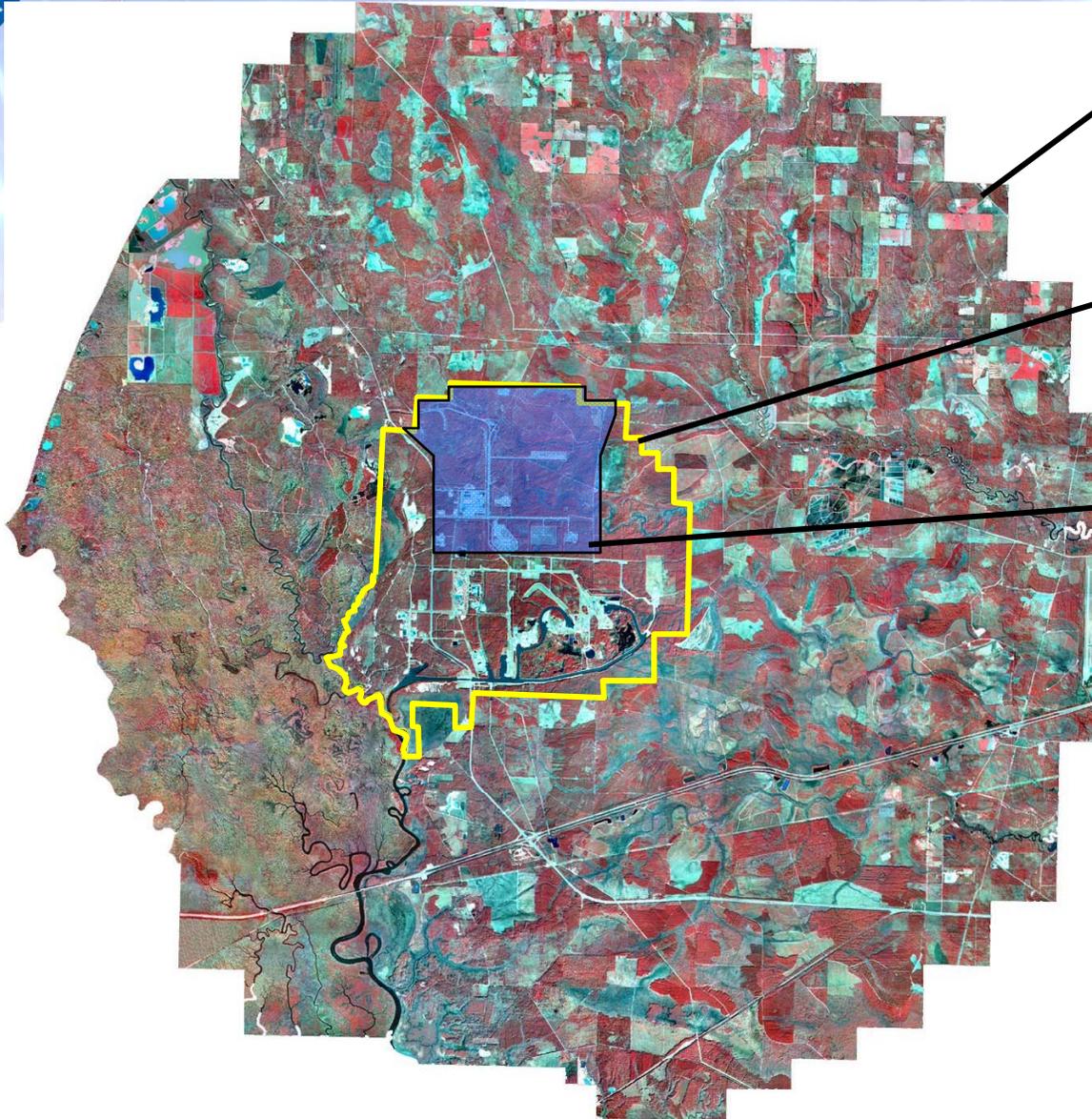
SSC Overview
Gene Goldman

May 7, 2009

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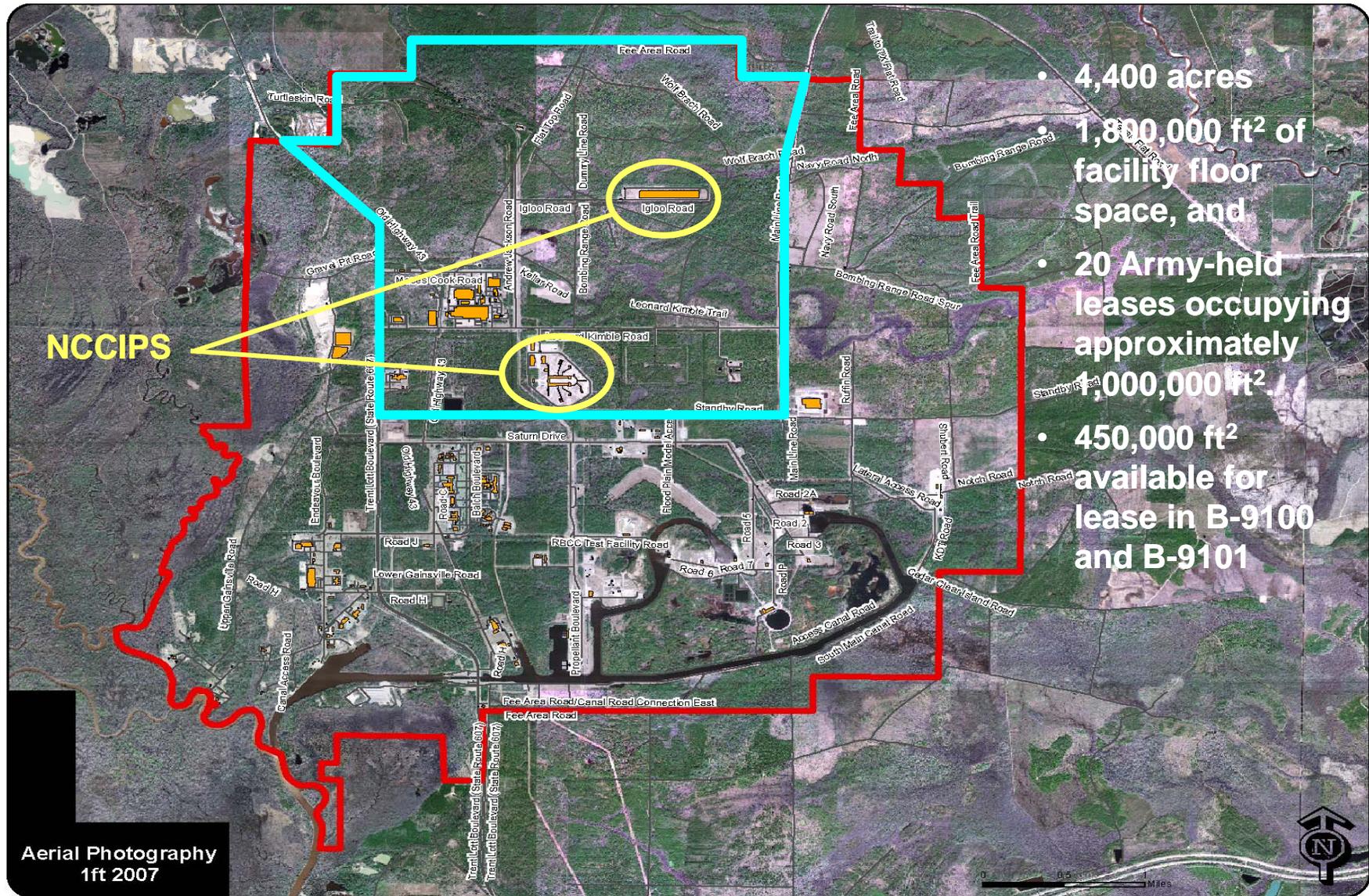
Stennis Space Center



- **SSC Buffer Zone**
– 125,000 acres
- **SSC Fee Area**
– 13,800 acres
- **MSAAP BRAC transfer**
– 4,400 acres



MSAAP Overview



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NSSC Overview
Ken Newton

May 7, 2009

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NSSC Vision & Mission

Vision

Unparalleled Service

To provide timely, accurate, high quality, cost effective, and **customer focused** support for selected NASA business and technical services.

Mission



Definition of Shared Services

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- What is Shared Services?
 - A business model for delivering support services
 - Centralization is not shared services
 - Consolidation is not shared services
- How shared services differs from other business models
 - Cost is transparent
 - Service is transparent
 - A disciplined approach to delivering support services
 - Structured management of customer interactions
 - Sustained and systematic focus on customer service
 - Entrepreneurial approach to solving problems and leveraging opportunities
 - Fee for service drives the balance between service and cost
 - Data driven decisions



What is the NASA Shared Services Center?

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- The NSSC is a partnership between NASA and CSC
- The NSSC consolidated select business activities from the ten NASA Centers from four lines of business
 - Financial Management
 - Human Resources
 - Information Technology
 - Procurement
- Go live March 2006
- Number of Activity Transitions
 - Fiscal Year (FY) 2006: 27 activities
 - FY 2007: 17 activities
 - FY 2008: 7 activities
 - Total: 51 activities



NASA Shared Services as a Value Added Business Model

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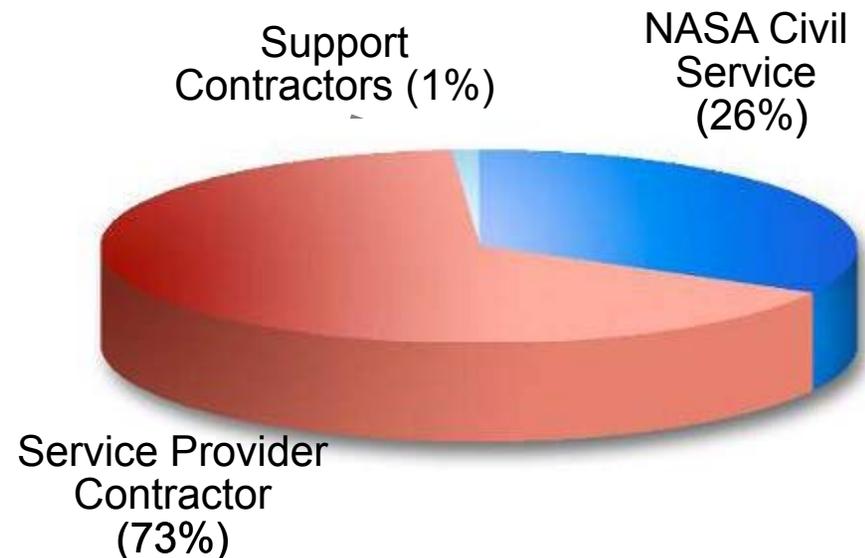
- The benefits of a shared services business model are more than financial
 - Improved services: NSSC's cross cutting infrastructure such as the contact center, customer service web, document imaging, and service recovery plan add and consistency
 - Leveraged buying of the Enterprise License Management
 - Improved processes: the NSSC redirected \$4.3M just by using credit cards in lieu of purchase orders to pay for external training
 - Standardization: consistent interpretation and application of policy ensures equity; and, consolidating work in one location (from 10 Centers to the NSSC) and standardizing processes makes it easier to change processes or fix problems
 - Increased and more efficient use of technology: high volume makes it easier to identify and prioritize system changes; and, consolidating work and standardizing processes makes it easier to architect and implement technology solutions
 - Full cost of delivering support services is captured and major cost drivers are identified



An Integrated Organization

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- Work force is a mix of Civil Service and Contractor employees
- CSC Team is referred to as “Service Providers”
- NSSC payroll is about \$46 million per year -- an important local economic initiative



- Civil Servants: 127
 - Service Providers: 353
 - Total 480
- Approximately 470 employees by 03/31/09



Return on Investment

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- December 26, 2008; the NSSC announced the \$30 million financial investment the Agency made in establishing the NSSC had been paid in full
- 3.18 years instead of the projected 3.54 years (ahead of the project schedule)
- Currently exceeding the initial savings estimate of \$6 to \$8 million per year and on track to recognize savings of \$12-\$16 million a year
- The NSSC has the potential to save the Agency \$120 million dollars by 2015



Working Capital Fund Mission and Goals

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- NSSC is a Working Capital Fund (WCF) fee for service organization
- NASA WCF Mission Statement
 - To establish a revolving fund that promotes economy, efficiency, and accountability with fully reimbursed rates by focusing on streamlining operations, extending resources, measuring performance, and improving customer satisfaction



WCF Supports NSSC Implementation

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- Enables better matching of funding and service delivery
- Promotes transparency of cost and services
- Supports goal of operating organizations in a business-like manner
- Encourages optimum balance of service and support
- Promotes a long-term approach to asset management
- Encourages process efficiencies



Success of the NSSC

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- March 2009: received *Best New Captive Shared Services Organization Excellence Award*
 - Recognizes the most successful shared services organization launched within the last three years
 - Nationally recognized as the highest accolade for shared services organizations
 - Runner-up was Wal-Mart Corporation
- March 2008: received a *Government Information Technology Executive Council (GITEC) Project Management Excellence Award in the category of Cost Savings/Cost Avoidance*
- March 2007: received runner-up *Best New Shared Services Organization Excellence Award*



Key Challenges

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- Implementing a best fit, continuous improvement methodology
- Improving the quality of our communications across all channels
- Institutionalize responsiveness
- Stabilization
- Capital Investments
- Managing NSSC portfolio



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I3P Overview
Ken Griffey

May 7, 2009

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I³P Overview: Why I³P?

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- NASA's commitment to the strategy of Agency-wide IT services and Agency-wide procurement aligns with:



- NASA's need for IT security, efficiency, and collaboration for mission support
- Industry and business best practices
- New Administration's priorities of effectiveness, efficiency, transparency, participation and collaboration

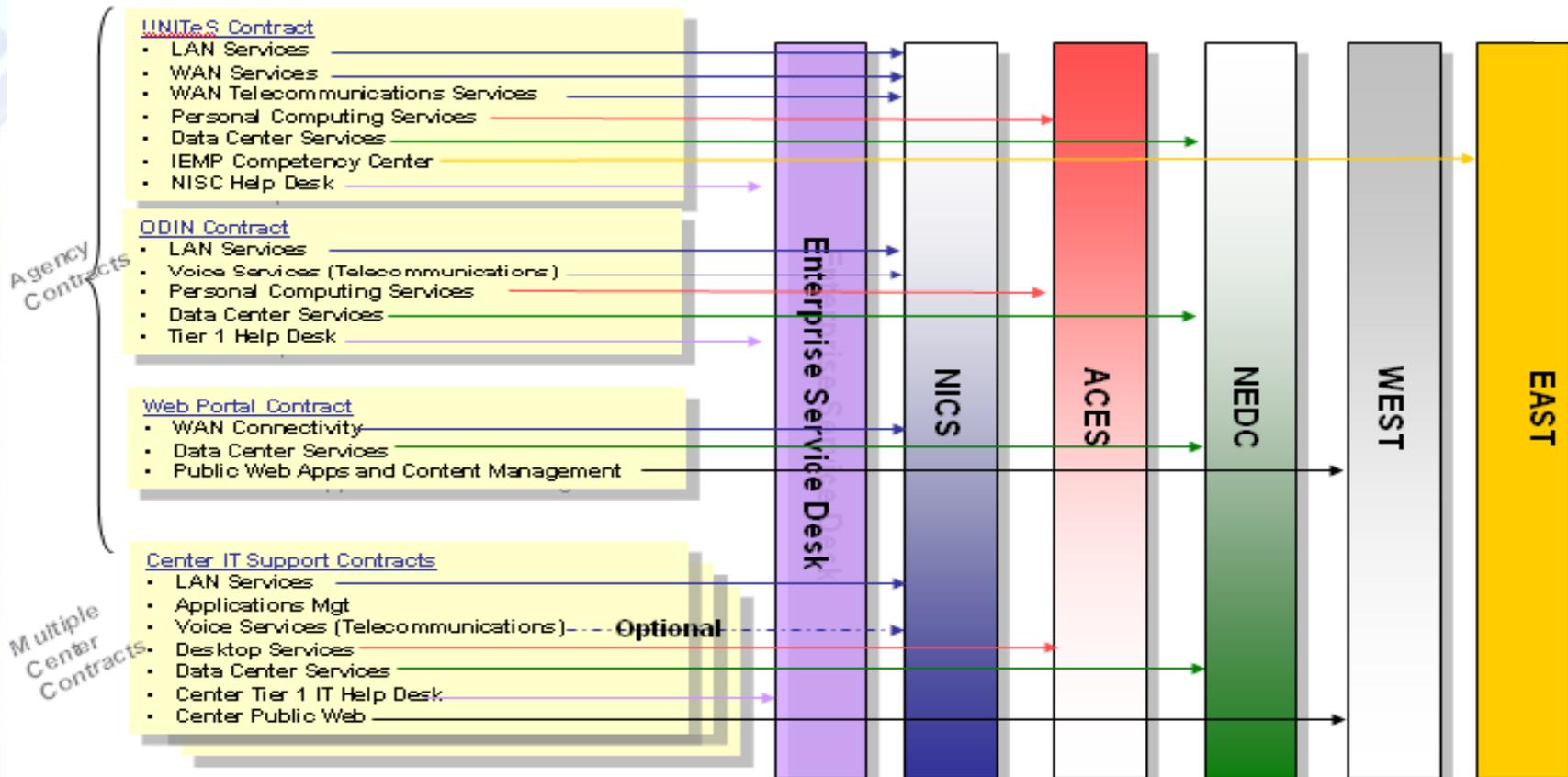
- What will success look like?

- Reliable, efficient, secure, and well-managed IT infrastructure that customers rely on
- Systems seamlessly deployed and used across Centers
- Investing in the right IT solutions that provide the greatest benefit to the NASA mission



I³P Overview: Agency IT Infrastructure Supports Transformation

- Consolidates and requires Centers to use Agency contracts for core IT infrastructure services
- Allows Centers to use Center specific IT support contracts for Non-I³P services
- Uses a single Enterprise Service Desk and Enterprise Service Request System for reporting/tracking Incidents and for requesting I³P defined services
- Primary purpose is to provide better IT security, collaboration, efficiencies to accomplish NASA mission





I³P Overview: Efforts Under Way

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- Making NASA's information easier to discover and safely access through current projects (e.g., Security Ops Center)
- Continuing consolidation of NASA's information technology (IT) through current contracts and projects (e.g., ODIN, NOMAD)
- Working procurements for Agency-wide IT services:
 - **NICS** will integrate networks and provide seamless operations across Centers;
 - **NEDC** will improve availability and access to applications and data;
 - **WEST** will improve the quality of web services for the same cost;
 - **ACES** will provide a consistent level of IT services across NASA; and
 - **EAST** will enable more efficient development and maintenance of Agency-wide applications, as well as improve the availability of business information for better informed decision making.
 - Enterprise Service Desk at NSSC will provide a single point of contact for IT incident and problem resolution and I³P service ordering



I³P Overview: Procurement Schedule

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Updated April 20, 2009

Milestones	NICS	ACES	NEDC	WEST	EAST
Draft RFP	4/20/09	4/20/09	4/20/09	4/20/09	5/11/09
Industry Days	4/21 and 4/22	4/21 and 4/22	4/21 and 4/22	4/21 and 4/22	4/21 and 4/22
Due Diligence	5/1 to 5/15 – Primary focus is on ACES, NEDC and NICS. NOTE: The EAST site visit will be on 5-20 at MSFC.				
RFP Release *	6/15/2009	6/15/2009	6/15/2009	6/15/2009	6/15/2009
Proposals Due *	7/30/2009	7/30/2009	7/30/2009	7/30/2009	7/30/2009
Contract Start *	May 2010	June 2010	May 2010	June 2010	May 2010

* Dates reflect current schedule posted online.

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NSSC IT Infrastructure Today
Mike Mudgett

May 7, 2009

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Center IT Infrastructure Today

End User Environment

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- NSSC Desktop Environment
 - Desktops: 484
 - Laptops:
 - PDAs: 7279
 - Multifunctional Devices: 24
 - Test Computers Platforms
 - Linux
 - Windows 32 bit
 - Windows 64 bit
 - Mac



Center IT Infrastructure Today Communication Environment

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- Network
 - Single Network/Single Bldg
 - Approx 10 users in adjacent bldg
 - Approximately 500 VoIP phone drops, 60 servers, 40 printers.
 - Cable Plant consists of single mode fiber, multi-mode fiber, cat 6 wiring, and coax.
 - VPN Connectivity
 - Licensed for 200 simultaneous connections.
- Guest Network
 - Wired and wireless connections.
 - Consists of 6 user switches within Bldg 1111.



Center IT Infrastructure Today Communication Environment

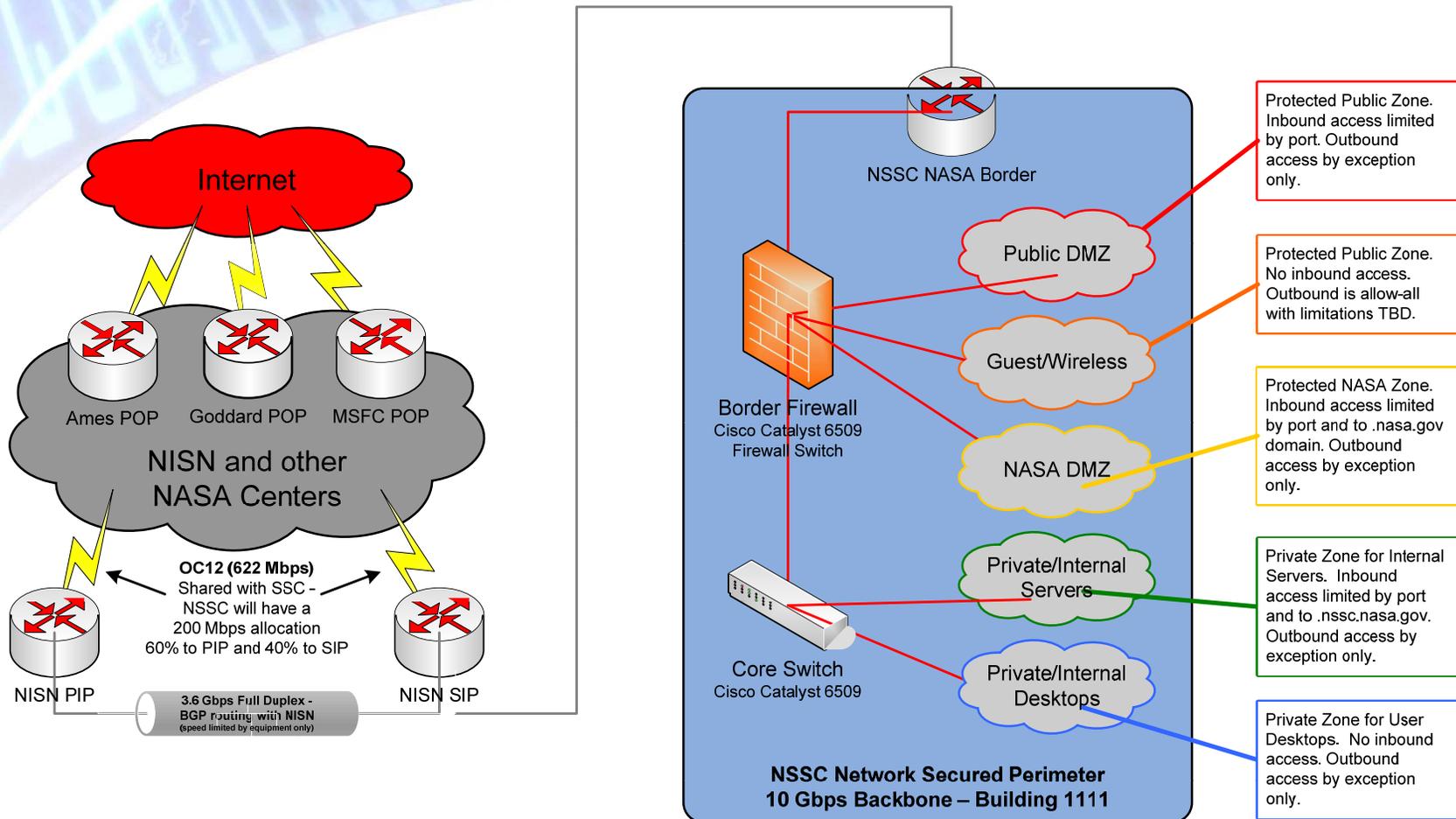
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- **Telephone Services**
 - Telephony over IP fiber distributed digital telephone system.
 - 1 PRI incoming only trunk that handles the NSSC Call Center
- **VoIP**
 - Approximately 500 VoIP phone drops
 - 4 T1s to the Stennis PBX, 1 which is dedicated to the NSSC call center.
- **Cable Television Services**
 - 9 video drops throughout the building terminated in flat screen monitors



Center IT Infrastructure Today Communication Environment

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Center IT Infrastructure Today

Data Center Environment

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- **3 Containers supporting 3 Environments**
 - Public DMZ, NASA DMZ, and Private
 - Production, Test, and Development
- **42 Rack Enclosures**
 - ~100 Managed Servers
 - SANS
 - Backup of Server and Desktops
 - UPS & Generator
- **UPS & Generator**
- **Redundant Air Handlers**

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SSC Communication / End User Environments
Debra Rushing / Teenia Perry

May 7, 2009

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Communications / End User Support Facility

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- Building 1201 is SSC Communications Building
 - Shared Facility between ODIN, NISN, ITS and AT&T
 - Houses the following:
 - ODIN Services
 - Desktop support
 - System administration
 - Radio
 - Networks
 - Back office support
 - Cable Plant
 - Cable Television
 - Telephone
 - NISN Services
 - NASA Wide Area Network Gateway
 - AT&T Services
 - 3rd party provides connectivity external connections for SSC
 - ITS - Physical Security Monitoring



Communications / End User Support Facility

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Building 1201





Communications / End User Support - Facility

Overall Building square footage is approximately 18,500 sq. ft. (estimated 35% in I3P scope)

Office space

ODIN

Desktop Support – 221 sq. ft.

System Admin – 510 sq. ft.

Network Support – 386 sq. ft.

Management – 393 sq. ft.

NISN

Gateway Support – 652 sq. ft.

Conference Room

Shared Facility – 528 sq. ft.

Note: FFP contractors charged facility occupancy fee

Fire Prevention: Siemens Apogee Life Safety

Access Control: NASA Smart Card integrated with SSC Lenel Access System

Technical Space

ODIN

Desktop / Testing Lab – 514 sq. ft.

Backoffice – 550 sq. ft. (raised floor)

Networks – 120 sq.ft. (raised floor)

NISN

Gateway – 1248 sq. ft. (raised floor)

Storage Space

ODIN

Desktop – 1096 sq. ft.

ODIN Networks – 240 sq. ft.

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Building 1201 - Power

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Power Systems Maintained by Facility and Operations Support contractor

UPS System

- Two Liebert Npower 75 kVA UPS
- 79 Batteries
- Integrated w/ generator system

Backup Generator System

- Kohler diesel generator
- Additional external fuel tank





Building 1201 – HVAC

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CRU-1

Mfg. Liebert
Cooling: Chilled Water
Model: FH199A-A00
Approximate Tons: 15

CRU-2

Mfg. Liebert
Cooling: Direct Expansion
Model: FH302CA00
Approximate Tons: 25

CRU-3

Mfg. Liebert
Cooling: Chilled Water
Model: FH200C-ASM
Approximate Tons: 15

CRU-4

Mfg. Liebert
Cooling: Chilled Water
Model: FH-200C-A5M
Approximate Tons: 15



Bldg 1201: ODIN Backoffice

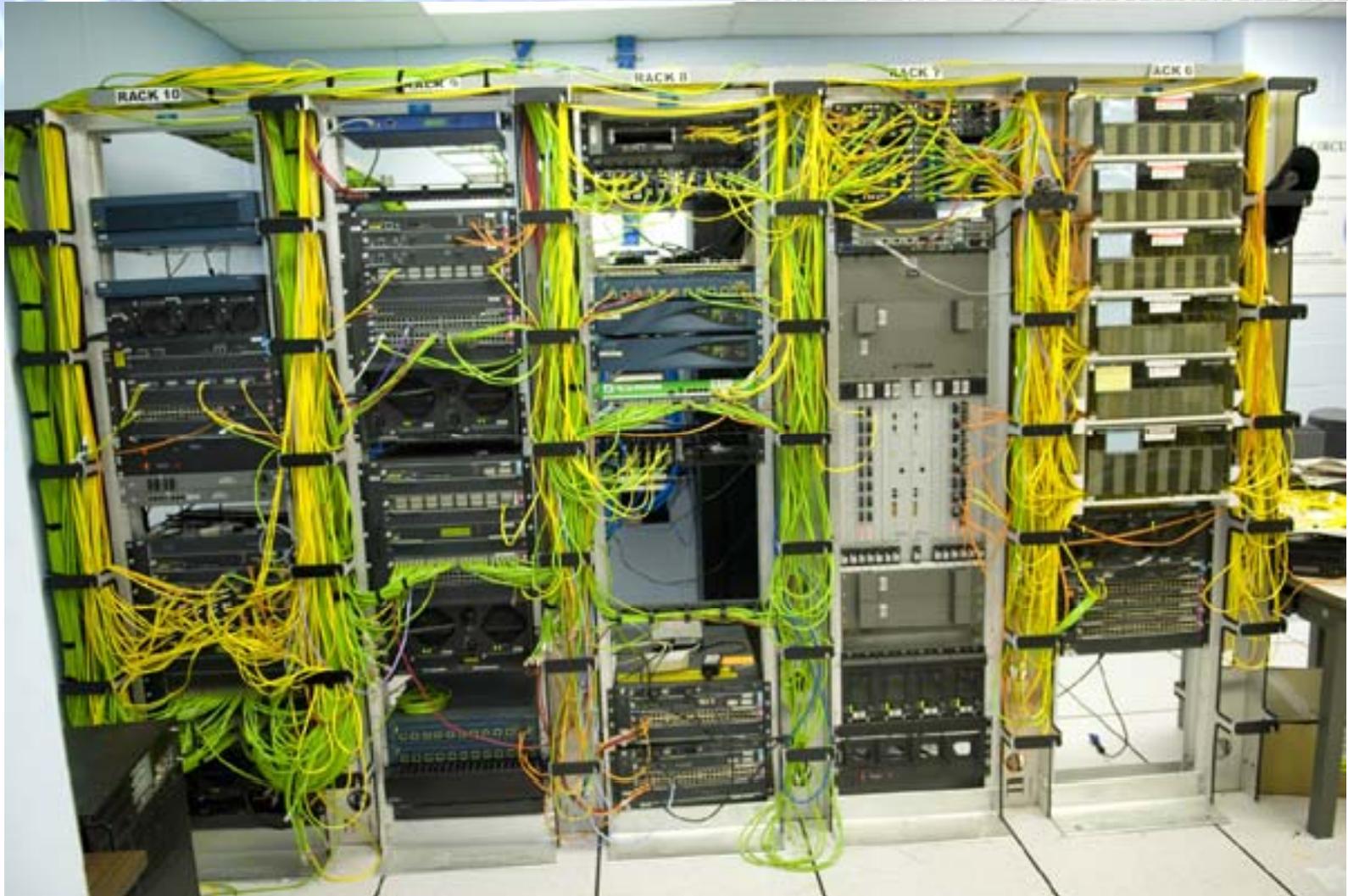
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Bldg 1201: ODIN Networks

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Bldg 1201: ODIN Networks

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Bldg 1201: NISN Gateway

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SSC Networks

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SSC Networks – ODIN Managed

- NASA Network
 - Connects 50 Buildings using network switches which include Cisco and Fore hardware (implementing network infrastructure upgrade)
 - Connects 100 Additional Buildings with network tail circuits for up to 4 nodes
 - Provides connectivity for over 4500 active nodes servicing nearly 1700 personnel
 - Provides Internet connectivity for 3 SSC tenants
 - Only Tenant Networks backbone connections are within scope
 - Provides wired and limited wireless connectivity in NASA areas
- MsET Network
 - 3 Buildings connected using network devices
 - Nearly 200 active nodes providing connectivity for nearly 25 commercial companies
- All other SSC Tenant Networks are not managed by NASA



SSC Network Architecture

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- **SSC NASA network**
 - Comprised of 4 zones
 - Each zone protected by either a firewall or packet filter router
 - Open zone
 - Hosts Guest hardwired and wireless service
 - Public zone
 - Hosts Tenant networks and Public facing system
 - Extranet zone
 - Hosts Remote Access from the Internet
 - Remote Access both Dial-Up and Virtual Private Network (VPN) appliances
 - Private zone
 - Hosts all Virtual LANS, internal servers, workstations and other Center essential services
 - Network Services provided
 - IP Address Management
 - Network Time Protocol
- **SSC MsET network**
 - Comprised of 1 zone protected by a firewall
- **Network Configuration Control governed by SSC Network Board**
 - Comprised of IT Security Manager and IT Network Manager
 - Manages all configuration and operational changes



Network Security

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- **Leverages network segmentation**
 - Firewall separation
 - Router packet filtering
- **Utilizes “port locking”**
 - Media Access Control (MAC) address of the Network Interface Card (NIC) is logically associated to the Network switch’s port
- **Tracks network connections**
 - Network data repository containing:
 - User name, telephone number, tag number, location, jack, MAC address, VLAN, IP address, host name, etc
- **Web filtering**
 - Restricts web site access as approved by the SSC CIO



Network Operations

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- Hardware located in Bldg 1110 IT Monitoring Center and Bldg. 1201 Network Operations
- Maintained by ODIN
- Operated by ITS Contractor and NASA Civil Servants
- Utilizes COTS programs
 - Bldg. 1201 ForeView – ATM network monitoring
 - Bldg. 1201 Cisco WLSE – CISCO wireless security monitoring
 - Bldg. 1110 Concord Network Health – trending analysis on network performance
 - Bldg. 1110 CiscoWorks – CISCO network monitoring
 - Both Bldgs. 1110 and 1201 Solarwinds – Generic network monitoring



End User Services

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Services currently provided to all NASA employees
(Government and Contractor)

- E-mail
- Directory Services (Domain and e-mail account)
- Computer seat protection (e.g., Anti-malware, patching)
- Software License Management
- Loaner Pool Management (access to Loaner Pool)
- Shared Printing/Multi-functional devices (MFDs)

SSC provides computer and mobile devices to MAF



End User Services

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SSC and MAF Customer Support Requirements

- Customers include Civil Servants and Contractors
- Scientists
- Engineers
- Technicians
- Administrative

Existing Seat Management Requirements

- Computing Seats (1815)
- Mobile Seats (154)
- Peripheral Seats (170)
- Virtual Team Meeting Seats (2)

Users require services to be used on-site and off-site

NOTE: Computing seats do not include UNIX/LINUX operating system. Mobile seats include both cell phones and Blackberries. Peripheral seats include networked printers and MFDs.

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SSC Data Center Environment
Scot Gressaffa

May 7, 2009

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SSC Data Centers

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Institutional Data Centers

Stennis Data Center – Building 1110

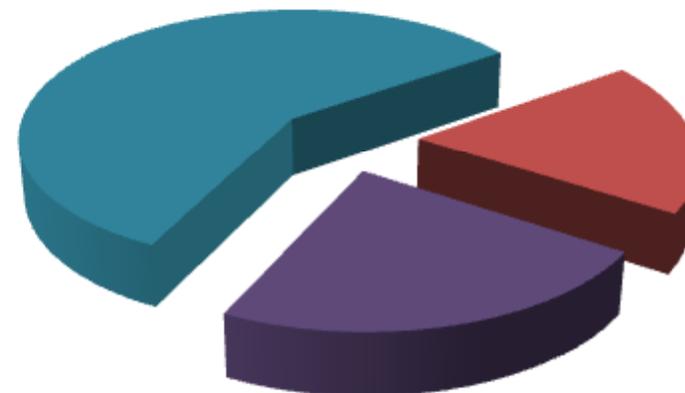
Facility and Operations Support (FOS) Data Center – Building 2204

Institutional data centers provide hosting environment for:

- SSC Program Offices
- SSC Institutional and Administrative Offices
- Tenant Agencies

User Community:

NASA	313
NASA Contractors	793
SSC Tenant Agencies	258
Total	1364



■ NASA ■ NASA Contractors ■ SSC Tenant Agencies



Stennis Data Center

Office of the Chief Information Officer

Building 1110





Stennis Data Center - Facility

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Raised Floor Space: 3,540 square feet

Access Control: NASA Smart Card integrated with SSC Level Access Control System

Fire Prevention: Siemens Apogee Life Safety

Console/Racks: Systems Manufacturing Corporation – System 2000 Command Bridge / Multi Rack II







Stennis Data Center - Power

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Power Systems Maintained by Facility and Operations Support contractor

UPS System

- Liebert Npower 100 kVA UPS
- Battery bank
- Integrated w/ generator

Backup Generator System

- Kohler 200 diesel generator (300KW)
- 28.5 hour run duration on single tank





Stennis Data Center – HVAC

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- Three Liebert DS Cooling Systems w/ two 15 ton and one 10 ton condensing units
- Hot and cold zones
- Supported by generator system
- Maintained by Facility and Operations Support Contractor





Physical Environment – Media Storage

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- Primary backup media storage in building 1110 tape storage room
- Secondary media storage in Bldg 1100 2nd floor vault
- NDC facility used for off-site backup media storage

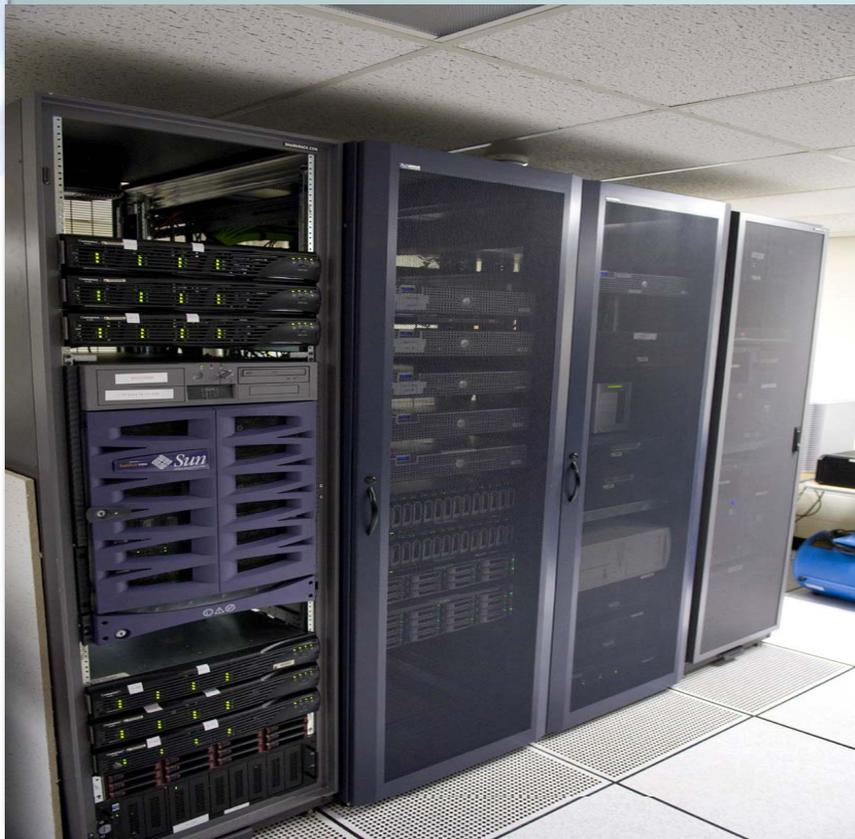




Stennis Data Center - Housing

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Applied Science Svstems



GIS and Image Processing Systems

Propulsion Test Svstems



Beowulf Cluster, Windchill, RPTMB

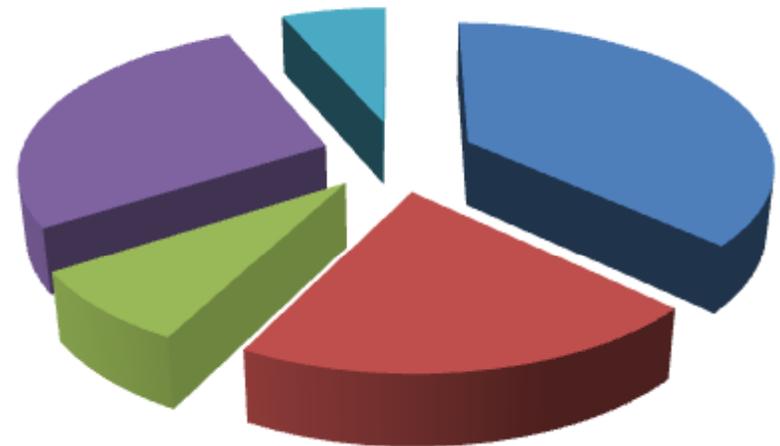


SDC – Applications / Web / File Shares

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End User Services

- 68 Web Applications
- 38 Client/Server Applications
- 15 COTS Applications
- 51 Web Sites
- 12 Jobs / Background Processing
- 221 File Shares



■ Web Apps ■ Client/Server ■ COTS ■ Web Sites ■ Jobs

Development Environments / Languages

- ASP (.net)
- PowerBuilder 10
- Oracle 9iAS
- Visual Basic (6) (.net)
- HTML
- Java
- Oracle Hyperion



Stennis Data Center – Server Software

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Operating Systems

- Microsoft Windows Server 2003
- UNIX: Sun Solaris 10
- LINUX: CentOS 5.3
- VMware ESX V3.5

Databases

- Microsoft SQL Server 2000 / 2005
- Oracle 10g / 9
- MySQL 5.0
- 4D 2003

Web Servers

- Microsoft Internet Information Services 6.0
- Apache HTTP Server 2.2
- Oracle Application Server

Misc. Server Software

- Citrix 4.5
- Big Brother 1.9i
- Microsoft Sharepoint Server 2003
- ArcGIS 9.2
- ArcSDE
- @Hand FMS



Stennis Data Center - Hardware

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Development, Test, and Production Servers Established for SDC Applications and Services

Servers Distributed across multiple network containers / VLAN's

- Primarily Dell 2U and 1U Servers
- Data Center Appliances [management, security, accessibility, and networking]

Server Hardware: 74

Appliances: 17

SAN / Backup: 35





Stennis Data Center - Storage Area Network / Backup

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Providing Mass Data Storage / Archival Capability for Program and Institutional Offices

Extended to Rocket Propulsion Test Complex Area and FOS Multimedia Services Facility

- Brocade SAN Fabric (2Gb and 4Gb segments)
- Sun StorageTek Storage Array/Controller (70 TB)
- Sun Storagetek L1400 Tape Library w/ LTO-4 and T9940B Drives
- IBM Tivoli SANergy, SUN StorageTek SANtricity, SUN StorageTek ACSLS
- Daily Incremental / Weekly Full Backup





Stennis Data Center – Disaster Recovery

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Disaster Recovery System based on virtual machine implementation in the data center and VM replication

“Warm Site” capability with next day availability for critical applications

JSC Bldg 46 Housing

- SUN L700 Tape Library with T9940B Drives
- SUN StorageTek D280 Disk Subsystem (8 TB)
- Brocade SAN Fabric
- Qlogic FC / IP Converters
- Security Appliances





Center Tour

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- Please board buses in front of SSC Visitors Center
- Estimated Tour Time: 1 Hour
- Site Visit concludes with completion of the tour

THANK YOU