

**What's the Latest?**

It is **Time To Upgrade** to the latest release of Change Action! As indicated in the September 2001 newsletter, support for Change Action releases up to and including 5.10 is withdrawn effective the end of January 2002! **Also note that if you are migrating your operating system to OS/390 R2.10 or z/OS, Change Action must be at 6.00 or above.**

The current release of Change Action is 6.06 (released March 2002). For a complete list of all of the new features and enhancements included in Change Action contact Action Software and ask for the "What's New in Change Action?" summary document. Also checkout our web site ([www.actionsoftware.com](http://www.actionsoftware.com)) for the latest information.

**USS Action Beta Release Up & Running**

Are you implementing OS/390 UNIX? Do you want to know 'What's Changed' in HFS files?

**USS Action** automatically and transparently tracks changes and references in OS/390 & z/OS UNIX.

USS Action will deliver the same superior functionality as Change Action but for Hierarchical File System (HFS) files under the OS/390 and z/OS UNIX System Services (USS) system environment. It looks similar to Change Action, except that dataset and member are replaced by directory and file name. The first beta release of USS Action, available October 2001, included automatic tracking, compare, reporting, and backup / restore of HFS files under USS. The most recent release provides reference tracking functionality for HFS files.

USS Action currently provides the following functions in the OS/390 or z/OS UNIX environment:

- > Automatic change and reference tracking for USS directories and files
- > Specify change tracking options down to the file level
- > Automatic backup of changed files
- > Back out changes with minimal effort
- > Side by side compare facility for comparing USS files and backups of files
- > Reference tracking at the Directory level
- > Batch report of change tracking statistics for USS directories and files
- > Online reporting of change tracking statistics for USS directories and files
- > Template support for selection criteria to be used with batch and online reporting
- > Determine change tracking options defined for any USS directory and file

Future releases of USS Action will concentrate on the change controls functionality of managing and controlling HFS files in a z/OS or OS/390 UNIX systems environment. For further information contact Action Software or visit our web site.

Many of our clients have implemented front line business applications that web enable their legacy data to improve customer service. These systems that are implemented on OS/390 UNIX are high profile business critical applications that require the qualities of service and systems management environment for which OS/390 is renowned. As part of this implementation **USS Action** has been installed to track changes to the OS/390 UNIX operating environment.

Some of the application areas tracked include Domino, Lotus-Notes excluding email, NFS file sharing, CICS front ends, and other Web based applications. Specifically directories and files such as configuration and system files in /etc directory, binaries & executables in /bin, and HTML, Java, and LDAP file directories.

**Change Action Recent Highlights**

Some of the new features / enhancements included in the last 2 releases are:

- > **USS Action** support for reference tracking of HFS directories and files.
- > Automatic Change Distribution has been added to the Excludes Feature (EX on primary panel). If Selected, then Automatic Change Distribution will be bypassed, if Program Name and task name/userid, etc. match.
- > For OID Level Change Request Options, a new option has been added (panel 4) to automatically test for conflicting Change Requests when a new Change Request is saved.
- > To improve audit capabilities, new Sub-Types have been added to the External Logging feature.

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- > Enhancements to Change Action's use of CSA.
- > Under the Reference Tracking by Data Set (RTDS) option, if you have defined datasets using masking, then it is possible that some GDG's may meet the masking criteria. This can result in creation of unique Reference Stat records for every generation. This can potentially cause thousands of records to be created. To avoid this problem, one Reference Stat record is created using the index, eg.SYS3.ABC(0). (Note: Change Stats records are already created this way.)
- > With enhancements to Automatic Scheduling, you may now select multiple individual hours during the day when you want the job to be submitted. Up to now, you could only select one individual hour or a time range. With multiple hours selected, the job will be submitted once in each hour selected.

Also now available in Automatic Scheduling is a Minute Range option which allows you to indicate at which minute passed the hour the job is to be submitted instead of just on the hour as it has been up until now.

## Reference Tracking Component

Have you ever wondered if someone is still using selected PDS datasets, product libraries, selected DA or sequential files, or specific members of a dataset?

Change Action's Reference Tracking Component can provide you with the answers you're looking for. Change Action's Reference Tracking Component can track and record references to data sets and to members of partitioned data sets (PDS). References may be from TSO, batch or a started task, using any program. A reference is when a change, read or execute has occurred. An executed member may be from a JOBLIB/STEPLIB data set, from one of the LINKLIST data sets, from a PROCLIB or from a CLIST/REXX dataset.

Tracking options are easily defined to Change Action and are completely dynamic and instantaneous.

Information provided by the Reference Tracking Component includes:

- > number of days that reference tracking has been active;
- > date on which the member or dataset was last referenced;
- > userid (i.e., RACF, ACF2, Top Secret) of the user that referenced the member;
- > task name of the batch job or started task which accessed the member;
- > task type of the reference access, either batch, TSO, or started task;
- > name of the program used to reference the member;
- > number of times the member has been referenced.

With Change Action's Reference Tracking Component, your installation can quickly and easily determine which members in which PDS datasets *are* or *are not* used.

This feature will allow management and support personnel to easily determine which members for which system or product libraries are currently being used in their environment.

This feature can also provide baseline information for the MVS installation to identify, monitor, and recover valuable DASD and backup media space by identifying redundant PDS libraries or members.

If you are not already using Change Action's Reference Tracking Component, you should consider what this feature could do for your MVS installation.

### Options In Reference Tracking

There are three options available for reference tracking from the Change Action Primary panel:

**RT** - Reference Tracking for Partition Data Sets, **RTM** - Reference Tracking by Members, and **RTDS** -Reference Tracking by Data Set. The Reference Tracking component allows the user to view and determine who or what is using or accessing defined resources. The reference data is recorded on the Change Action database, which can be accessed using the standard ISPF panels provided with the product. The references from all the CPUs are recorded on the common Database. All the references can be viewed from any CPU. Before using any of the above options, the Reference Tracking Component must be activated by the Global Administrator.

The Global Administrator uses Global option H (Host Records) to activate reference tracking. On the Host Records panel specify 'yes' in the 'Ref.Trk.Yes/No' column for each SMFid that you want to activate reference tracking. Once this option is saved activation takes place immediately. Reference tracking can be turned off on any SMFid without deleting any data already recorded.

### What RT Option Provides

For each defined dataset, Change Action maintains up to 3 reference statistic records for each member that was accessed. Information provided also includes the number of days that reference tracking has been active for the dataset, as well as the recorded access dates, userids, task names, and jobnames.

A complete list of users who referenced each dataset defined for reference tracking, along with the most recent reference date, the SMFid and a count showing the number of times referenced by the user on a specific machine. To see the user list, use the line command USR on the Datasets for Reference Tracking panel.

Some of the key options under RT that can be set by data set are Normal Recording, R/T Opts, Max Blks, and Ext Log. 'Normal Recording' option set to yes provides both the daily member reference information and the user summary list. While Normal Recording set to no provides only the user summary list. R/T Opts set to 'any' tracks any reference (any Open), while set to 'proc' or 'ex' tracks executes or changes as references. Using EX is useful for tracking the actual usage of programs, Clists or REXX routines. The Max Blks option allows you to limit the amount of data that will be recorded on the Database. This will prevent unexpected over-utilization of the Database. The number is specified in Database blocks (each block contains 35 records). Once the Max Blk count is reached recording will be stopped (as indicated under Status column). Ext Log set to yes indicates that each reference will be logged to an external data set (or SMF); see External Logging topic in the Administration Guide.

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### **RT use in Charge Back**

Installations that manage their company computer resources on an internal charge back basis, may have a requirement to track which departments use specific software products. Using Reference Tracking with the option set for External Logging can provide the data necessary to do this tracking, along with the appropriate audit trail necessary for some charge back functions.

As an alternative to External Logging, the USR line command can provide a summary of 'users' who have referenced specific libraries. The output from the USR command can be 'printed' to an external data set, which could be used as input to a charge back function.

### **What RTM option Provides**

The Reference Tracking by Members feature provides you with information for the usage of a product, usage of specific features of a product, or usage of any in-house developed applications or systems. The tracked data indicates if the product, feature, or application is used at all, how much is it being used, who is using it, and who are the most frequent users. If there are multiple copies of a member in different libraries, then the dataset names of every library where the member was referenced, along with the userids that made the reference for each and every library is recorded. Additional information includes the system SMFid, the volume serial name, and latest reference date. There is an entry for each userid-jobname-smfid combination.

Some of the key options under RTM that can be set by member name are R/T Opts and Max Blks. R/T Opts (set to ex) tracks executes or changes as references of programs, Procs, Clists or Rexx routines.

### **RTM for Product Library Cleanup**

If you have copies of programs (or products) in multiple libraries, then you will be able to determine which libraries are in use, by whom and the frequency of usage. This will be very useful when you are installing a new version of programs or products into a different library. By adding the name of the program (or programs) executed for a given product and specifying R/T Opts equal to EX, all executions of the product will be recorded by Change Action along with the userid, jobname and library name. Data will be recorded to ensure that users are not using older versions of the product. See Use of PALL under RTM (below) for additional processes.

### **Use of PALL under RTM**

The PALL (Print ALL) command can be used on the Reference Tracking By Member panel to Print the references for all selected members in the table being displayed. The format of the PALL command is the same as the PRT command (ie PALL parm).

PALL allows you to print the reference information for documentation purposes or to send the data to an external data set for further processing. This would be useful when cleaning up multiple copies of a product library. All the users who were still using 'old' product libraries can be identified.

To customize the output from PALL use the Selection Field(s) to select the members that you wish to print. In

addition you can further provide selection criteria on the Reference Info for Member panel. To do this, use Line Command S to select any member to display Reference Info for Member panel; provide your Selection on this panel and hit PF3 (end); now issue command PALL parms. The PRT routine is called for every selected member. The parm /MOD is added for second and subsequent members. You can use /MOD on PALL command, in which case all the output will be modded.

### **What RTDS Option Provides**

Reference Tracking by Data Set tracks all accesses to the defined data sets. The information recorded for the access is at the data set level and consists of the userid, jobname, SMFid, and count of references. For performance reasons, each and every reference is not record to the database. Instead, the information is collected in an address space and written out to the database at specific time intervals.

RTDS would be used when you want to get a complete list of users who reference a data set along with a count showing the number of times referenced and from which systems (SMFid). This option can be used for DA, sequential, VSAM, and partitioned data sets.

## **Change Action CSA Usage**

Prior to release 6.06, when Change Action was restarted it would handle most of its CSA storage needs by obtaining a new area and then asynchronously free the old area replaced by this new area.

This would result in a short-term spike in CSA usage when Change Action was restarted. As of release 6.06, Change Action reuses existing CSA storage as much as possible, unless specifically directed otherwise by a parameter at start up. ("S MZCA,PARM=REFRESH")

This new parameter will cause Change Action to obtain new CSA storage when it is restarted (and asynchronously free the old area).

Note that this new parameter should NOT be specified on a routine basis. Use it only when directed to do so by Action Software International Technical Support.

Users of CSA monitoring software should be aware that the monitor will provide misleading information about Change Action's use of CSA if Change Action is restarted. CSA storage obtained by one instance of Change Action and reused by a subsequent instance of Change Action will be reported by the CSA monitor as having been obtained by an address space that no longer exists. While this is technically true, in the case of Change Action it does not mean that the storage has been "orphaned".

## **VOLSER Specific Entry**

The automatic change tracking mechanism of Change Action knows when changes are made to all data sets. However, changes (statistics and backups) are not recorded for a data set, unless the data set has been defined to Change Action. Data sets are defined to Change Action by specifying the fully qualified dsname or a data set mask. Optionally a Volser can be specified when defining a data set entry for tracking.

For most data sets the Volser should be left blank, however, if the Volser is left blank, then one set of statistics

will be kept per data set name, even though several volumes may contain data sets with the same name. If the Volser is set to \*, then one set of statistics will be kept per data set per volume. If three volumes contain data sets with the same name, then three sets of statistics will be kept.

Any non-blank for Volser is treated as if there is an extra key field in front of the data set name. This type of entry is referred to as **Volume Specific Entry**. Volser equal to 'blank' means that the volume is ignored when looking for a match. If non blank, the volume and dsname must match when searching entries in the database, otherwise a new entry is created. **Most data sets especially GDGs should be defined with a blank Volser.**

With Change Action's extensive masking capabilities a data set may fall under more than one definition. The most specific match is used if more than one mask satisfies the data set being looked up. Most specific means the longest in number of characters. With a Volume Specific Entry the Volser takes precedence.

The following examples will clarify this more:

Example 1:

(1) DSN=\*                   VOL=TST\*  
(2) DSN=SYS1\*            VOL=blank  
(3) DSN=SYS\*LIB         VOL=blank  
SYS1.MACLIB on TST001 would fall under (1)  
SYS1.MODGEN on IPL001 would fall under (2)  
SYS1.MACLIB on IPL001 would fall under (3)  
SYS2.MODGEN on IPL001 would not be controlled

Example 2:

(1) DSN=SYS\*             VOL=\*  
(2) DSN=SYS1.PARMLIB    VOL=blank  
SYS1.PARMLIB on any volume would fall under (1) and not under (2). To specify unique options for SYS1.PARMLIB, specify VOL=\* for (2).

Example 3:

(1) SYS1\*                VOL=RES\*  
(2) SYS1.LINKLIB        VOL=blank  
SYS1.LINKLIB on RES001 would fall under (1).  
SYS1.LINKLIB on any other volume will fall under (2)

Example 4:

(1) SYS1\*                VOL=\*  
(2) SYS1.LINKLIB        VOL=RES\*  
(3) SYS1.LINKLIB        VOL=blank  
(4) SYS1.P\*             VOL=blank  
SYS1.LINKLIB on RES001 would fall under (2).  
SYS1.LINKLIB on any other volume will fall under (1)  
No dataset will fall under (3) or (4)

If you are not sure which options will be used for a data set, then use the command **OPTS** from the primary selection panel.

## Tips & Techniques

**Q:** I have lost an important PDS dataset, and my last backup taken by storage management is 4 days old. How can I restore all of the changes that have been made since then?

**A:** First If the Dataset Options for this dataset includes having Change Action take a backup whenever a change is

made, you can restore the members that have changed since the dataset was last backed up by doing the following.

1. Restore the PDS from your last storage management backup tape or file.
2. In Change Action, select the Scan All Changes panel (option SC). On the Scan Dataset Changes panel,
  - select the PDS for which the changed members need to be restored.
  - enter the "From Date" and "From Time" since the last PDS backup was taken.
  - provide any other selection criteria.
  - enter primary command DSC.
3. Change Action will return a list of datasets in the Dataset Changed panel.
4. Select the PDS, a list of members that have been modified since the date specified will be provided.
5. From this panel, you can also exclude members from being restored by placing an "X" in the line command field for the member name.
6. Finally, use the primary command REST, and Change Action will display the restore options for the selected members.
7. Backups on tape can be restored to the Change Action Database first or directly to the PDS (use Restore to Database parameter).
8. Enter primary command GO to initiate the restore. Restore jobs for backups on tape will be automatically submitted. Members with backups on disk will be restored directly from this panel.
9. All of the changes that have been made to the PDS since your last backup will be recovered.

## Contact Information

If you require more detailed information about Change Action, TestAction, or USS Action, we can be reached at:

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