



Release Integration

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Development Model

- Release procedure creates *Reference* Federation
 - Schema only - no data
- Developers import their *Test* Federations from Reference
- Import performs minimal configuration of database
 - Default authorizations setup
 - Default conditions DB information setup
- Each developer allocated 5 federated database Ids
 - GetFDID command
- Site-specific default database locations setup
 - Most, but not all, sites

Development Model (2)

- .bbobj configuration file specifies federation configuration
 - Based upon site-specific defaults
 - Contents override defaults
 - The federated database ID (FD_NUMBER) *must* be specified
 - ◆ All that's needed unless no site-specific defaults setup
- Database-related actions performed by *database* pseudo-package
 - *gmake* does automatic import to test federation if required
 - *gmake database.<target>* does more complex actions

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Database Pseudo-Package

- Targets

<ul style="list-style-type: none"> ◆ backup/restore ◆ cleanup ◆ config ◆ deleteboot/makeboot ◆ exists ◆ help ◆ import/export ◆ load ◆ reset ◆ status 	<ul style="list-style-type: none"> Backup/restore federation Cleans up after error Displays current configuration Delete/make a federation (protected) Test whether a federation exists Displays help information Import/export current federation Load initial configuration into federation Reset federation to state after import Shows transaction status
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Release Builds

- Initially database builds alongside non-database builds
 - Release 4.3.5 (12 Aug 1997)
- Now database only builds
 - Release 6.0.0 (16 Feb 1998)
 - Not HP-UX because of compiler/Objectivity mismatch (aCC)
- Database access necessary even if events from .xdr file
 - Conditions database

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Release Build Procedure

- Cascaded
 - SunOS5 creates Reference federation & builds schema
 - Exports federation
 - Triggers AIX4 & OSF1V4 to import federation & build schema
 - Remainder of build proceeds independently
- Ensures that schema ids are compatible across platforms
 - Mismatch is fatal
- Operational decision to abort builds with catastrophic schema errors
 - Not yet fully automated

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Release Build Feedback

- Painful learning process
 - Bitter experience triggered decision to give up when catastrophic errors occur
 - ◆ Went through several release builds where one or more platforms had at least one catastrophic error due to an Objectivity DDL compiler bug
 - Finally bypassed by code simplification
- Complex matrix of success/failures
 - Three platforms
 - ◆ SunOS5, AIX4, OSF1V4
 - Several database-dependent executables
 - ◆ BdbAuthCmd, BdbCondLoad, BdbEvsTest, bdbLoader, SimApp, Beta
 - Rare to get >50% success rate

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Release Build Problems

- Not single source
 - Database group bugs
 - Reconstruction group bugs
 - ◆ Both database-related and non database-related
 - Platform-specific problems
 - Not all executables functional without specific package tags
 - Backup “simple” clustering solution had a bug
 - Complicated procedures
 - Finger problems
 - Inadequate documentation
 - Documentation not read anyway

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Release Build Problems (2)

- Burden on development team
 - Large user community (>150)
 - Multiple sites wishing to install Objectivity
 - Small developer community (~4-5)
- Conflicting priorities
 - Treating MDC-2 as highest priority
 - The only possible stable state at the moment is a non-functional one
- A few people generate an immense amount of noise
 - Vast majority are coping with an unstable situation

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Response to Problems?

- Update documentation
- Create Web page giving summary of status for each release
 - Simon Patton & David Quarrie
- Internal reassignment of release build monitoring
 - Simon Patton taking over from David Quarrie
- Simplify production build procedure
 - Cascaded builds inherently complex
 - ◆ Simple recipe for Doug Johnson to follow
 - Error recovery is still complicated
- Raise priority of hand-holding relative to development?
 - The only thing that can give is MDC-2

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Future Release Build Issues

- Short Term
 - Objectivity V5 support underway
 - ◆ Postprocessing added to remove incorrectly generated code
 - ◆ Dependencies correctly handled (being tested)
- Medium Term
 - Add support for production federation
 - ◆ Protect production federation against accidental deletion etc.
- Long Term
 - Eliminate the need to NFS-export catalog file system to makefiles
 - ◆ Use PUD daemon for directory creation & management