

Mastering the Art of Version Control & Migration Management with Stat

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Introduction

Modern corporate IT infrastructures are constantly changing. Maintenance, such as user provisioning and regular updates to operating systems, server software and applications, is just a small part of the picture. IT departments must also frequently change configurations and code to comply with ever-changing internal and external regulations. For example, a new security policy can mean creating new security groups. In addition, development, test, user acceptance testing, and training environments need to be routinely refreshed by cloning a complete copy of another environment (usually production), and any code or configuration modifications being developed or tested need to be re-introduced after the refresh occurs.

Effective change management is required to make these processes efficient, consistent and repeatable. For example, organizations should ensure that changes are approved and implemented by authorized personnel. Moreover, regulations such as Sarbanes Oxley require organizations to demonstrate

control over and visibility into the change process, including an auditing mechanism that tracks all changes to computer systems, such as who requested each change, the purpose of the request, who authorized the change, and what changes were made.

Stat™ from Dell is an advanced change management solution that solves these challenges. Stat's built-in version control and migration functionality enables you to safely and consistently introduce changes and to easily roll back mistakes by recovering items to their previous states. Stat's issue tracking and workflow capabilities ensure an audit trail while enforcing rules and policies: changes can be performed only by authorized personnel and only after the requisite tasks and approvals are completed. All user and change activity is captured in a central repository and is available in reports that can be delivered electronically.

This document explains the key features that any quality change management solution must provide, and shows how Stat delivers those features.

Issue tracking & automated workflows

The foundation of any good change process is issue tracking: tracking all changes and user activity. You need to be able to show who requested a change, the purpose of the change, who authorized the change, what was changed, and when the change was made.

Automated workflows facilitate movement of a change request from one stage to the next, ensuring that the correct people approve and otherwise act on the request at the proper time, and prevent changes from prematurely being introduced into your environment.

Issue tracking with Stat's Change/Service Request (CSR)

Stat tracks each change to your environment in a Change/Service Request (CSR). The CSR captures who did what, what was changed and when it was done, ensuring a complete and accurate trail of every change.

A CSR must be created in order to initiate and progress any change using Stat. A CSR can be created by any of three methods: within the tool manually, auto-generated from an email or auto-generated from an existing helpdesk tool. Every CSR tracks critical information such as who created the request, due dates and last modified dates. You can also use templates to incorporate additional information, customizing the CSR for different applications and types of changes.

Stat's automated workflow

An automated workflow can help you comply with external regulations and internal auditing requirements by helping you manage the change process, including ensuring that approvals and other activities are completed at the proper times.

Stat's flexible workflow can be used to define and enforce the lifecycle of all types of changes. Workflows can be created for each type of change, and each change type can have multiple workflows (for example, based on the urgency of the change request). Consider a migration project: when you have objects ready for migration, the workflow will ensure that they will not be migrated until the approvals, tasks and activities you defined have been

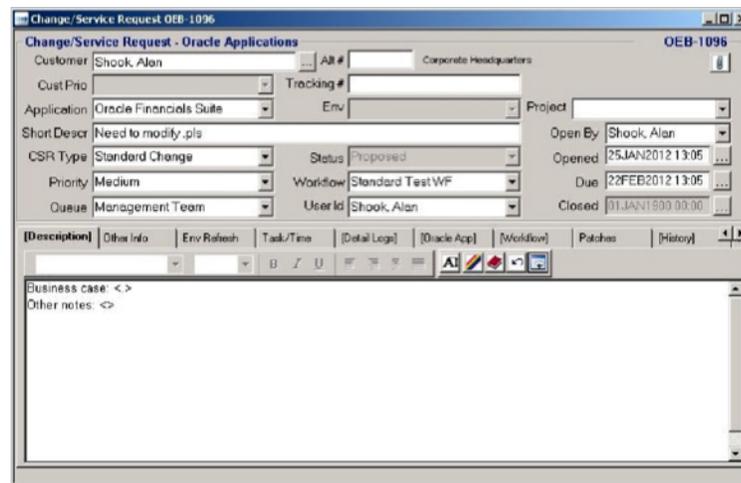


Figure 1. A Change/Service Request (CSR) in Stat



completed. For instance, you can require the developer to create a detailed log of what was changed and get approval from an IT supervisor before objects are promoted to production. You simply define these requirements as steps in the workflow, and Stat enforces them automatically. You can also give some users override privileges to enable them to make emergency fixes; Stat will track such changes like any other activity and generate an auditable event so that the user can document the justification for using the override authority.

The approval requests you require are sent electronically to the people you specify: a specific user, members of a class (such as managers), or a combination of the two. The recipients can approve or reject the change request via email or by logging in to either a Web or a Windows interface (shown below).

To ensure that the issue progresses in a timely fashion, you can create business rules to notify the team via email when an issue enters a new stage, when a migration has occurred or if an issue or approval request becomes past due.

Enforcing security around the change processes

A quality change management solution ensures that only authorized personnel can access and approve changes to your Oracle applications and to the change management tool itself. Different users will require different privileges and roles in the change process: some need privileged passwords while others need to make their requests through authorized personnel.

Stat's class-based security rights system

To enforce security, Stat uses a class-based security rights system very similar to Oracle responsibilities. Users are assigned to the appropriate queues, which enables them to perform the tasks needed for their role. Stat also provides a more granular level of control so you can specify which applications, objects and environments each user has access to. For example, you can grant a user access to your development and test environments while prohibiting the user from performing activities in production, as shown below:

```
-----
CSR NBR:      OEB-1096
-----
BRIEF DESCRIPTION:  Need to modify .pls|
-----
STATUS APPROVER:    ASHOOK
-----
DATE APPROVAL ASSIGNED:    25-Jan-2012 13:06:59
-----
SOURCE STATUS: Change Request Creation
-----
TARGET STATUS: User Acceptance Testing
-----
Do not Reply to this message to send your approval or rejection.
Please click on one of the choices below to automatically generate an approval or rejection
and send it to Stat via email.

Approve Reject

Created by Stat Application Change Management
<<Stat|OEB|1096|SYSTEM>>
```

Figure 2. An approval request in Stat

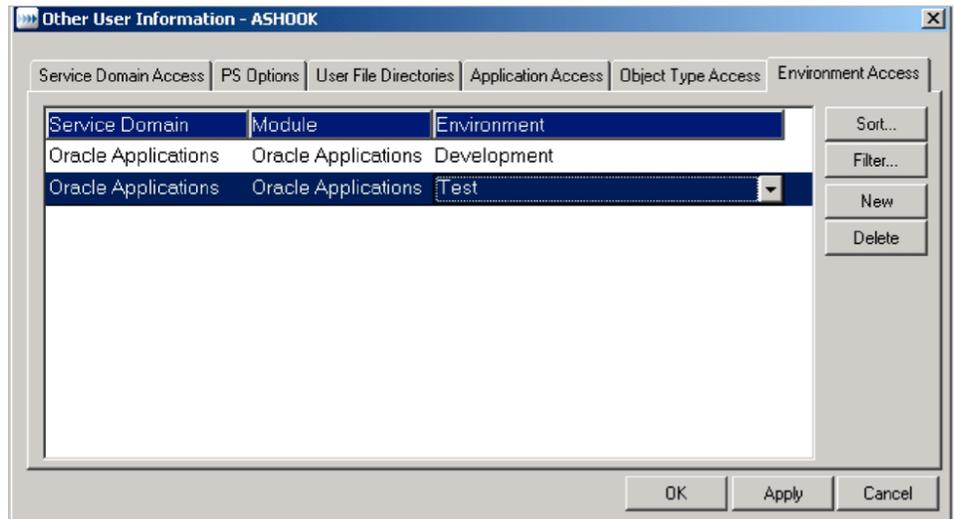


Figure 3. Granting a user access to the development and test environments

Limiting access to privileged passwords

In order to work within Oracle E-Business Suite, you need to enter the apps and system passwords in an encrypted field. This enables Stat to execute migrations and gain access to conduct its activities. By securing the password within Stat, you enable your users to perform their activities without giving them access to privileged passwords, thereby adding another layer of protection to your application environments.

Segregation of duties

Stat enforces other process and compliance concerns, such as separation or segregation of duties, by transferring ownership of the issue to the team or queue you define for each stage as the change progresses through its lifecycle. For example, a change might progress from development to test to production, as illustrated below:

The status and transfer rules you specify determine who controls the issue at any given stage, as well as the required approvals, tasks and activities.

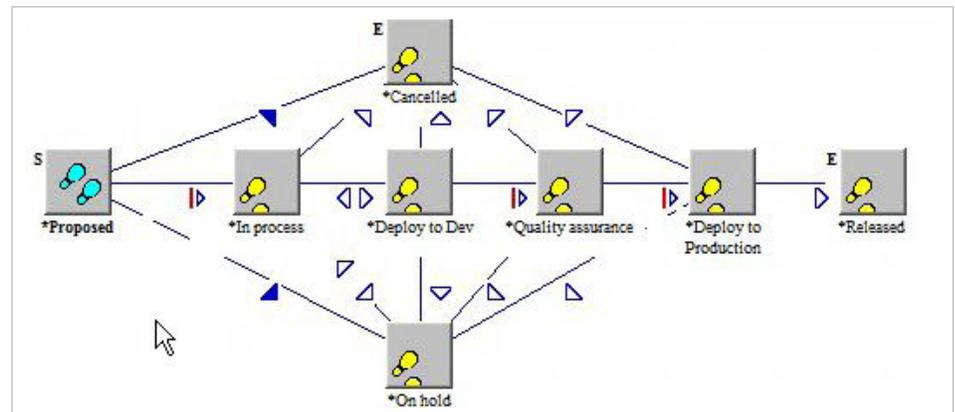


Figure 4. The planned progression of a change request

Version control & object management

Maintaining and supporting Oracle E-Business Suite can be very complex. Extensions or customizations may be required to meet user requirements. Changing seeded objects can be challenging because of interdependencies on other objects. And changes to application setups and AOL objects are common and are outside the scope of most version control tools. Therefore, being able to version both file-based and configurations objects is critical.

Objects supported by Stat

Stat provides out-of-the-box support for a wide variety of objects, including Oracle flat-file, Developer and AOL objects, as well as many Application setups. By leveraging the Oracle E-Business Suite domain knowledge embedded within Stat, Stat can call the appropriate technology and ensure that the objects are moved in a manner supported by Oracle.

For example, when migrating a .sql script, Stat knows to execute against the database, an OAF XML file using the XMLImporter, and an AOL or Application setup to leverage FNDLOAD. With objects using FNDLOAD, the version of the LCT file in the target environment is validated against the version of the LCT file used in the archived object. When the versions are identical, Stat will invoke FNDLOAD using the LDT file from the Stat repository to load the object.

Stat provides out-of-the-box support for the following objects:

File objects

- DRV File
- EXE File
- FMX File
- Form File
- Form Library File
- LCT File
- MMX File
- Menu File
- ODF File
- Object/Library File

- Oracle Workflow File
- OAF: OA Component XML files
- OAF: OA Component Class files
- OAF: BC4J Component XML files
- OAF: BC4J Component Class files
- PL/SQL File
- PLX File
- Report File
- SQL File
- XDO XML Publisher Data Source Defs
- XDO XML Publisher Template files
- XDO XML Publisher Translations

OA customization framework setups

- Forms Custom Rules
- Forms Custom Property List
- Forms Custom Property

Special setups

- AK Regions
- Workflow Item Type

Alerts (ALR)

- ALR Alert Profile Options
- ALR Mail Accounts
- ALR Alerts
- ALR Message Systems
- ALR Lookups
- ALR Periodic Sets

Application object library (AOL)

- Application
- Concurrent Manager Queues
- Concurrent Processing Work Shifts
- Concurrent Program Libraries
- Concurrent Programs
- Descriptive Flexfields
- Executables
- Form
- Function
- Help
- Key Flexfields
- Lookup Types
- Menu
- Messages
- Printer Drivers
- Printer Information
- Printer Styles
- Printer Types
- Profile Option
- Registered Sequences
- Registered Tables
- Registered Views
- Report Request Groups

- Report Request Sets
- Responsibility
- Security Group
- Services
- User
- Value Sets

Accounts payable (AP)

- AP Hold and Release Codes
- AP Income Tax Types

Bill of material (BOM)

- BOM Accounting Library Packages
- BOM Delete Constraints
- BOM Alternate Designators
- BOM Exception Sets
- BOM Component Columns
- BOM Structure Types

Fixed assets (FA)

- FA Asset Categories
- FA Depreciation Methods
- FA Assets
- FA ITC Rates
- FA Ceilings
- FA ITC Recapture Rates
- FA Depreciation Basis Rule Details
- FA Lookups
- FA Depreciation Basis Rules
- FA RX Report LOVs
- FA Depreciation Bonus Rates
- FA RX Reports

Human resources (Fast Formula)

- FF Formula Definitions
- FF Formula Routes

Accounts receivable (AR)

- AR Actions for Confirm. Msg
- AR Aging Buckets
- AR Application Rule Sets
- AR AutoInv GroupBy Cols
- AR AutoInv GroupBy Rules
- AR AutoInv OrderBy Cols
- AR AutoInv OrderBy Rules
- AR BPA Area Items
- AR BPA Content Items
- AR BPA Data Source Applications
- AR BPA Data Sources
- AR BPA Page Setups
- AR BPA Template Assignment Rules
- AR BPA URLs
- AR Collectors
- AR Customer Statement Cycles

- AR Customer Statement Messages
- AR Dunning Letter Sets
- AR Dunning Letters
- AR HZ CC Phone Prefixes
- AR HZ Class Categories
- AR HZ Class Relationships
- AR HZ Code Assignments
- AR HZ Match Rules
- AR HZ Relationship Types
- AR HZ Search Word Replacements
- AR HZ Source System Mapping
- AR HZ Transformation Attrs
- AR HZ Word Replacement List
- AR Invoice/Accounting Rules
- AR Lockbox Transmit Formats
- AR Memo Lines
- AR Receipt Batch Sources
- AR Tax Codes
- AR Timezone Address Mapping
- AR Transaction Batch Sources
- AR Transaction Matching Rules
- AR Transaction Types

Inventory (INV)

- INV Background Process Config
- INV Category Sets
- INV Economic Zones
- INV Functional Area Default Cat Set
- INV Inventory Status Codes
- INV Item Attributes
- INV Item Category Set Assignments
- INV Item Status Codes
- INV Item Templates
- INV Items Assigned to Category Set
- INV Movement Statistics Rule Sets
- INV Pick Release Grouping Rules
- INV Transaction Source Types
- INV Transaction Types
- INV Unit of Measure Classes
- INV Unit of Measures
- INV Valid Categories for Cat Set

General ledger (GL)

- GL Accounting Calendar
- GL Journal Categories
- GL Budgetary Control Options
- GL Journal Sources
- GL Daily Conversion Types
- GL Period Types
- GL Encumbrance Types
- GL Storage Parameters
- GL Financial Data Items



Order Management (ONT)

- ONT AK Object Attribute Extensions
- ONT AK Object Extensions
- ONT All OM System Parameters
- ONT All Payment Types
- ONT Attribute Defaulting Condition
- ONT Attribute Defaulting Rules
- ONT Defaulting Conditions
- ONT Defaulting Conditions Elements
- ONT PC Assignments
- ONT PC Conditions
- ONT PC Record Set Columns
- ONT PC Record Sets
- ONT PC Validation Template Columns
- ONT PC Validation Templates
- ONT Process Constraints (PC)

Defining additional setup types

Stat can be extended to support other unique setup object types to version and migrate, if the following conditions are met:

- Oracle provides a .lct file for that object type.
- The .lct file is defined in a way that allows for download and upload of a unique record for that object type.

With this functionality, Stat offers one of the most complete sets of Oracle flat-file, Developer, AOL and application setups in the market today.

With Extended Object Support, Stat for Oracle E-Business Suite allows you to automate the versioning and migration processes for setup objects across all your environments, including financials, HR, supply and supply chain. Additionally, libraries of the most commonly used and customized setup objects have been added to further simplify these processes.

Defining additional objects

You can define additional flat-file objects to version and migrate. You need to specify the file location; object file type; extension name; file format; whether it affects the Web, forms, database or concurrent manager server; and whether it needs to be executed as a script against the database. Any custom

objects you create appear in Stat's list of available objects to version and migrate. In addition, you can define manual steps or call automatic post-migration scripts to complete activities that are required for your objects. You can dynamically pass parameters such as user names, passwords and target databases to help facilitate the process.

Data in E-Business Suite tables & views

Stat's ability to also version setup object types allow for archiving and migration of data stored in Oracle E-Business Suite tables and views. Stat utilizes the FNDLOAD utility provided by Oracle to download or upload rows of data from one Oracle instance to another. FNDLOAD in turn uses a set of instructions available in a .lct file, which is also provided by Oracle for many setups. The .lct file defines the fields that are extracted, as well as the actual sql statement for downloading and uploading the data item.

Preventing overwrites

Sometimes developers need to work on the same object concurrently, so a quality change management solution needs to be able to keep them from overwriting each other's code. Stat uses object locking and reservations to track who is working on a particular object and ensure that only one person can deploy that object at a given time.

Stat's object locking & reservations

An object lock for an environment is required before an object can be migrated to that environment. An object can be locked in each environment in its migration path or for one particular environment when it is assigned to a CSR. If a requested object is locked in another CSR, the object is assigned a reservation. The screen below shows both locked objects (indicated by a lock symbol) and objects assigned reservations (indicated by a clock symbol):

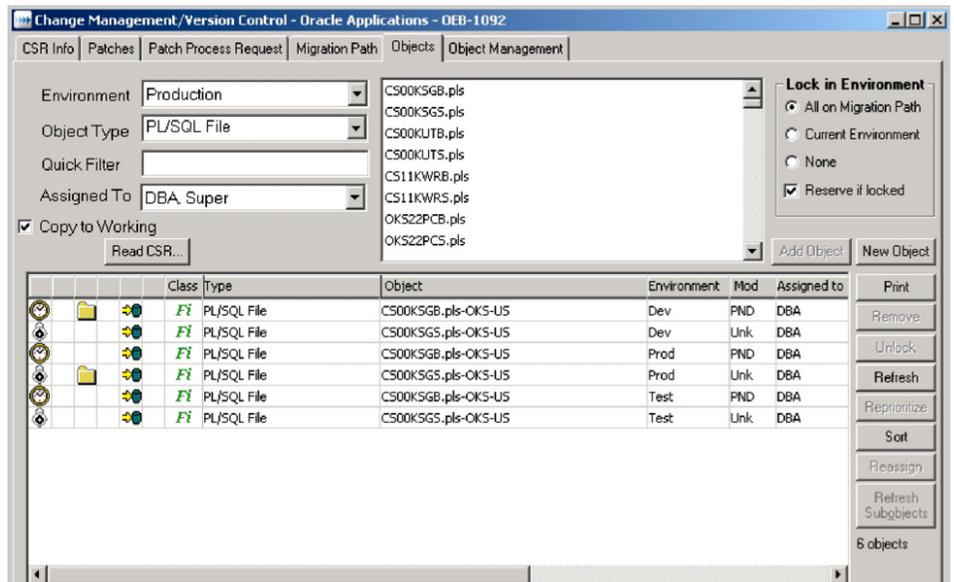


Figure 5. Locked objects have a lock symbol and objects with reservations have a clock symbol

Administrators have the right to release locks in another user's CSR. You can also give users the privilege to re-prioritize the order of reservations.

Managing versions in working directories

When checking out flat-file and developer objects, you can choose to work outside of the Oracle E-Business Suite by sending a copy of the objects to your working directory. A working directory is an area on the server where a developer can work on and save customized or extended objects; Stat can pull those objects back in to be versioned and migrated. A working directory can be used by an individual or shared by multiple developers.

Since Stat has its own version control system, it provides the unique ability to version your objects and create backups of them in case there is a need to recover a previous state. When you check out an object, a baseline copy is immediately taken from the environment you have identified as your baseline (usually production).

Archive sets

When you are ready to version your objects, you do so through an archive set. An archive set is comprised of one or many objects; you create a new archive set for each iteration of change. Regularly storing objects in archive sets creates a running history that shows each version of change in the lifecycle of those objects. The object history can transcend multiple CSRs and provides a picture of how the object evolved over time.

An archive set can be either an interim or a final version. An interim version might include only a few objects from the CSR; a final version includes all objects from the CSR in a state ready for migration to other environments.

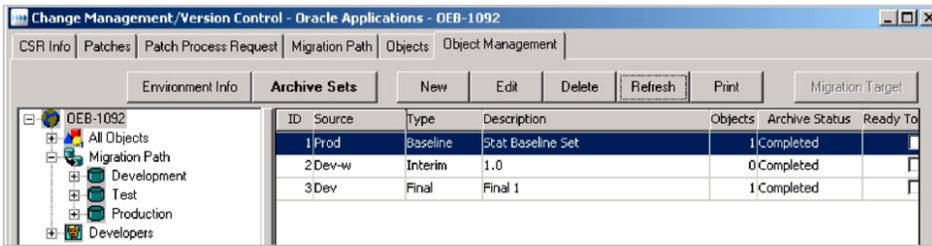


Figure 6. Baseline, interim and final archive sets, and the available environments for migration

Flat-file and developer objects in an archive set can be pulled from either an application environment (such as development) or a working directory. AOL objects and Application setups have to be pulled from an application environment since these objects are not altered outside of an application environment.

For More Information

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