

spatial dimension
AN MS GROUP BUSINESS



flexicadastre

Lessons learnt from supporting high volume instances of FlexiCadaastre

Saliegh Aziz

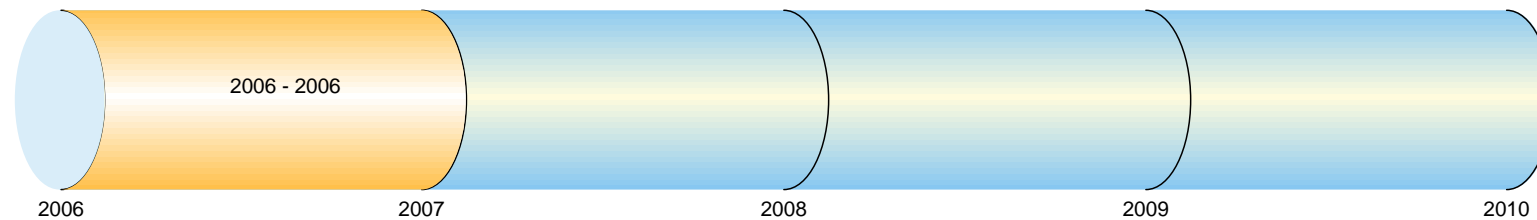
CONFIDENTIALITY

- This document has been issued to the receiving party in the strictest confidence and no parts of this or any other document in this regard may be reproduced or communicated in any form without the express prior consent of the authors.
- The receiving party shall make only such use of the information contained herein as is intended and authorized by an agreement between such receiving party and Spatial Dimension.
- The receiving party will not use or exploit the confidential or proprietary information contained herein for its own benefit or that of any third party and may make only such use of such confidential or proprietary information as is contemplated or specifically authorized by the disclosing party. The receiving party further undertakes that in the event that they do not wish to progress a relationship with Spatial Dimension they will forthwith return to the address contained herein this and any other material related hereto.

OVERVIEW

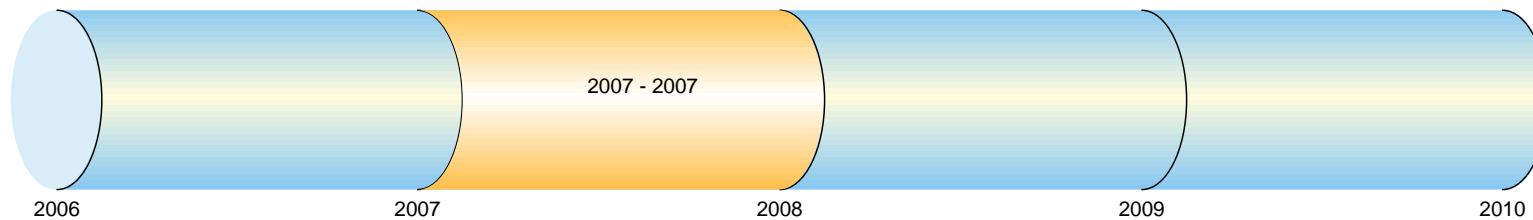
- Case Study: Ministry of Energy and Minerals, Dar es Salaam, Tanzania
 - The situation
 - The solution
 - The outcome
- Summary of the lessons learnt
- Questions

THE SITUATION

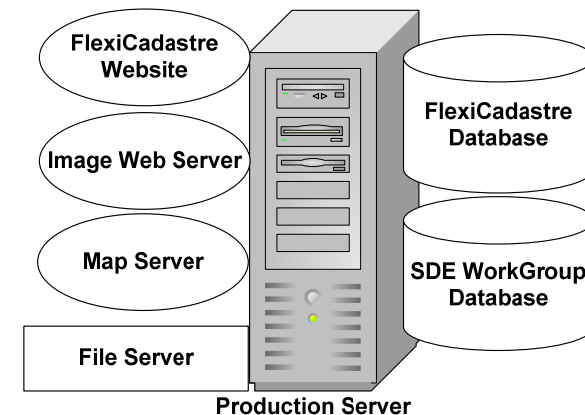


- 2006
 - Mining Cadastre Information Management System Projected commenced
 - Data migration
 - Data cleaning
 - Workflow implementation – 72 active workflows
 - User training

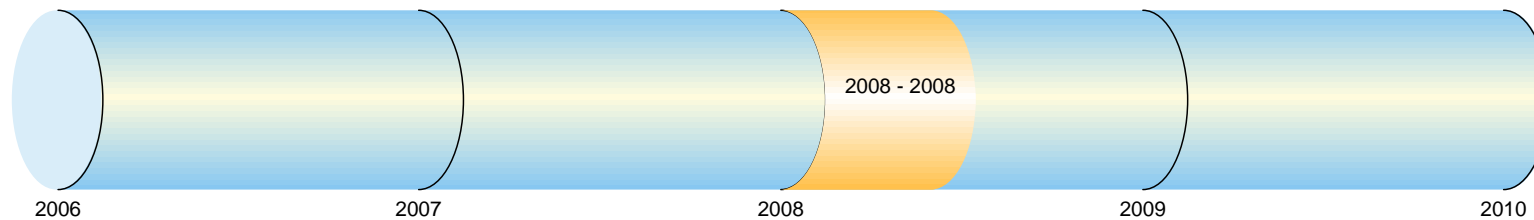
THE SITUATION



- 2007
 - Final data import
 - Go-Live
 - 2 Servers (2 dual core processors, 2GB RAM)
 - VSAT for VPN connection – future use
 - 10 users
- Mid 2007
 - Critical Hardware failure – RAID drives
 - Resulting in single server implementation hosting the
 - web server,
 - database server,
 - map server,
 - file server
 - spatial database server
 - Image server

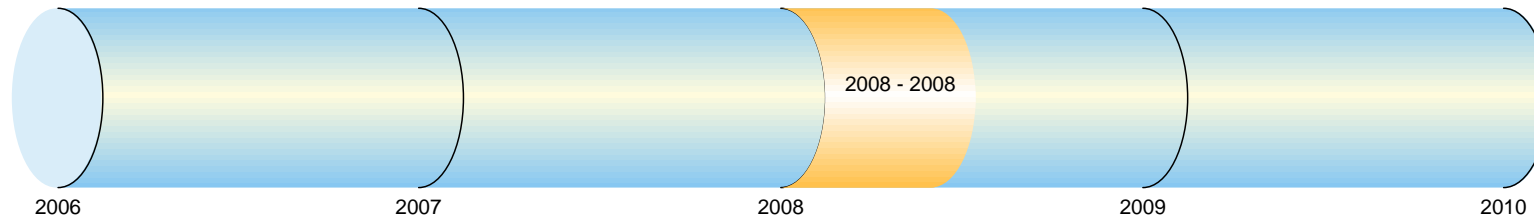


THE SITUATION

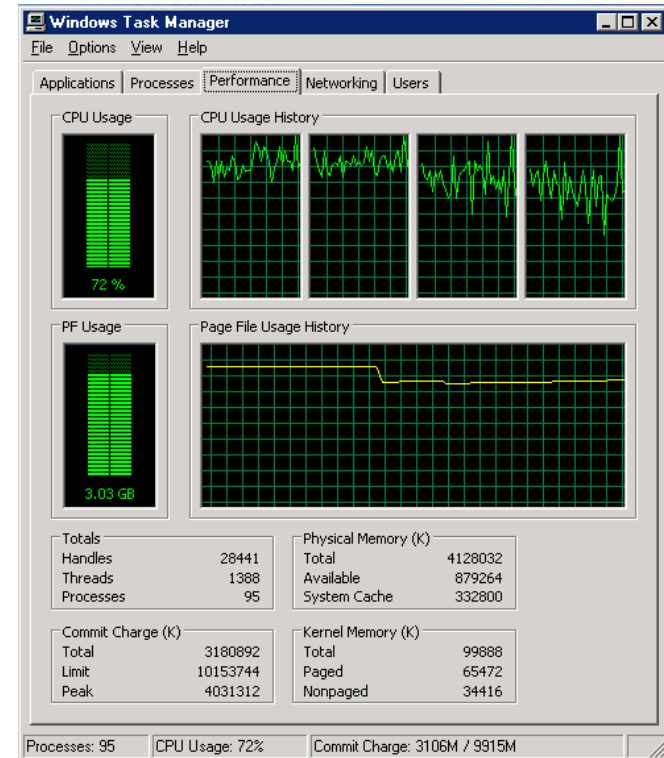


- 2008
 - User base increased to between 45-60
 - Introduction of remote offices
 - More Head Office personnel using FlexiCadastre
 - High volume of data
 - 39,453 licenses in the system
 - Almost 15,000 active licenses
 - Approximately 18,000 applications
 - 291,924 actions in the system
 - Almost 90,000 open actions
 - Resulted in
 - Hardware limitations
 - Software limitations
 - Other issues

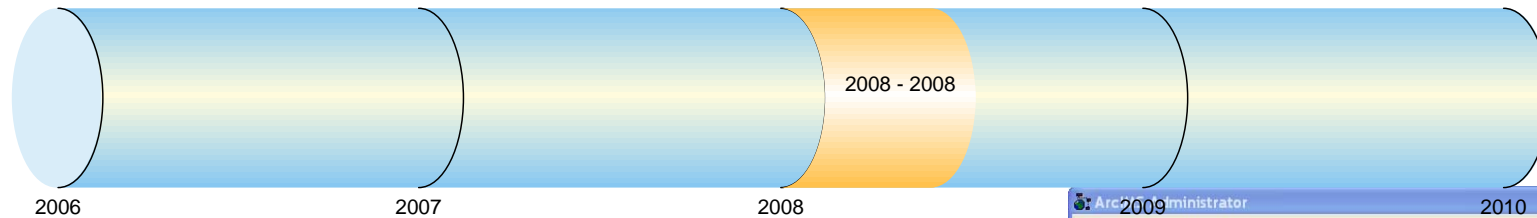
THE SITUATION



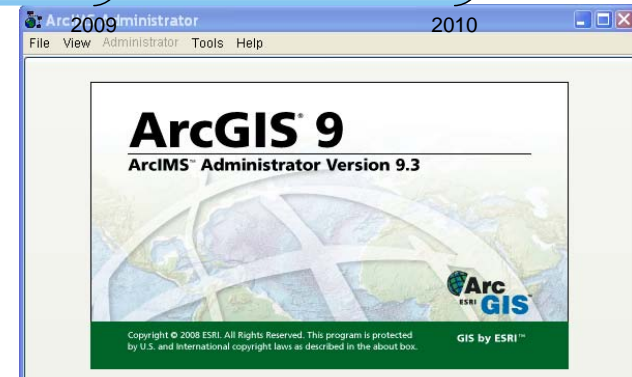
- Hardware limitations
 - Server processor running high all the time
 - Server memory constantly at its maximum
 - Constant Disk I/O
 - Server hardware resources exhausted
 - Server required “baby-sitting”



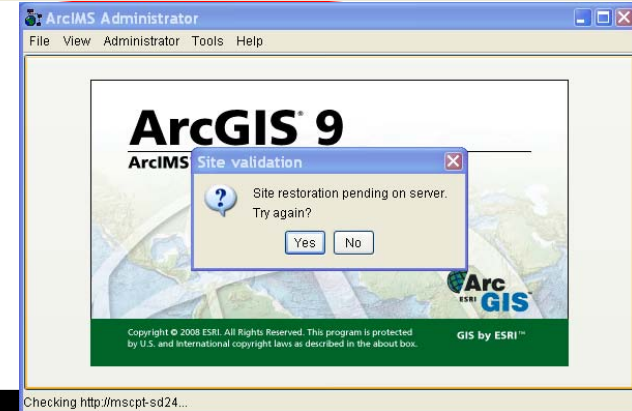
THE SITUATION



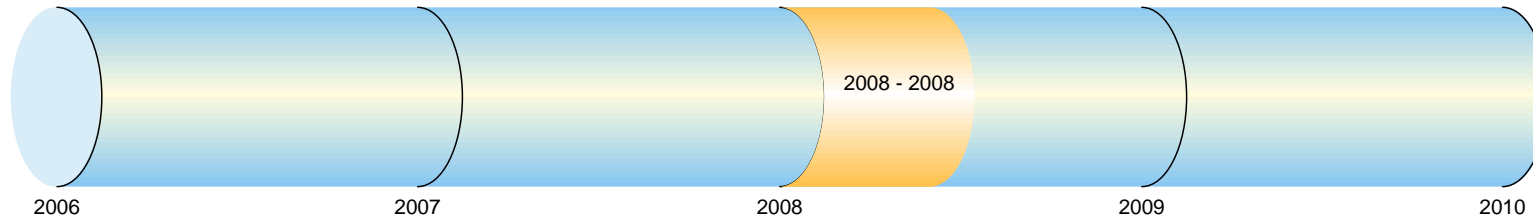
- Software limitations
 - SQL Server
 - Slow SQL query response
 - SQL time-outs, deadlocks
 - Internet Information Services
 - 1 process, running above 1.5GB
 - ArcIMS
 - Mapping issues
 - SDE
 - connectivity sporadic
 - Map rendering failure



The URL <http://mscpt-sd24> is invalid or ArcIMS is not running.



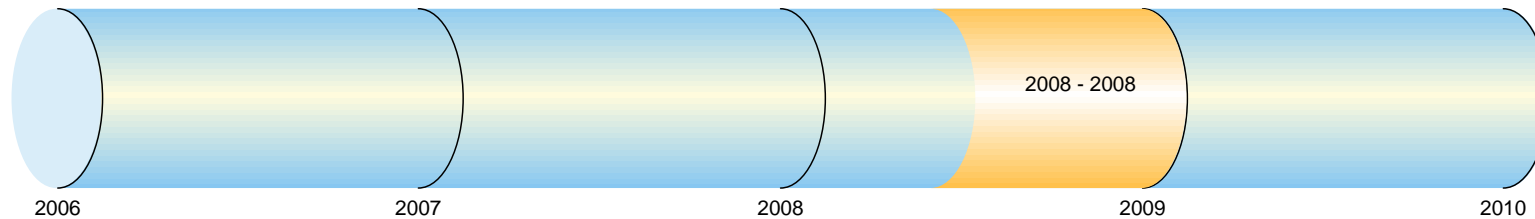
THE SITUATION



- Other limitations
 - Poor network connectivity from the ZMO/RMO's
 - Viruses on the network

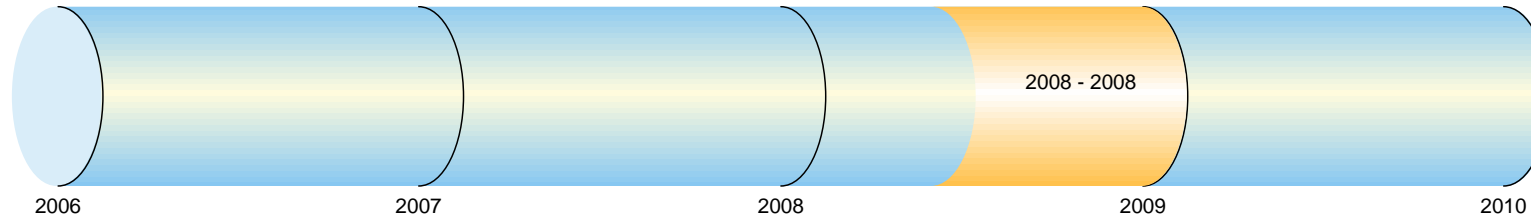


THE SOLUTION



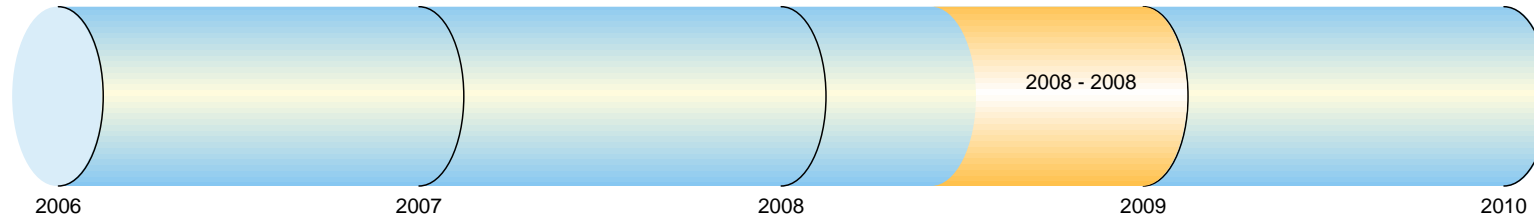
- Mid 2008
 - A team was put together to analyse and assess the situation
 - The recommendation
 - Client-side Plan of Action
 - Spatial Dimension Plan of Action

THE SOLUTION



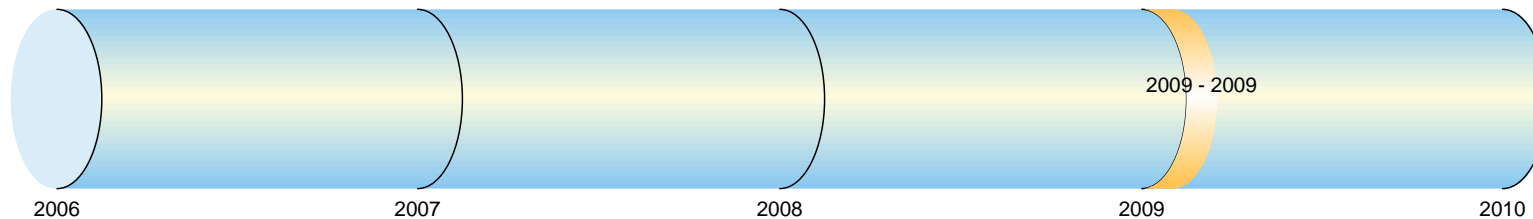
- Client-side Plan of Action
 - Procure latest technology servers
 - Acquire Gigabit switches
 - Audit user machines
 - Consult with ISP regarding remote offices' connectivity
 - Implement a reliable power backup system
 - Authorise upgrade to latest FlexiCadaastre with ArcGIS Server technology
 - Provision for a Fail-over system

THE SOLUTION



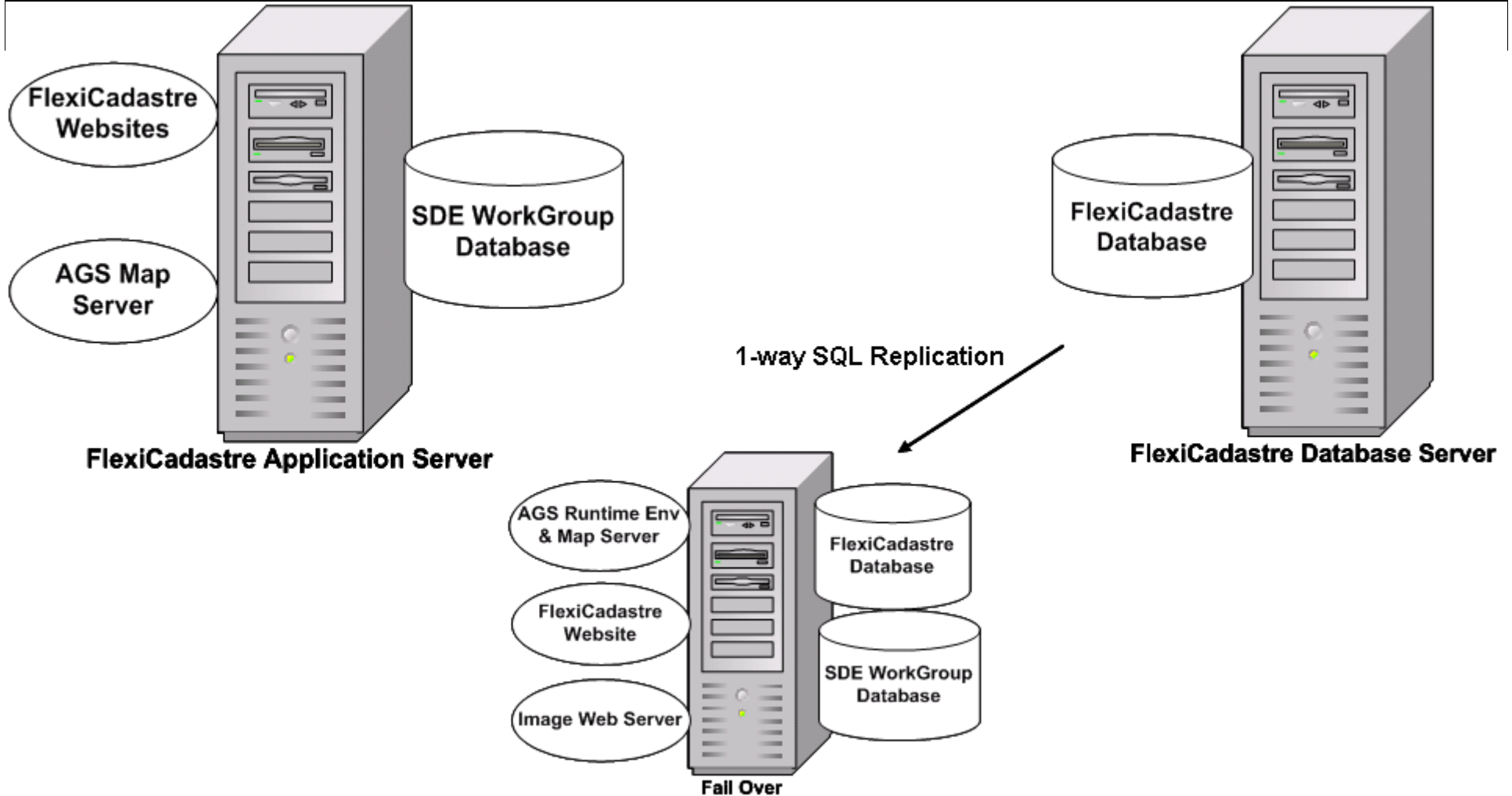
- Spatial Dimension Plan of Action
 - Replicate client-site issues with regard to FlexiCadaastre and implement sustainable solutions
- Code solutions resulted in
 - SQL query optimisation
 - Deadlock elimination
 - Database tables re-indexed
 - Load-Balance functionality implemented
 - Next website in a sequential list
 - Spread the CPU load across processors

THE SOLUTION

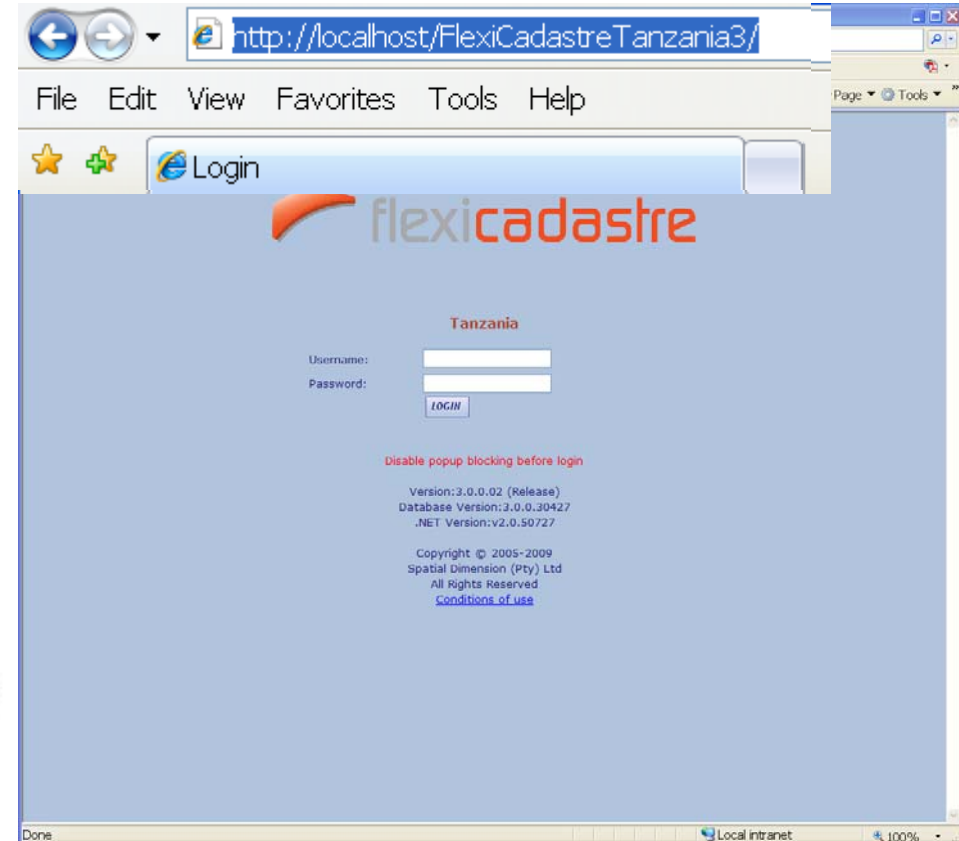
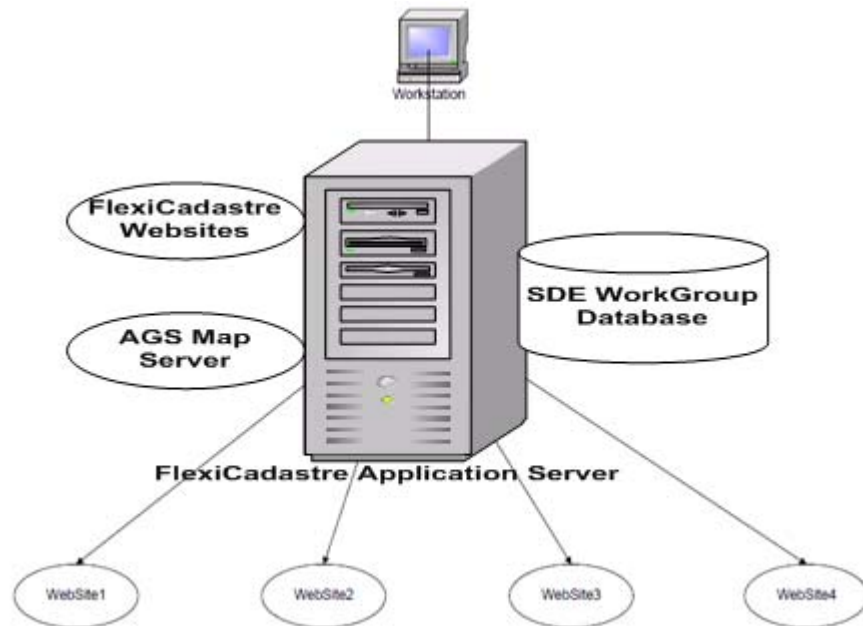


- 2009
 - Servers arrived at the Ministry of Energy and Minerals
 - 2 Resources deployed to Dar es Salaam on a “Rescue Mission”
 - Migration to New Servers – distributed solution
 - Audited user machines
 - Removed all viruses
 - Setup backup procedures
 - SQL Server Replication
 - Test Environment
 - Fail-Over Environment

THE SOLUTION – THE ARCHITECTURE



THE SOLUTION – LOAD BALANCING



THE OUTCOME

- Results of the new deployment
 - Hardware
 - Software
 - Other

THE OUTCOME

- Hardware Report Back
 - Memory load spread over multiple application processes
 - Processing spread across CPU's
 - Minimal server administration

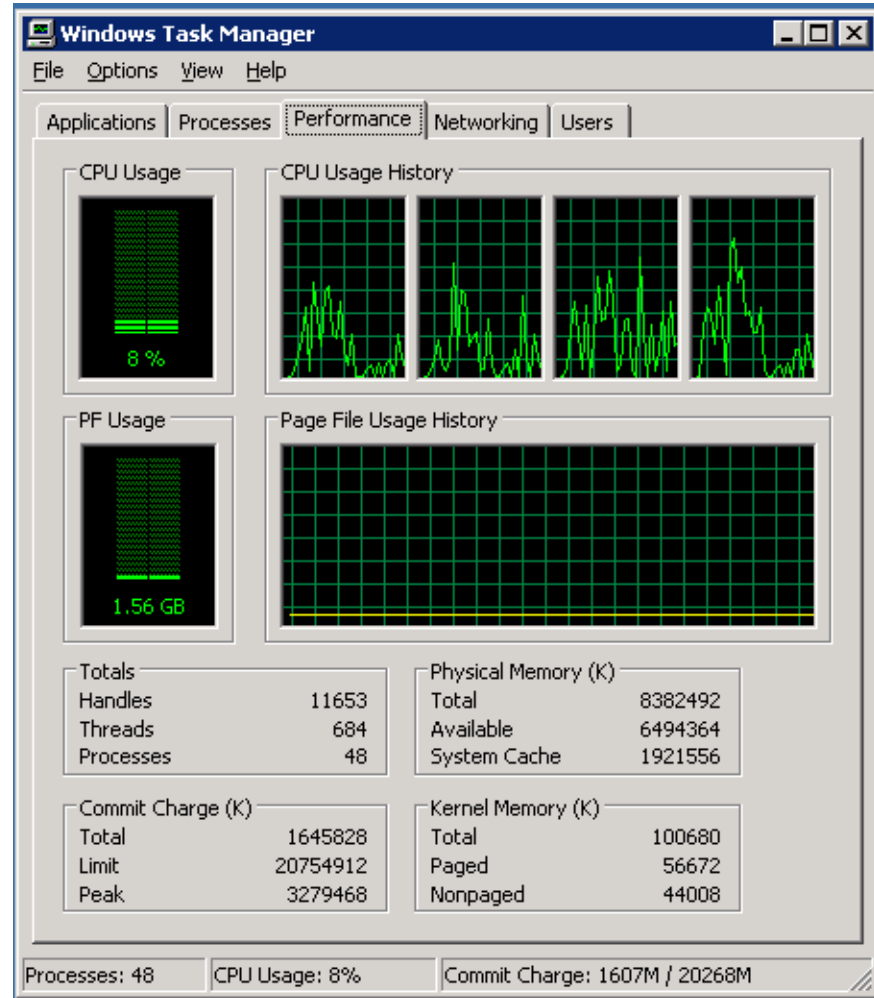
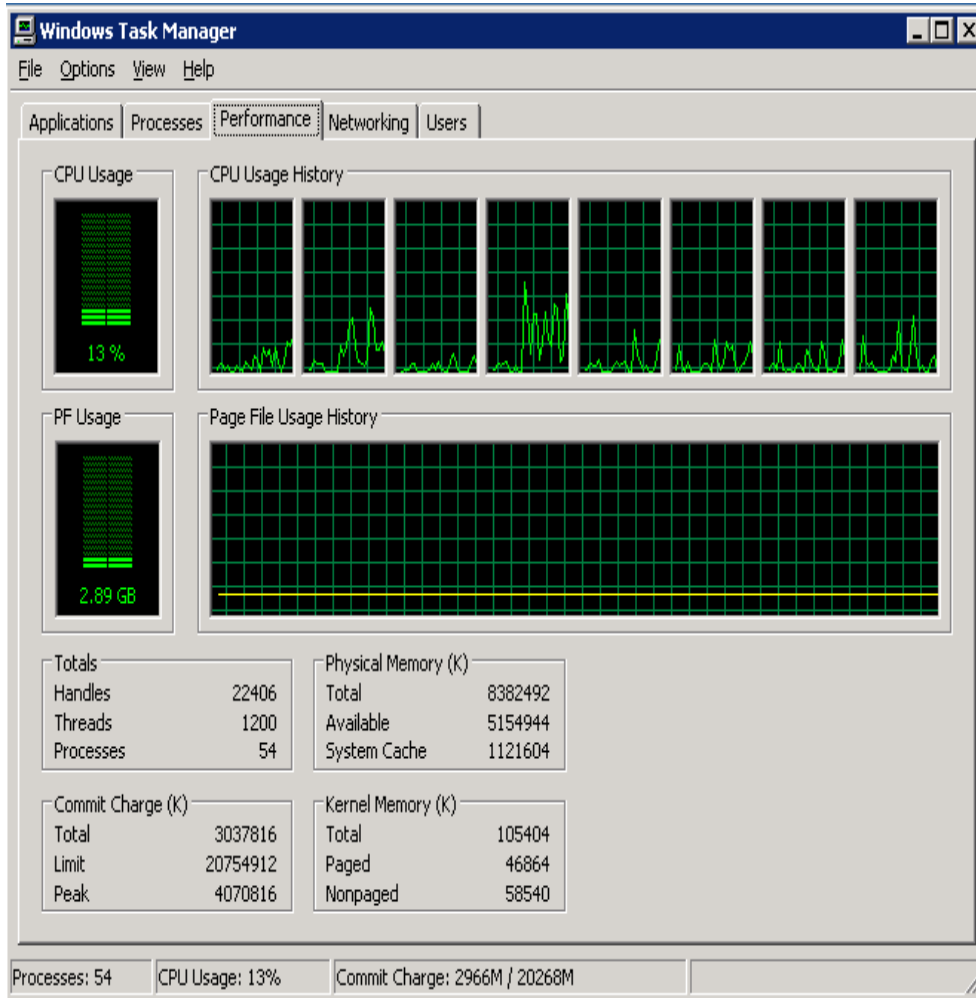
THE OUTCOME

- Software Report Back
 - Faster searches
 - Quicker shape validation
 - Load balance functionality spreads the load
 - Elimination of SQL time-outs and deadlocks
 - Mapping interface stable and easy to manage
 - SDE connectivity constantly available
 - Virus free environment
 - An overall improvement in performance
 - An increase in productivity

THE OUTCOME

- Other Report Back
 - Virus free environment
 - Reliable Backup Plan
 - Successful database replication

THE OUTCOME



USER FEEDBACK

- “Previously I processed 2 to 4 licenses a day. Today I have already printed 30 offers” – Frank Makyao, Assistant Licensing Officer
- “The shape validation used to run for 4 or 6 minutes before. It is very fast now.” - Sabastian Massau
- “I have no problems with the new FlexiCadastre. The users are happy, I am happy” - Slimmu Mtigile, Assistant Head of Licensing and Mineral Right Registry

SUMMARY: LESSONS LEARNT

- Anti-virus programs are a must.
- Face time with the user is invaluable.
- Data backups are not to be taken lightly.
- Testing backup sets could save hundreds of man-hours' worked
- Fully functioning air-conditioners are a must.
- Regular testing of UPS is not a waste of time.
- FlexiCadaastre administrators play a huge role in outlining users' feelings regarding the system.
- Users' commitment to go beyond their daily tasks assist in diagnosing intermittent issues.

QUESTIONS

Questions