Use the arrow keys to move within this document.

IT-Solutions Shop (ITSS) Emergency CCB Meeting

TechFlow in conjunction with David Griffin, ITSS GSA Project Manager, gave an informative presentation on the state of ITSS and possible options to address performance issues. The presentation highlighted the enormous change in request volume and the addition of many new users as the National roll-out expanded in scope. In addition, the presentation highlighted the need to address server and network issues associated with sizing ITSS responsiveness. Many factors were discussed which had contributed to the performance issues which led to the calling of the October 26th Emergency CCB Meeting. In light of these issues, it was demonstrated how much progress has been made at increasing performance while maintaining a high level of functionality in the system. The efforts currently under way to further improve performance were highlighted and include:

- Categorized View Changes
- Navigation Enhancements
- Aggressive Archiving
- Collecting Performance Data
- Software Script Optimizations
- AS/400 Benchmarking

The CCB made a decision to allow TechFlow to continue to pursue these options.

Other options were also presented so that the CCB could make educated decisions as to which other directions TechFlow should take in order to further address performance concerns. These options were categorized as Short-term options (90 days or less) and Long-term options (90 days or more). Once the CCB had a chance to discuss these additional options, they decided to have TechFlow execute the following additional short term options:

1. Improve View Index Requirements
2. Expand Document Archiving
3. Distribute Data Documents to Separate Databases
4. Change ITSS GSA Access model
5. Regionalize Funding Documents
6. Pursue Additional Outside Performance Expert Review of Application
7. Limit ITSS use to existing regions

In addition to these short term options the CCB wanted TechFlow to pursue the following action items:

1. Resubmit the ECP detailing the opening of every field that makes sense within ITSS to enable end users to fix their own mistakes and relieve some pressure from the help desk
2. Address the slow response time surrounding the BOAC lookup (To help facilitate this effort, Ft. Worth also took an action item to get rid of the numerous duplicates found within the table)
3. Engage a third party industry partner to conduct benchmarking on the ITSS system
4. Have DISA investigate the network issues surrounding the DOD and the client sites
5. Make sure we are on track to finish the Pegasys work and conduct testing

Lastly, the CCB requested that TechFlow hold off on all other ITSS version 3 development activities (approved from August) until the performance and Pegasys issues were addressed. TechFlow, with coordination from David Griffin, agreed to rework the schedule and present an abbreviated list of tasks corresponding to functionality that is critical for supporting Regional work-flows. This new list of items will be presented to the CCB during the December 7th meeting for discussion and approval. The approved list and schedule will detail the Version 3 Release of ITSS.

The slides presented at the CCB meeting are below. Use the arrow keys to move within this document.

Emergency CCB Mtg
IT-Solutions Shop

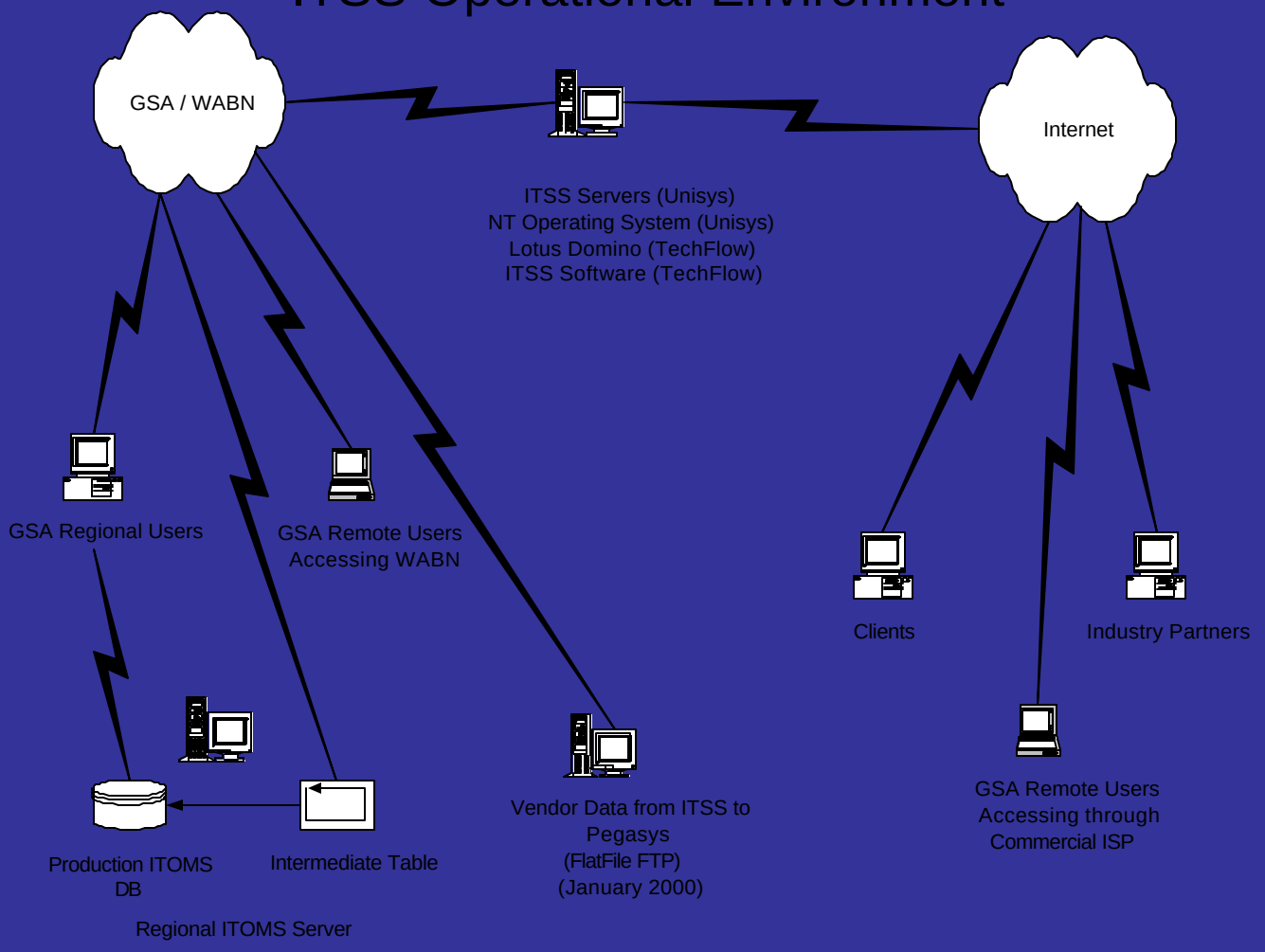
Presented by
David R. Griffin, GSA
Robert S. Baum, TechFlow
Nelson Diaz, TechFlow

Outline

- ITSS Map & Responsibilities Alignment
- ITSS Rationale & Strategic Focus
- Growth of ITSS
- Solutions to Date
- Other Commitments
- Options to Look At
- Impact of Decisions
- Summary

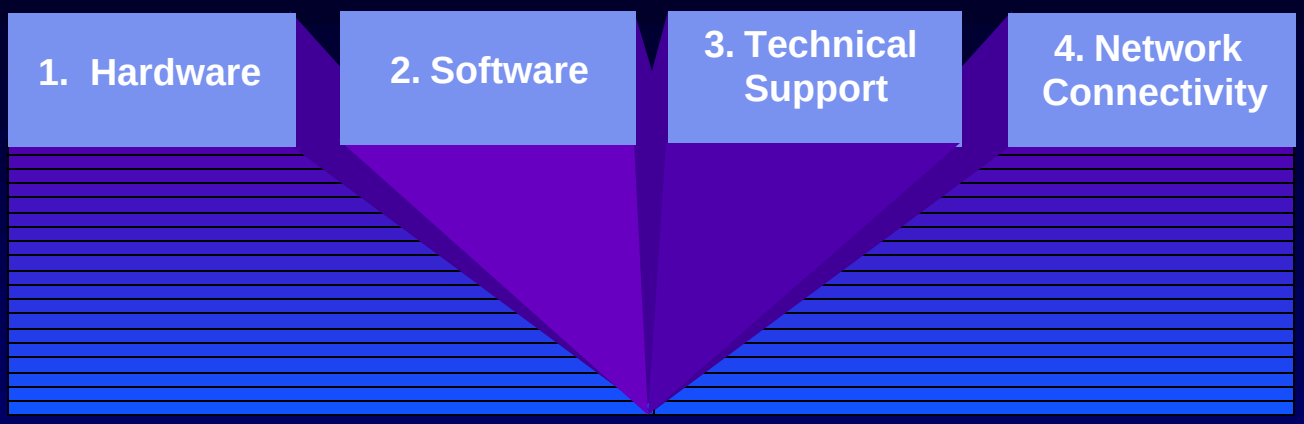
IT-Solutions Shop Map

ITSS Operational Environment



ITSS Responsibilities

- Four Functional Areas



ITSS Responsibilities*(continued)*

1. Hardware
   - Unisys Corporation
     - Physical Hardware and Operating System
   - GSA FTS Regions
     - ITOMS Servers

ITSS Responsibilities*(continued)*

2. Software
   - TechFlow Incorporated
     - ITSS Application, Lotus/Domino Software and Administration
   - OAO Corporation
     - ITOMS Operational Software
     - Intermediate tables and import program

ITSS Responsibilities*(continued)*

3. Technical Support
   - TechFlow Incorporated
     - ITSS application
   - Syncrotech Software Corporation
     - ITSS registration desk
   - Unisys Corporation
     - 2d level support for ITSS hardware/operating system problems
   - OAO Corporation
     - ITOMS application

ITSS Responsibilities*(continued)*

4. Network Connectivity
   - Unisys Corporation
     - From Data Center to Internet and to GSA WABN
   - GSA Network Support
     - GSA WABN
   - GSA Regions
     - Internal network connectivity
   - Clients and Industry Partners
     - From workstation to Internet

Rationale or Benefits of the ITSS System Approach

1. Consistent Business Process and One-point of entry for all clients and contractors
2. Consolidated expandable infrastructure to support GSA workload
3. Ability to work anytime, anywhere leveraging the Internet as a medium
4. Provide management visibility to all regions

Rationale or Benefits of the ITSS System Approach *(continued)*

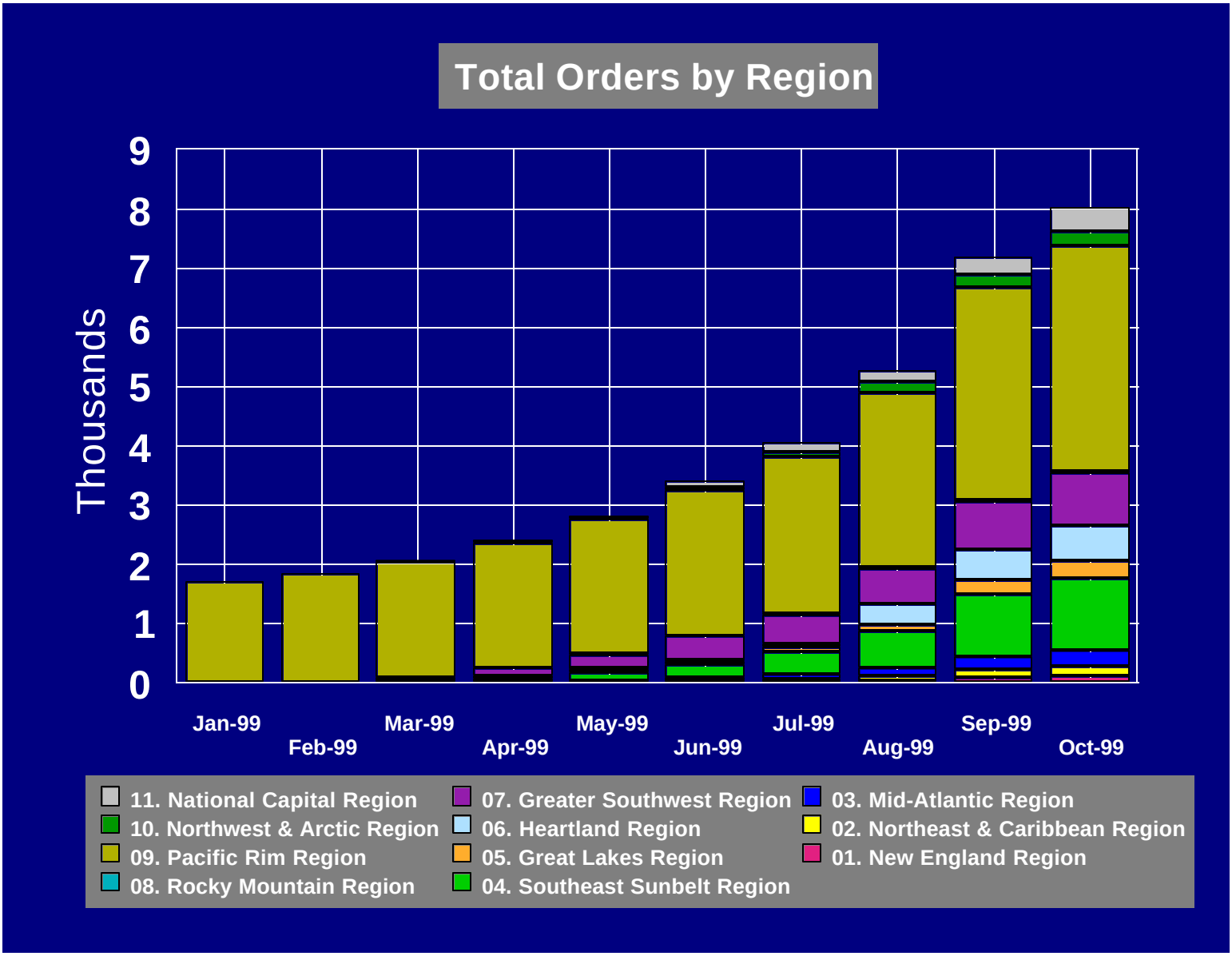
5. Pooled resources - develop, maintenance, operators
6. One interface to support for communication with other systems and hooks to financials
7. Opportunity to build Business Intelligence - Centralized look at Customers & Vendors

Strategic Focus

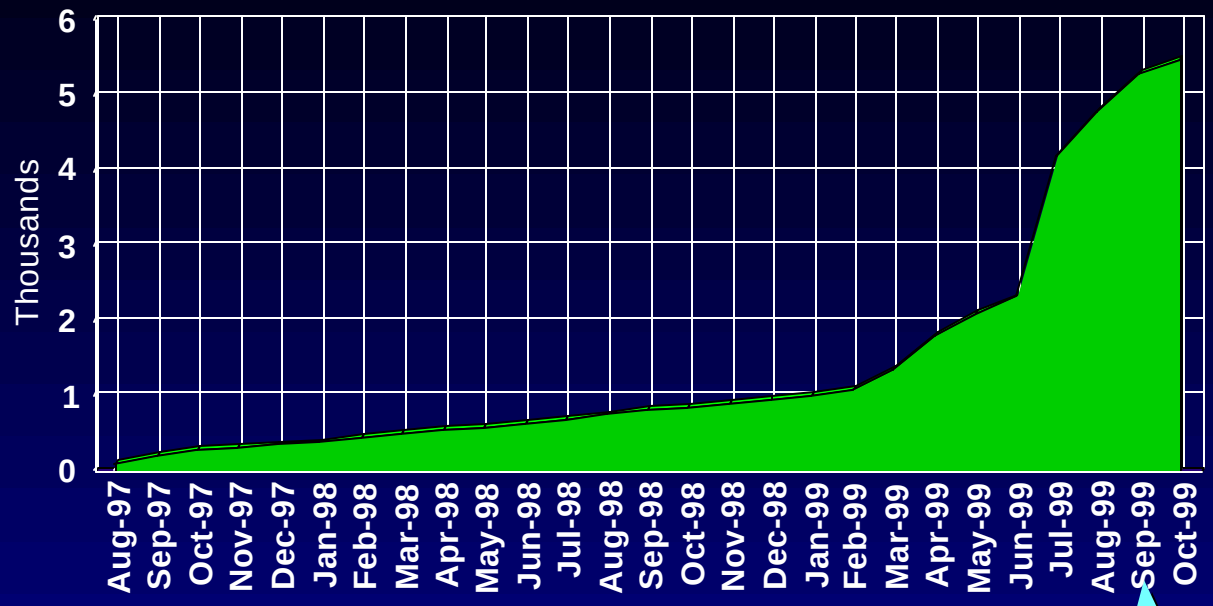
- Software Performance
- Hardware Performance
- Network Performance
- Help Desk Responsiveness

Growth of ITSS

- Total # of orders has grown to 9,600+
- # of Funding documents has grown to over 19,500 (70,000 total documents)
- Over 6,600+ feedbacks in the system
- Total ITSS System is just over 7 GB (approximately 24 files)

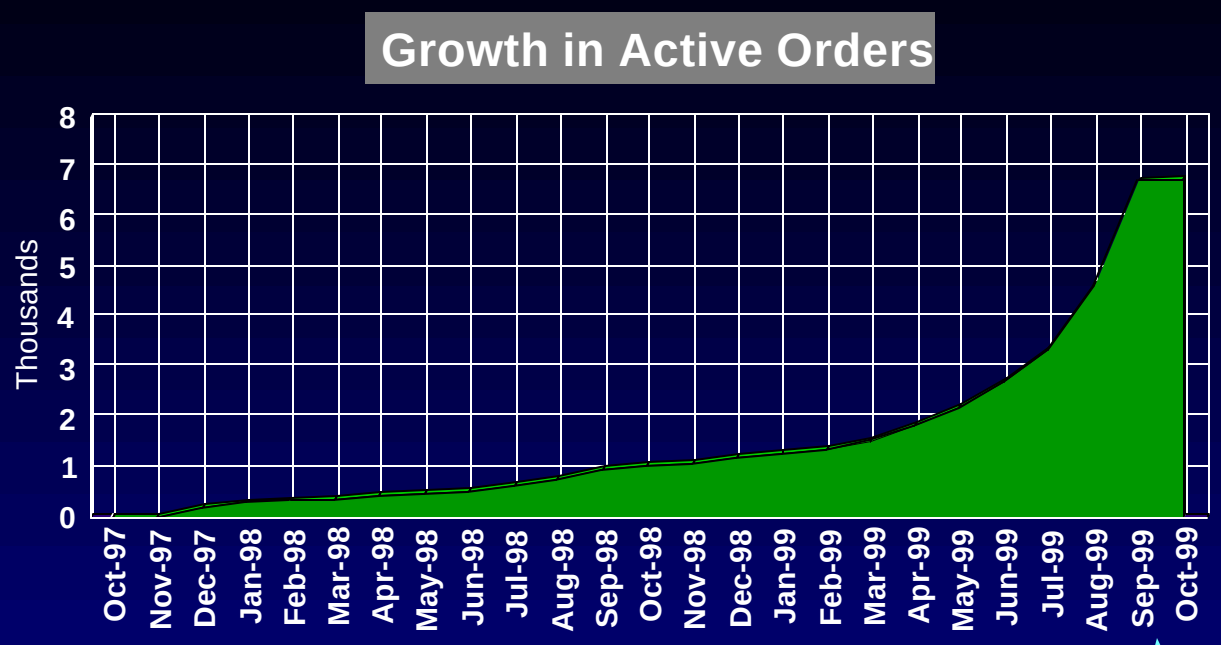

Total Orders by Region
Thousands
9
8
7
6
5
4
3
2
1
0
Jan-99
Feb-99
Mar-99
Apr-99
May-99
Jun-99
Jul-99
Aug-99
Sep-99
Oct-99
11. National Capital Region
10. Northwest & Arctic Region
09. Pacific Rim Region
08. Rocky Mountain Region
07. Greater Southwest Region
06. Heartland Region
05. Great Lakes Region
04. Southeast Sunbelt Region
03. Mid-Atlantic Region
02. Northeast & Caribbean Region
01. New England Region

Growth of ITSS *(continued)*

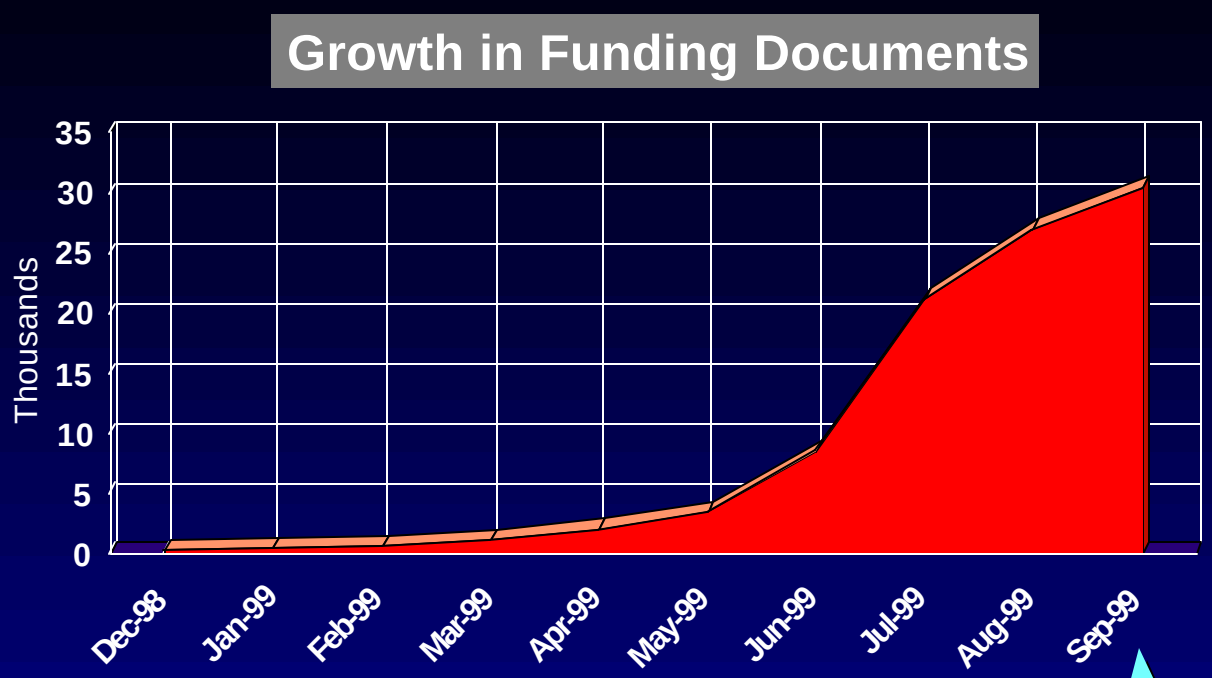


Growth of ITSS *(continued)*

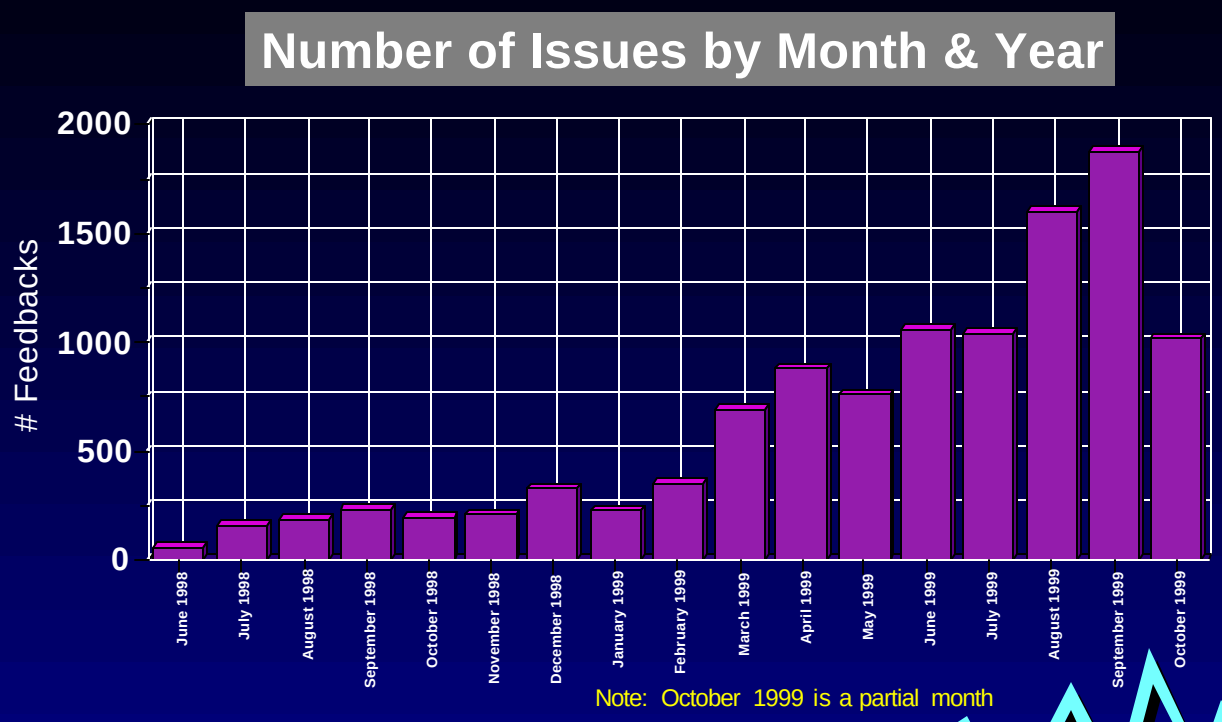
Growth in ITSS *(continued)*



Growth in ITSS *(continued)*

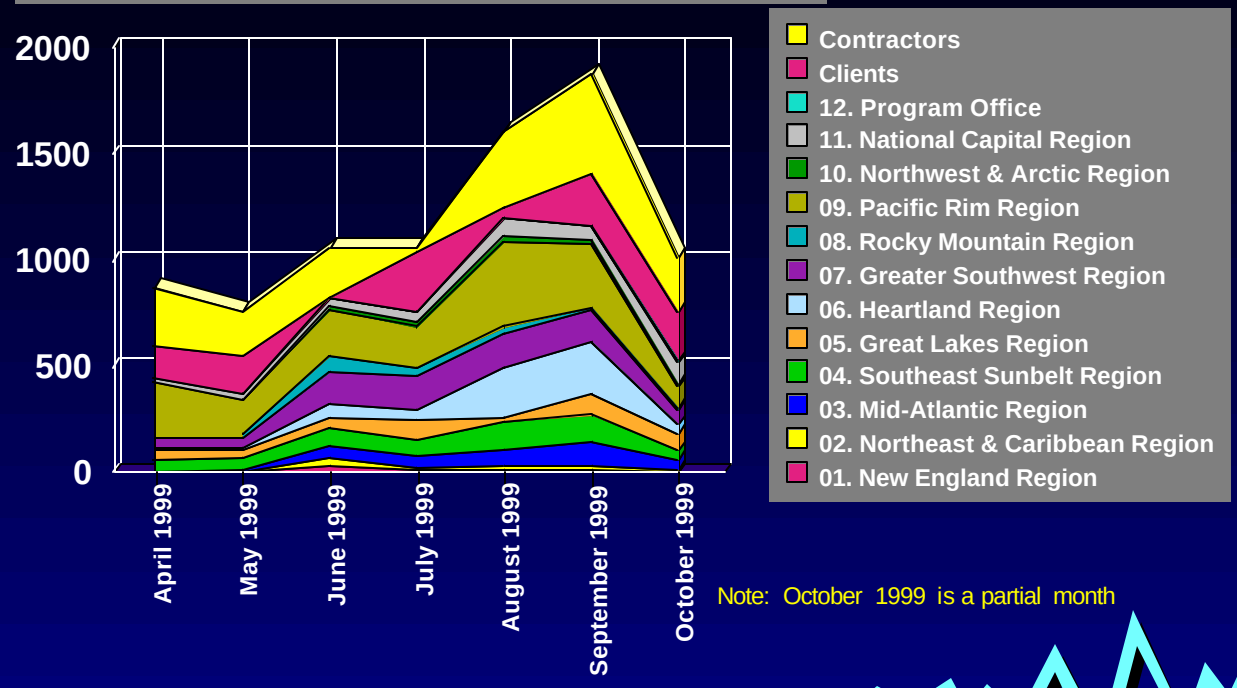


Growth of ITSS *(continued)*



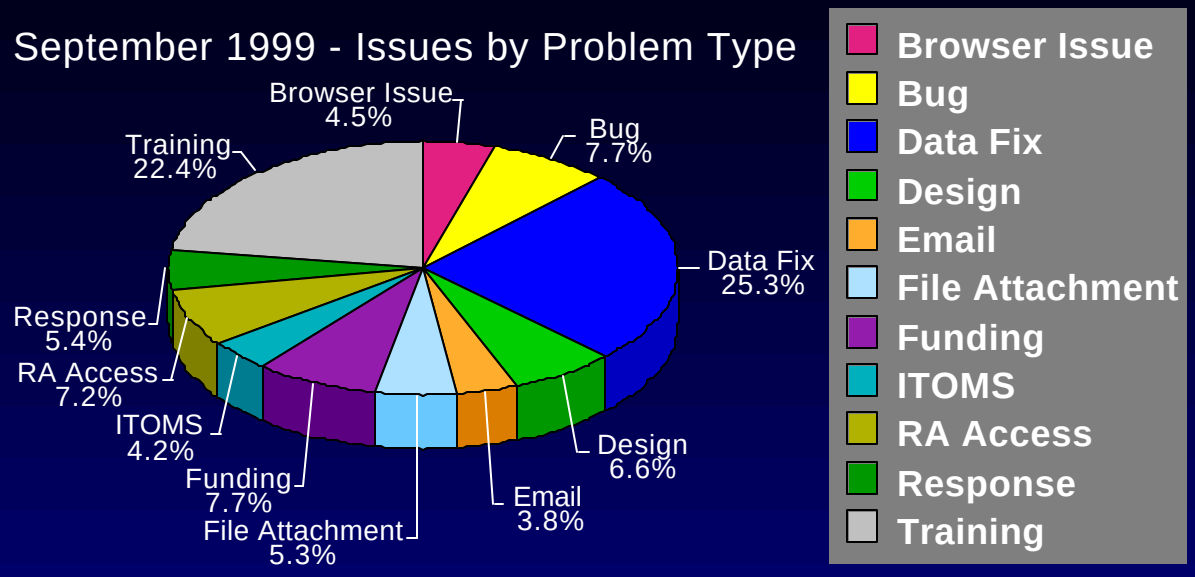
Growth of ITSS *(continued)*

Feedbacks by Region & Month

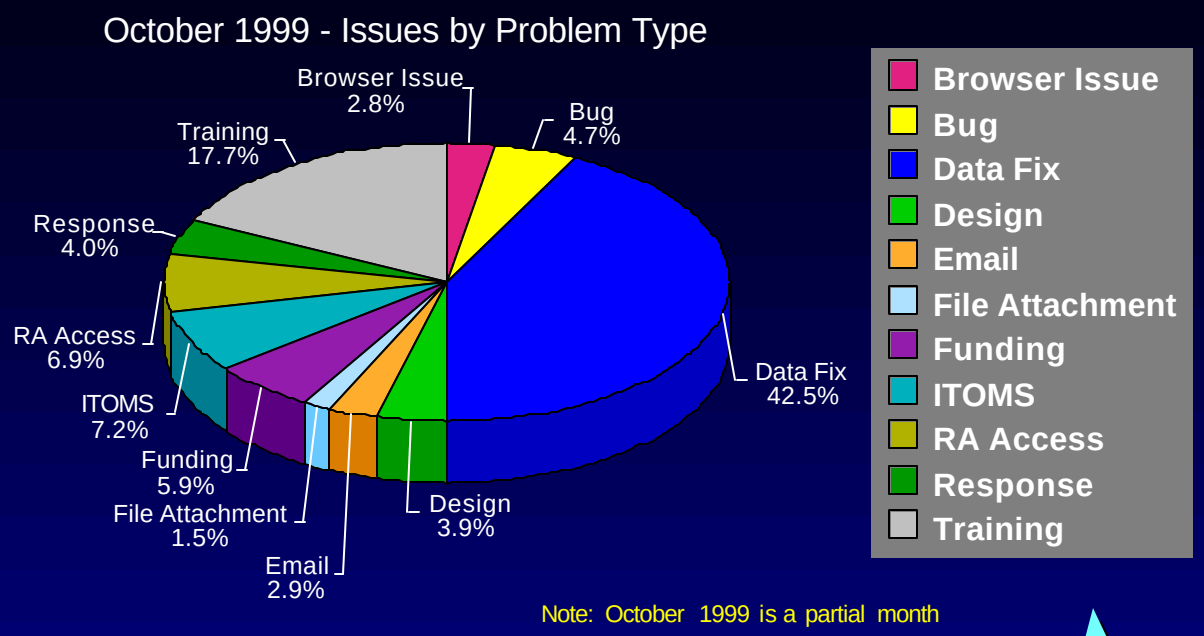


Note: October 1999 is a partial month

Growth of ITSS *(continued)*



Growth of ITSS *(continued)*



Note: October 1999 is a partial month

What have we done?

- Consulted with IBM Domino Experts
- Engaged Lotus Technical Support
- Aggressively Migrated to Domino Release 5
- Optimized Server Environment
- Optimized Software Environment
- Analyzed Hardware & Network Issues
- Help Desk Changes

What have we done? Consulted w/IBM Domino Experts

- IBM spent three days on-site at TechFlow
- "...a complete and thorough description of the ITSS application architecture along with access to some of the application code... confident in stating... good job in programming for the best performance of the ITSS application"
- Several Observations & Recommendations currently being pursued
  - View, Categorization, Indexes, SSL

What have we done?
Engaged Lotus Technical Support

- Worked on optimization of NT parameters & Domino R5 Setup
- Evaluated Domino configuration for performance
- Several changes made to variety of system files
- Pursuing additional memory request

What have we done? Aggressively Migrated to R5

- Moved time frame of migration schedule up
- Executed testing and benchmarking prior to migration
- R5 code changes implemented to support migration
- Additional improvements implemented based on more powerful interface

What have we done?
Optimized Server Environment

- Reduced replication cycles with external Servers
- Isolated ITSS cluster traffic
- Deleted unnecessary dbs, files and templates
- Added additional Server to Cluster
- Removed ITSS demo traffic from site

What have we done?
Optimized Server Env *(continued)*

- Upgraded all templates
- Upgraded all databases to R5
- Enabled new performance enhancements - R4 to R5

What have we done?
Optimized Server Env *(continued)*

- Leveraged native SMTP mail processing
- Implemented view performance improvements
- Moved static documents out of indexes
- Enabled automatic server and process monitoring
- Routed Cluster Traffic to Dedicated LAN

What have we done? Optimized Software Environment

- Ongoing code analysis and benchmarking
- Focus on view indexes
- Lowered per database document count
  - Archiving Canceled & Completed Orders
  - Evaluation of individual order documents, separation by function
- JavaScript SSL caching & routine size
- Consolidated Available User Views

What have we done? Hardware & Network Analysis

- Hardware
  - Unisys box reconfiguration
  - 2nd NIC Card/dedicated Cluster LAN
  - Memory request
  - Additional Server
- Network
  - GSA WABN analysis
  - Researched redundant Internet solutions
  - Engaged Network Experts

NT PerformanceMonitor Results

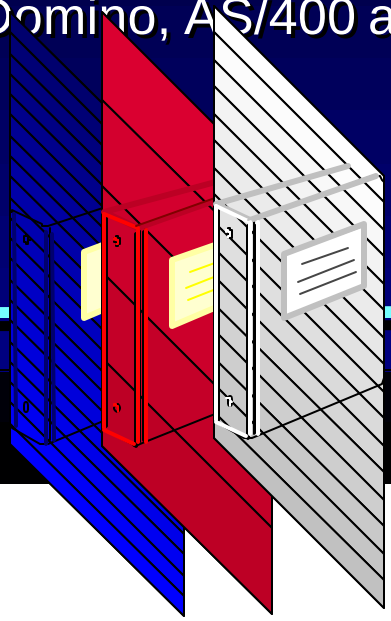
- Memory Available Bytes - R5 initiated decrease indicating improved use of memory
- TCP Connections Established - Showing daytime peaks of 200 Connections/Server
- System File Write Operations - R5 improved
- System File Read Operations - Large increase in read requests over time, large daytime peaks
- System Total Processor Time - 30-40% jump in usage, daytime peaks at 80-100%

Current Activity

- Categorized View Changes
- Navigation Enhancements
- Aggressive Archiving
- Collecting Performance Data
- Software Script Optimizations
- AS/400 Benchmarking

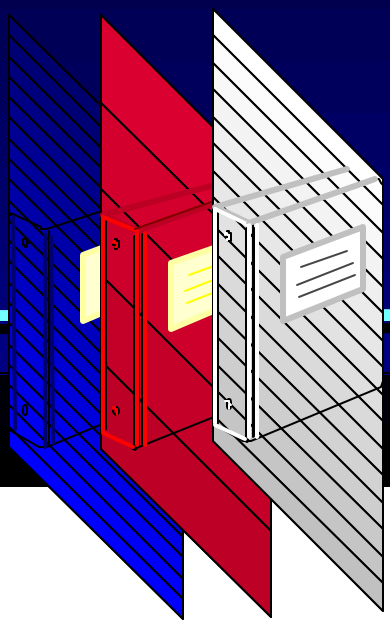
Domino Published Case Studies

- CountryWide Lending - E-Commerce solution for loan servicing function
  - Leveraging Domino on AS/400 platform
  - 1000's of Internet customers/day
- SEB Private Bank - Internet access to real-time data stored in financial systems
  - Leveraging Domino, AS/400 and SSL for encryption



Domino Published Case Studies *(continued)*

- SAAB - E-Commerce application connecting retailer clients with back-end manufacturing and financial systems
  - Leveraging Domino, AS/400, and Java
- Atlanta and Nagano Olympics hosted on Domino and AS/400s



Other Commitments

- ITSS to ITOMS Interface
- Pegasys Requirements
- National Programs (ITOMS Mod 2)
- Common Database
- Customer Database
- Products & Services Database
- Version 3 ECPs

Other Commitments
ITSS to ITOMS Interface

- Balancing Act
  - ITOMS (no history) & ITSS (history)
  - Problem with synchronization
  - TOF Update Process
- PO Conversion (from Legacy systems)
- Improving Error Message Trapping
- Support Issues
  - Data Problems
  - Microsoft Access Issues

Other Commitments Pegasys Requirements

- Three Main Requirements
  - Pass vendor information
    - Generate Tracking Number for each address
  - Import Existing Near Tracking Numbers
  - Generate a Document Number to Replace Order Number (Act Number)
  - Track New Field Information

Other Commitments
National Programs (ITOMS Mod 2)

- Likely to double user & transaction base
- Recently received final work requirements
  - Larger impact than early analysis indicated
  - Performance Considerations
- Change to Funding
- Project Focus
- Project Workflow Issues & Forms

Other Commitments
Other Projects

- Common Oracle Database
  - Ongoing definition of field mappings
- Customer Information Database
  - Pass/Replicate Client Information
- Products & Services Database
  - What people are buying - summary of orders
- Training

Options to Look At

- Software, Hardware, and Network
  - Short-term Options
    - within 90 days
  - Long-term Options
    - 90 days plus
- Technical Support Initiatives

Short-term Options - *Software*

1. Improve View Index Requirements
   - Lower index counts and streamline data presentation
   - Lower most view indexes to less than 10% of their existing size while preserving the existing navigation
   - Result: Much improved system responsiveness

Short-term Options - *Software (continued)*

2. Expand Document Archiving
   - Algorithm to archive by type based upon age or status.
   - Result = By lowering document count, indexes calculate and respond quicker
   - IBM Analysis highlighted view and index calculation as the number one focus area

Short-term Options - *Software (continued)*

3. Distribute Data Documents to Separate DBs
   - Less views per database
   - Less documents to index per database and change
   - Result: Increase view index rebuilds and caching
   - Similar to archiving document (3)
   - IBM Analysis highlighted view and index calculation as the number one focus area

Short-term Options - *Software (continued)*

4. Change ITSS GSA Access model
   - GSA staff in the regions only see their regional orders (not other regions) = more usable
   - Management/Reporting Access to all orders
   - Result: Easier to find relevant information
   - Being able to find information quicker will make the system seem faster and will result in less queries (people need to search less)
   - Maintain shared registration, shared ITSS system

Short-term Options - *Software (continued)*

5. Regionalize Funding Documents
   - Change access model in Funding
   - Same Rationale as (4) above

Short-term Options - *Software (continued)*

6. Additional Outside Performance Expert Review of Application
   - Outside of Lotus/IBM
   - Code review/walk-through/optimization analysis
   - Criteria for Selection
     - Size of applications optimized
     - Domino Focus
     - Achieved response change

Short-term Options - *Software (continued)*

7. Limit ITSS use to existing regions
   - Relax migration schedule (delay)
   - Fix performance and missing functionality issues before enforcing drop dead date

Short-term Options - *Software (continued)*

- Take IT-Solutions Shop off-line completely
  - Fix remaining issues (including interface problems) before allowing continued use
  - Regions would process orders with systems in place before IT-Solutions Shop

Short-term Options - *Software (continued)*

- Architect a graphic/no-graphic interface
  - Enable all screens to operate with or without graphics for speed on download.
  - All ITSS graphics are minimized in terms of size.
  - Would not be a major performance enhancement

Short-term Options - *Hardware*

- Optimize Current Hardware Configuration
  - Install Additional Memory
  - Optimize NT Configuration
    - Look at Disk Structure

Short-term Options - *Network*

- Engage Network Specialists
  - Visit and Analyze Customer Sites against Benchmarks
  - Evaluate Frame to Data Center/Frame at DOD sites
  - Leverage Conversations with Business Partner Network Analysts
    - Check existing infrastructure
    - Resolve Peering and Time-out issues

Long-term Options - *Software*

- Local Region Reporting Replica
  - Local Regional Replica
  - Enable Custom Manipulation of Data/Views
  - Facilitate Reporting and Analysis
  - Keeps ITSS centralized (no regionally based workflow processing)
  - Look at adding New Record capability

Long-term Options - *Software (continued)*

- Separate National Program Workflow
  - Create linked but separate environment
  - Leverage existing application
  - Keeps different workflow separated
  - Keeps size impact of data separated
  - Centralized registration, centralized data, distributed order processing.

Long-term Options - *Software (continued)*

- Architect a Distributed ITSS Solution
  - Place Regional web servers in each region
  - Isolate the region, industry partners, and the clients to regional server(s)
  - All parties would operate off a regional server
  - No consolidated database, no one URL to go to.
  - Host in current data center or distribute hosting to regions.
  - Lose consolidated data management and centralized administration.

Long-term Options - *Software (continued)*

- Architect a Distributed Solution for GSA
  - Leverage Domino Replication
  - Provide a Local Domino Copy to each Region to work from
  - Client and Contractor Speed Issues Unresolved
  - Increase in Replication Traffic must be Evaluated
  - Higher Probability for Replication Conflicts

Long-term Options - *Software (continued)*

- Remove SSL on all GSA WABN Transactions
  - SSL Encryption and Decryption Occur on
    - server
    - browser
  - Dedicate Several Cluster Members to Servicing GSA users over the Wide Area Backbone
  - All Outside Internet Based Access would go to SSL enabled databases

Long-term Options - *Software (continued)*

- Provide a Notes (Release 5.0 Client) as well as Internet Browser client solution
  - Leveraging the Notes client, GSA could access ITSS with Notes
  - Data could be replicated
  - Records could be added off-line (quick) and then replicated back up to ITSS.
  - Particularly useful and powerful for the funding database.

Long-term Options - *Software (continued)*

- Re-architect solution to segment SSL requests to certain data elements only
  - Propose SSL transactions be limited to certain transactions
  - Remove current SSL encryption except when critical data is flowing across the system

Long-term Options - *Software (continued)*

- Push all Work Flow down to Regionally based Servers
  - Clients still go to ITSS, as they click on orders, they automatically go to the correct regional server.
  - Leverage replication in solution

Long-term Options - *Software (continued)*

- Leverage CORBA and JAVA
  - Push More Work out to the Clients Off the Server
  - The more the clients are doing, the less the servers need to do and the faster things perform
  - Issue could be in size of applets and download times associated

Long-term Options - *Software (continued)*

- Remove Lotus Notes and Domino
  - Change software application used to host ITSS
  - Look at other options such as Oracle
- Change back-end storage of ITSS

Long-term Options - *Hardware*

- Evaluate Change to Hardware Platform
  - Look at a more optimized and powerful solution
  - Conduct benchmarking on the AS/400
    - How will platform support the expected volume
  - Lotus Domino for AS/400 has established benchmarks of being able to service 27,000 concurrent mail users on a single AS/400 server

Long-term Options - *Hardware (continued)*

- Add Additional NT Servers to cluster
  - Today - 4 quad processors in Minnesota
  - Under Win32 NT, possible to expand this number to a maximum of 6
  - Development team feels that spreading the load will not increase performance substantially
- Evaluate faster WIN32 NT Machines

Long-term Options - *Network*

- Leverage Frame Relay
  - Provide dedicated access to a network cloud
  - Result = better access for DOD like clients
  - Minimized Expense

Long-term Options - *Network (continued)*

- Implement a Virtual Internet Service Provider Service for Clients/Contractors
  - Close proximity to ITSS on Internet Backbone
  - Leverage resources of ISP
    - Provide Internet access accounts
    - Each Account is one hop away from ITSS
    - End-User could sign up for own account
    - Managed by ISP
    - Client offering (service) for GSA

Long-term Options - *Network (continued)*

- Redundant ISP
  - Increase and Guarantee Access to ITSS
  - Best Route Picked
  - Provide multiple paths to get to ITSS
  - E.g. - SprintLink and Cable & Wireless provide access to ITSS

Long-term Options - *Network (continued)*

- Implement Nationwide Data Caching
  - Cacheable material is served up
  - Speeds delivery to the user
  - In different locations across the country, place caching servers to cache requests for cacheable elements

Technical Support Responsiveness

- Added 3 additional staff resources
- Created Support Knowledge Base
- Implementing call escalation (emergencies)
- Facilitate Regionally Based Training Sessions
  - Increase end-user skills (client, contractor & GSA)
  - Lower help desk call volume
  - Do a periodic training seminar

Technical Support Responsiveness *(continued)*

- Main 800 # auto call router
  - Based upon type of problem
  - End-user calls one number for problem resolution
  - Call is automatically routed and handled by answering technician
  - Link help desks together

Technical Support Responsiveness *(continued)*

- SameTime Internet based Chat for Problem Resolution Communication
  - Would be available On-line
  - Could use while working within ITSS
    - Ask the expert
    - Ask a question while working in a workflow
    - Join a discussion group on funding, etc.

Impact of Decisions

- Version 3 ECPs
  - Include Recent Emergency Requests
  - Reorder & Recommend on existing

Impact of Decisions *(continued)*

- Implementation of Pegasys
- Implementation of National Programs
- Implementation of Common Database
- Implementation of Customer Database
- Implementation of Products and Services Database

Summary

- Performance is Number One Priority
  - Recommend Completion of Short-term Software Changes
  - Retain Single DB Model with a Powerful Hardware Engine
    - AS/400 and Win32 Benchmarking
  - Intense Network Analysis
- Added Focus on Mission Critical ECPs for V3, Pegasys, and National Programs
    - Distribute Regional Reporting DBs