Tech Notes

Selecting the Right Change Management Solution

Key Factors to Consider When Evaluating Change Management Tools for Your Databases and Teams

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Frequent application updates, data migrations, service level requirements and new compliance mandates – these are just a few of the reasons why your company needs a solid, reliable database change management strategy, and the right database management tool to support that strategy.

Choosing the right tool for your environment will reduce training and software costs, increase productivity, and ensure database availability, security and performance. When evaluating change management products, you should consider several important factors relating to your specific needs. The following paper outlines the main points to take into account when searching for the right change management solution.

THE DATABASE ENVIRONMENT

MANAGING CROSS-PLATFORM ENVIRONMENTS

The first point you must consider when selecting a change management tool is the number of database platforms in your data center. Are you running Oracle®, IBM® DB2®, Microsoft® SQL Server™, or even Sybase®? One of the most problematic disconnects with change management tools is the fact that they usually only handle one database platform. If you have more than one platform, you could end up with multiple change management tools – one for each platform.

The traditional method of database management is based on the platform. DBAs must be trained to manage a specific platform, and are chosen based on their skillset in relation to that platform. Unfortunately, this platform-centric view impedes cross-platform database management, and limits DBA resources. If a shop has two platforms, and one DBA trained on each of the platforms, it is unlikely that those DBAs will be able to step in for each other when needed, because they will be unfamiliar with the environment, and the change management tool.

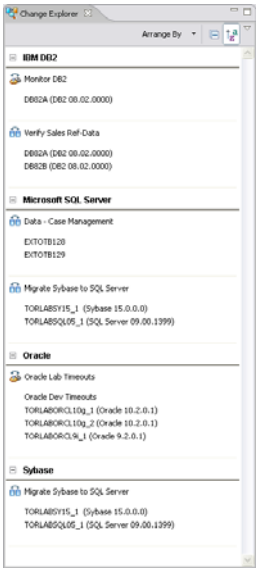
If you select a change management solution that supports multiple platforms, however, you will have a common interface, enabling any DBA to understand basic change management across platforms. A change management solution designed to handle multiple platforms is also very useful when executing a cross-platform data compare.

THE CHANGE MANAGER ADVANTAGE

Embarcadero® Change Manager™ provides one change management interface across multiple platforms. Supported platforms include IBM DB2 for LUW, Microsoft SQL Server, Oracle, and Sybase, enabling DBAs to manage all changes to all databases with one user interface. No other change management tool available supports all four of the major database platforms.

Change Manager's cross-platform capability enables you to:

- Minimize the training needed to manage databases
- Increase data center productivity
- Reduce the expense of change management software
- Generate consistent reports and alerts



Change Manager supports DB2 for LUW, Oracle, Sybase, and SQL Server from one easy to use interface. Shown here, the Change Explorer allows you to group jobs by platform in addition to datasource, type, dates run, etc.

COMPARING AND SYNCHRONIZING

Change management involves managing data, schema and configuration. A primary responsibility of the DBA is to manage database schema changes. In addition, someone has to manage configuration changes as well as the managing the data in the databases. Traditionally, all of these change management tasks are handled by separate stand-alone data, schema, and configuration compare and synch tools. When selecting the right change management solution, however, it is advisable to deploy a solution that offers tools to cover all three tasks within one user interface.

THE CHANGE MANAGER ADVANTAGE

Change Manager, an innovative solution built from the ground up specifically for change management, delivers data, schema and configuration management – the complete change life-cycle – all within one feature-rich solution.

CM/Schema™ helps you automate, manage, and track complex database schema changes to minimize the risks associated with change, ensure application availability across database platforms, and facilitate regulatory compliance. With CM/Schema, DBAs can automatically capture database schema "snapshots" and generate compare reports to identify changes and correct unanticipated problems in significantly less time.

CM/Data™ is a high-speed data compare and synchronization tool that enables you to compare, validate and synchronize data within one database platform or across heterogeneous RDBMS environments. CM/Data helps developers and DBAs create and validate test results, verify replication, ensure reference data is accurate, and streamline the migration of data from test to development to QA to production environments.

CM/Config™ allows comparisons between configuration standards, configuration archives, and live datasource configuration settings, enabling DBAs to fine tune database performance, maintain database availability, quickly diagnose problems, and ensure configuration settings meet the specified requirements. CM/Config saves you hours of time troubleshooting and comparing options by quickly discovering what settings have changed and what settings are not in compliance with regulations and company policies.

Change Manager's multiple compare and synch tools enable you to:

- Minimize the training needed to use compare and synch tools
- Increase productivity and save valuable time
- Reduce the expense of change management software

TECHNICAL IMPLEMENTATION

IMPLEMENTING CHANGE MANAGEMENT

Change management tools differ greatly in terms of how they are implemented, and this should be a major concern during the selection process. The simplest technique is to connect the application to the database from your workstation, where you will perform all comparison and reporting tasks.

A more complicated approach involves installing the programs on the server where the database resides. Managing databases on different servers requires communicating between each of the servers, adding multiple potential points of failure. Implementation is highly complex, and keeping the entire system up and running is a significant time-consuming and stress-inducing challenge.

Another complex method is the installation of an agent, repository, or set of tables or procedures in the database, to enable the change management tool to operate. This also produces greater levels of complexity and more potential points of failure. In addition, this method poses a security risk by opening up a path for unauthorized individuals to gain access to sensitive data by connecting to the database outside the change management application. Further difficulties can arise if the change management tool requires a certain protocol be installed. If this is not a shop standard protocol, you will be unable to install the product.

Certain change management tools require dedicated resources, opening up additional risk for failure. If the only way to connect to multiple databases is via a single server, and that server goes down, all database management activities will be interrupted. In addition, installations, upgrades and dedicated resources all increase the total cost of ownership of the change management tool.

Although several database management tools on the market today attempt server-based change management, no change management vendor has mastered this challenging task to date without alleviating the challenges described above. For this reason, it is currently advisable to choose a solution that does not add agents, software or objects to your database or run applications directly on your database servers.

THE CHANGE MANAGER ADVANTAGE

If you do not want software installed on your servers or objects installed in your database, Change Manager from Embarcadero is the ideal solution, offering a non-intrusive agentless implementation that runs directly from the workstation.

Change Manager's workstation-based implementation enables you to:

- Minimize points of failure
- Ensure availability of database management applications
- Reduce total cost of ownership
- Eliminate the additional overhead and maintenance associated with server-based change management
- Tighten database security

MAINTAINING REFERENTIAL INTEGRITY

One important characteristic of a change management solution is intelligence. Before you purchase a change management system, you need to know how well the product understands the physical and logical structure in your database. When you are adding or changing a table, for example, the tool must maintain referential integrity. Certain change management tools will automatically make changes to the detail record, however, and inadvertently lose the relationship to the header record, because the system is only focused on the detail, and does not consider the referential integrity in relation to the header. Without logical data integrity, you simply cannot access the data.

Consequently, when selecting the right change management solution, you should look for an intelligent product that is aware of the relationships in your database, and maintains the physical integrity of the tables coupled with the logical integrity of the data. Many change management tools do not offer this critical capability.

THE CHANGE MANAGER ADVANTAGE

Change Manager was designed from the start to understand and preserve all relationships between physical and logical integrity within your system. The system provides you with great flexibility to make changes while still maintaining referential integrity.

Adherence to referential integrity in Change Manager enables you to:

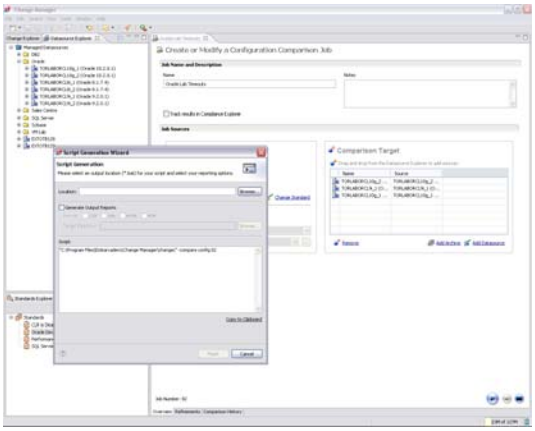
- Make changes or reload data without losing data relationships
- Ensure continuous access and availability of data

THE USER EXPERIENCE

AUTOMATING TASKS

When selecting the right change management solution, automation is an important factor. For example, how do you want to schedule tasks? On a regular basis, you need to take a snapshot of the tables and indexes owned by specific users. You can write yourself a post-it note or schedule via Microsoft® Outlook® for every Friday to remind yourself to manually interact with the tool to accomplish the archiving tasks. Many shops prefer a job scheduler, however, to automatically schedule the task for specific times to ensure timeliness.

The key is to select a change management tool that works with the job scheduler of your choice. Many tools do not have flexibility in this area and require the user to sit down in front of the screen and take a snapshot or perform a compare. Alternatively, certain tools require the use of a built-in job scheduler – a proprietary tool that will only work with this one application. Not only are you forced to learn to use another job scheduler with no other purpose than to schedule jobs for change management, but you are also limited to the features of that tool, rather than choosing the job scheduler with all the features you need.



Change Manager includes a Command Line Builder that quickly lets you generate batch files and preview command line scripts to easily automate jobs and integrate with source control systems.

THE CHANGE MANAGER ADVANTAGE

Change Manager provides the flexibility to choose the job scheduler. The solution interfaces with job scheduling in the native Windows Task Manager, enabling the creation of batch jobs for taking snapshots or comparisons. In addition, Change Manager integrates with your job scheduler of choice, using the Command Line Interface for batch processing. You can snapshot the entire database or a table or anything in between. You have the flexibility to schedule periodically from as often as every 10 minutes to only once a month, and jobs can be processed consecutively or concurrently, depending on your needs.

Change Manager was built within the Eclipse open source development platform, which offers a high degree of compatibility with third-party tools. Many job scheduling tools already offer an Eclipse plug-in, and the list keeps growing, giving you the freedom to continue to use the job scheduler you prefer.

Change Manager's automation capabilities enable you to:
- Save time and increase productivity by running tasks automatically in unattended mode
- Save time by running batch jobs concurrently
- Share results automatically via email or alerts

SHARING INFORMATION

Sharing information is essential in database management. When selecting the right change management solution, search for a tool that enables you to easily share information and collaborate across the team. First, you need to be able to report on issues that impact the entire team. In addition, when a DBA is out of the office, the other team members must have easy access to information that will enable them to cover that position.

THE CHANGE MANAGER ADVANTAGE

The reporting capabilities offered by Change Manager ensure that everyone responsible for change control stays informed and up to date. Change Manager generates HTML-based reports that can be tailored to multiple audiences and levels of detail, and can easily be sent via email or posted to a website. DBAs and IT managers can also receive up-to-the-minute alerts by email about capture and compare jobs through Change Manager's automatic notification of job completion or abnormal termination. When needed, the system can attach output logs to email notifications to facilitate faster problem resolution.

Consolidated and consistent reporting – all within one tool – is an added advantage of Change Manager. All reports have a uniform look across all platforms, and DBAs can more easily understand the reports across platform-specific skillsets.

Change Manager's reporting and collaboration capabilities enable you to:
- Keep the entire team informed about database issues
- Streamline information sharing and collaboration regardless of responsibilities separated by platform
- Boost database management team productivity
- Get the right information to the right people to solve change-related problems faster

ARCHIVING SNAPSHOTS

A key to change management – as well as database recovery – is pinpointing what changed and when, and recreating what the database looked like before the change. To select the right change management tool, you need to determine your archiving needs. How often do you need to view a snapshot of a particular point in time? Being able to save an image from a specific point in time as an archive is critical to change management, and serves as the basis for comparisons.

Sometimes you need to see a snapshot of the entire database; a specific schema and all of the objects it owns; or just a particular table. Not all tools provide adequate archiving capabilities,

however. A tool may limit you to viewing one snapshot at a time, with no ability to archive snapshots. That means that every time you take a new snapshot, the previous one is deleted. This leaves you without the database history that is essential to your job. Furthermore, even the tools that provide an archiving feature do not always provide the view you need or make it easy to find the snapshot you are looking for. If you are unable to locate the archive you need, it is the same as not having the snapshot at all.

THE CHANGE MANAGER ADVANTAGE

Embarcadero's Change Explorer feature empowers you to find your jobs quickly. Change Explorer supports requests for a variety of job views, in terms of platforms, datasources, time periods or job types, and Change Manager can compare multiple versions of archive history to the live database or another archive. The solution also allows you to store archives as long as you need them, and provides you with total control over when archives are deleted.

Change Manager's archiving capabilities enable you to:

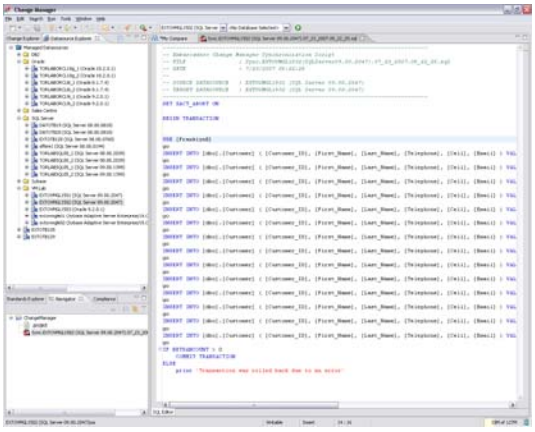
- Access all the history you need to do your job
- Choose how you store and view archives
- Easily compare archives to solve issues fast
- Support database recovery

CONTROLLING SYNCHRONIZATION SCRIPTS

Although automating certain tasks is preferable, there are also times when you want to have control, such as in the synchronization of scripts for capture, edit and debugging. Many tools perform these tasks automatically, identifying changes, synching the differences, and updating data in a batch mode. As a DBA with primary responsibility for the database, however, you want control – you want to see the results first, to verify data integrity. So when you are selecting the right change management solution, you want a tool that allows for automation when needed, but also provides you with decision-making control.

THE CHANGE MANAGER ADVANTAGE

Change Manager offers a high degree of flexibility with SQL Editors, built-in debuggers that allow you to debug, test and view the impact before it happens. The SQL Editors, a core component of all Embarcadero database management tools, provides you with the control you need to ensure data integrity. Whether you are writing SQL from scratch or testing the effects of stored procedure and its execution, and you need to see exactly what will happen, step by step, SQL Editors provide you with the confidence of knowing you are making the right decision.



Edit and run your CM/Data sync scripts from within Change Manager and organize them using Eclipse's built-in Navigator view (includes built-in CVS integration).

Change Manager's debugging capabilities enable you to:

- Ensure data integrity
- Control capture, edit and debug
- Support change management decision-making

CHANGE MANAGER: A SINGLE PLATFORM

Change Manager from Embarcadero Technologies is the only application of its kind that supports all four of the major database platforms, and the only solution available today that can address all of the critical change management requirements outlined above. Built specifically to meet your change management challenges, Change Manager has one objective – to enable you to manage all types of change across all of your RDBMS platforms.

Data is only going to get more complicated. But that doesn't mean change management has to be more complicated. Change Manager simplifies how you manage change.

Embarcadero Technologies, Inc. is a leading provider of award-winning tools for application developers and database professionals so they can design systems right, build them faster and run them better, regardless of their platform or programming language. Ninety of the Fortune 100 and an active community of more than three million users worldwide rely on Embarcadero products to increase productivity, reduce costs, simplify change management and compliance and accelerate innovation. The company's flagship tools include: Embarcadero® Change Manager™, CodeGear™ RAD Studio, DBArtisan®, Delphi®, ER/Studio®, JBuilder® and Rapid SQL®. Founded in 1993, Embarcadero is headquartered in San Francisco, with offices located around the world. Embarcadero is online at www.embarcadero.com.