

Migrating and Integrating A Global ClearCase Infrastructure

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IBM Rational Software Development Conference 2008

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Abstract

Following the 2006 acquisition of Micromuse by IBM, the IBM Rational ClearCase environment in 6 global locations was migrated and integrated onto the IBM network. The subsequent acquisition of Vallent in 2007 required the integration of an additional ClearCase environment. This session describes the challenges faced in migrating and integrating IBM Rational ClearCase environments from one network to another, especially after an acquisition, and how the team identified and resolved the challenges associated with the project.

Agenda

- Introduction
- About the Author
- Migrating a Global ClearCase Infrastructure
 - IBM Acquires Micromuse
- Integrating a Global ClearCase Infrastructure
 - IBM Acquires Vallent
- Summary

Introduction

- This session details the challenges facing ClearCase support engineers following an acquisition or merger

- Told through the experience gained by the author through:
 - Acquisition of Micromuse by IBM (Feb 2006)
 - Integration of Vallent into the Tivoli Network Management business unit (Feb 2007)

About the Author – Steve Hall

- Rational Support Team in Hursley
- IBM SWG but not part of Rational organisation
- Software Engineer for 15 years
- Supporting ClearCase for 7 years
- Supporting ClearCase MultiSite for 5 years
 - RiverSoft, (acquired by Micromuse in 2002)
 - Micromuse, (acquired by IBM in 2006)
 - IBM (acquired Vallent in 2007)

Migrating A Global ClearCase Infrastructure



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IBM buys Micromuse

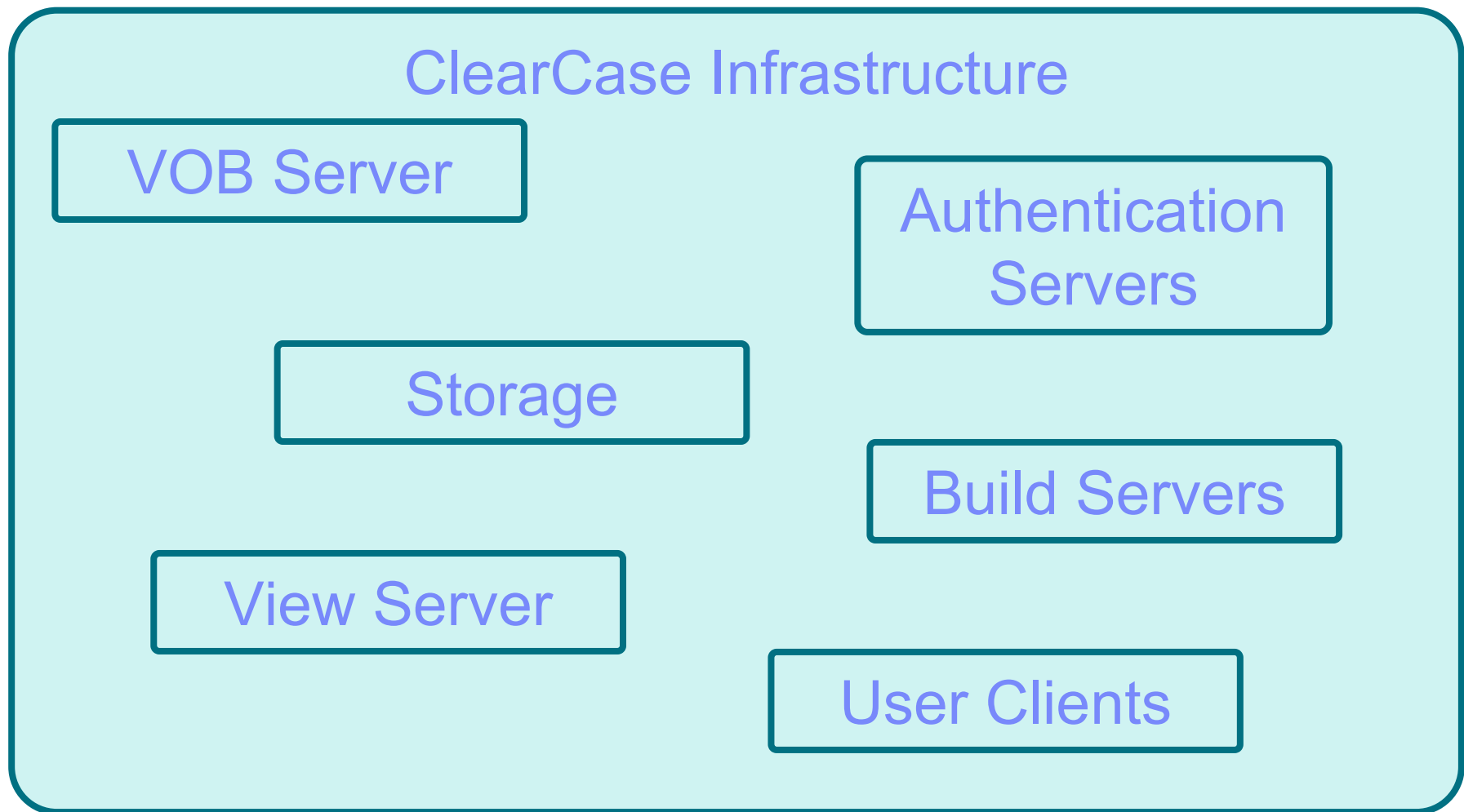
- Following the acquisition of Micromuse by IBM in February 2006 the IT and ClearCase support teams at Micromuse started the process to Migrate the development environment onto IBM's network

Acquisition Announced – Review Infrastructure

- Typical Changes that occur during an acquisition
 - Merging Data Centres
 - Large IT Infrastructure changes
 - Renaming all hosts
 - `vobserver.micromuse.com` -> `vobserver.uk.ibm.com`

- Review the ClearCase infrastructure and prepare for changes

Typical ClearCase Infrastructure



Typical ClearCase Infrastructure

- ClearCase infrastructure is extensively integrated with the IT services
- MultiSite may be used
- What range of operating systems and versions are used?

Migration Project Goals - Customer

- Move the development environment into the acquiring company with minimum impact to the development teams
- Minimal downtime for development teams
- Ability to continue to support Customers during the downtime
- Move the users to one location and the data centre to another (same country)

Additional Project Goals – ClearCase Support

- Upgrade ClearCase

- Spring Clean ClearCase Data
 - Remove Views
 - Resolve all checkouts
 - Archive VOB's

- Replace NIS as an authentication component

Identify Project Challenges

- Ensure ClearCase availability throughout the move weekend
- Global migration dealing with multiple time zones
 - Unable to migrate individual office's due to IT security policy restrictions
- Lack of experts in each location

Produce Plans

- Project Plans
- Hourly Plan
- Dry Run
- ClearCase Changes
 - Ensure all replicas are self mastering

- What tasks can be completed before the move?
 - Upgrade ClearCase VOB servers to new version 2 weeks before move
 - NIS to LDAP run in parallel

Date	Perth	UK	East Coast	West Coast	Site	Tasks
Wed 04 Apr 2007	22:00 (Wed)	15:00 (Wed)	10:00 (Wed)	07:00 (Wed)	Global	ClearCase Status / Issues / Planning Conference Call
Thu 05 Apr 2007	00:00 (Thu)	17:00 (Thu)	12:00 (Thu)	09:00 (Thu)	Global	All Dev sites to ensure all files checked in and majority of views removed
Fri 06 Apr 2007	19:00 (Fri)	12:00 (Fri)	07:00 (Fri)	04:00 (Fri)	Global	Ensure all MultiSite packets have been processed
Sat 07 Apr 2007	07:30 (Sat)	00:30 (Sat)	19:30 (Fri)	16:30 (Fri)	Lon	Full Tape Backup of ClearCase in London
Wed 11 Apr 2007	22:00 (Wed)	15:00 (Wed)	10:00 (Wed)	07:00 (Wed)	Global	ClearCase Status / Issues / Planning Conference Call
Wed 11 Apr 2007	22:00 (Wed)	15:00 (Wed)	10:00 (Wed)	07:00 (Wed)	Global	Ensure all IT have relevant admin/ root access across ALL global systems
Thu 12 Apr 2007	23:00 (Thu)	16:00 (Thu)	11:00 (Thu)	08:00 (Thu)	London	Start Shutdown of non Critical Putney dev machines
Thu 12 Apr 2007	00:00 (Fri)	17:00 (Thu)	12:00 (Thu)	09:00 (Thu)	London	Shutdown majority of Dev server room
Thu 12 Apr 2007	03:00 (Fri)	20:00 (Thu)	15:00 (Thu)	12:00 (Thu)	Par	All Perth elements checked in and the majority of views removed (only views needed for next 24 hours remain)
Thu 12 Apr 2007	03:00 (Fri)	20:00 (Thu)	15:00 (Thu)	12:00 (Thu)	Low	All Lowell elements checked in and the majority of views removed (only views needed for next 24 hours remain)
Thu 12 Apr 2007	03:00 (Fri)	20:00 (Thu)	15:00 (Thu)	12:00 (Thu)	Nyc	All Wall St elements checked in and the majority of views removed (only views needed for next 24 hours remain)
Thu 12 Apr 2007	03:00 (Fri)	20:00 (Thu)	15:00 (Thu)	12:00 (Thu)	Smo	All El Segundo elements checked in and the majority of views removed (only views needed for next 24 hours remain)
Thu 12 Apr 2007	06:00 (Fri)	23:00 (Thu)	18:00 (Thu)	15:00 (Thu)	Global	MultiSite is Switched Off
Thu 12 Apr 2007	06:00 (Fri)	23:00 (Thu)	18:00 (Thu)	15:00 (Thu)	Lon	Shutdown ClearCase Servers in London - to run the backups pre Move
Thu 12 Apr 2007	06:00 (Fri)	23:00 (Thu)	18:00 (Thu)	15:00 (Thu)	Lon	Crit Sit Process Moves to non Standard Process
Thu 12 Apr 2007	06:30 (Fri)	23:30 (Thu)	18:30 (Thu)	15:30 (Thu)	Lon	Start Backups to Tape
Fri 13 Apr 2007	12:00 (Fri)	05:00 (Fri)	00:00 (Fri)	21:00 (Thu)	Lon	Shutdown London Domain Controllers
Fri 13 Apr 2007	14:30 (Fri)	07:30 (Fri)	02:30 (Fri)	23:30 (Thu)	Lon	Backups to Tape - Complete
Fri 13 Apr 2007	16:00 (Fri)	09:00 (Fri)	04:00 (Fri)	01:00 (Fri)	Lon	Lony leaves Putney
Fri 13 Apr 2007	17:00 (Fri)	10:00 (Fri)	05:00 (Fri)	02:00 (Fri)	Per	Perth Servers Shutdown
Fri 13 Apr 2007	18:30 (Fri)	11:30 (Fri)	06:30 (Fri)	03:30 (Fri)	Lon	Lony arrives Hursley
Fri 13 Apr 2007	21:00 (Fri)	14:00 (Fri)	09:00 (Fri)	06:00 (Fri)	Hur	Domain Controller re-configured in Hursley
Fri 13 Apr 2007	00:00 (Sat)	17:00 (Fri)	12:00 (Fri)	09:00 (Fri)	Low	Lowell Barriers Shutdown
Fri 13 Apr 2007	00:00 (Sat)	17:00 (Fri)	12:00 (Fri)	09:00 (Fri)	Lon	ClearCase confirmed as working in Hursley
Fri 13 Apr 2007	01:00 (Sat)	18:00 (Fri)	13:00 (Fri)	10:00 (Fri)	Lon	London Barriers Powered up
Fri 13 Apr 2007	01:00 (Sat)	18:00 (Fri)	13:00 (Fri)	10:00 (Fri)	Global	Conference Call to confirm London is available to support Crit Sit 1s
Fri 13 Apr 2007	02:00 (Sat)	19:00 (Fri)	14:00 (Fri)	11:00 (Fri)	Smo	El Segundo Servers Shutdown Starting 2 hours before - all local site managed
Fri 13 Apr 2007	06:00 (Sat)	22:00 (Fri)	17:00 (Fri)	14:00 (Fri)	Nyc	New York Servers Shutdown - Only if London Servers are backup after move
Sat 14 Apr 2007	15:00 (Sat)	08:00 (Sat)	03:00 (Sat)	00:00 (Sat)	Hur	Testing of Remote Access solution
Sat 14 Apr 2007	22:00 (Sat)	15:00 (Sat)	10:00 (Sat)	07:00 (Sat)	Per	Perth Servers Powered up
Sat 14 Apr 2007	22:00 (Sat)	15:00 (Sat)	10:00 (Sat)	07:00 (Sat)	Global	ClearCase Status / Issues / Planning Conference Call
Sat 14 Apr 2007	22:00 (Sat)	15:00 (Sat)	10:00 (Sat)	07:00 (Sat)	Hur	Developers from ncp and nco re-start product nightly builds
Sun 15 Apr 2007	10:00 (Sun)	03:00 (Sun)	22:00 (Sat)	19:00 (Sat)	Low	Lowell Barriers Powered up
Sun 15 Apr 2007	10:00 (Sun)	03:00 (Sun)	22:00 (Sat)	19:00 (Sat)	Nyc	New York Servers Powered up
Sun 15 Apr 2007	13:00 (Sun)	06:00 (Sun)	01:00 (Sun)	22:00 (Sat)	Smo	El Segundo Servers Powered up
Sun 15 Apr 2007	15:00 (Sun)	08:00 (Sun)	03:00 (Sun)	00:00 (Sun)	Global	Validate ClearCase is working on all sites - create cadmin_maintenance / cadmin_snap views
Sun 15 Apr 2007	17:00 (Sun)	10:00 (Sun)	05:00 (Sun)	02:00 (Sun)	Global	Restart MultiSite
Sun 15 Apr 2007	17:00 (Sun)	10:00 (Sun)	05:00 (Sun)	02:00 (Sun)	Global	Crit Sit Process Moves to non Normal Process
Sun 15 Apr 2007	17:00 (Sun)	10:00 (Sun)	05:00 (Sun)	02:00 (Sun)	Global	Developers to test new infrastructure
Sun 15 Apr 2007	22:00 (Sun)	15:00 (Sun)	10:00 (Sun)	07:00 (Sun)	Global	ClearCase Status / Issues / Planning Conference Call

Dry Run

- A replica of the environment enables testing of the plans to be conducted
- Assisted in identifying issues with the procedures and helped streamline the process

Shutting down ClearCase service

- Ensure all views removed
 - TIP: allow time to remove views, especially of using clearmake extensively
- Ensure all elements are checked in
- Ensure all MultiSite replicas are in sync
- Perform last backup at old location
 - Don't ship back up tapes in the same vehicle as the servers
- Remove ClearCase from all clients
 - Re-install will pick up new version and updated settings
 - Prevents ClearCase failing to start if power up order is wrong

Shutting down ClearCase service

- Shut Down servers
 - Leave 1 site up with access to all code



Power up Servers



- Update ClearCase release area with new Registry / Licence server details
- Re-register and re-tag all VOB's with new hostname
- Create new ClearCase View
- Update hostname in Replica
- Run confidence tests on new site
 - TIP: Can you build your products on the new site?
- Once service is available in new location other sites can then be shutdown

Restore MultiSite

- Once all sites are moved onto the new network / data centre moves complete service can be fully restored
 - Restart MultiSite replication using new hosts
 - TIP: If necessary edit /etc/hosts on VOB server and put the old hostname with the new IP address of old VOB servers.

- Ensure all VOB's replicate correctly
 - TIP: do an unreserved checkout in the root of all VOB's and check that it can be seen on all sites

Update ClearCase clients

- Install ClearCase on all clients
 - TIP: Have the output of cleartool lsclient <registry server> available as a check list
 - TIP: Have a release area of the previous version available. The ClearCase support team were surprised at the versions of operating system on a number of users machines, and lack of disk space on some clients.

First Week after the move

- Consider a War Room
 - Users will have a number of questions:
 - “ClearCase does not work” or actually they are not on the network properly
 - “I can’t find my computer” - Was the crate correctly labelled?
- By the end of the first week the aim is to have all users working as efficiently as before the move

Integrating A Global ClearCase Infrastructure



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IBM buys Vallent

- Following the acquisition of Vallent by IBM in February 2006 the IT and ClearCase support teams at Vallent started the process to migrate the development environment onto IBM's network
- The ClearCase environment was to be integrated into the Tivoli Network Management business unit.

Produce plans

- Project Plans
- Hourly Plan
- ClearCase Changes
 - Changes to the replication model
- Tasks to be completed prior to the move
 - Replicate VOB's to existing hub within IBM
 - User ID integration

ClearCase Replication

- Due to IT security policy restrictions between the 2 companies in the early days of the acquisition it was not possible to have ClearCase replication working out of the box
- Scripts were developed that allowed replication to be controlled from one site but offered 2 way replication
- This ensured that once the Vallent network was shutdown source code was available to support IBM customers

Shutting down ClearCase service

- Ensure all views removed
- Ensure all elements are checked in
- Ensure all MultiSite replicas are in sync
 - TIP: Ensure all sites can see all replicas
- Remove ClearCase from all clients
 - Re-install will pick up new version and updated settings
 - Prevents ClearCase failing to start if power up order is wrong
- Manage users
 - During move (Saturday) user asked if they could start developing, surprised they could not connect to server

Summary



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Summary

- There will be down time for projects of this size
- Have detailed plans, consider time zones
 - Global conference calls over the move weekend are very useful
- Manage user and user managers expectations
 - Ensure senior managers from the acquired company understand the impact to their business



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