

JOB S User Reference

Version 4.0 Level U

Copyright 2001 – 2006

Rosebud Management Systems

JOBS Overview

The JOBS facility is an integral part of the overall Eden Server system that allows Eden users to run and manage batch jobs and their associated reports. JOBS was designed to provide Eden Server users with mainframe class job management facilities such as IOF and SAR on MVS or POWER on VSE. JOBS also provides extended features to clients such as report viewing, printing and management.

In addition to providing the basic functions of running batch jobs and handling reports, JOBS also provides a powerful control-card and command-line building feature that allows users to run even custom reports and programs without the need for intervention from the systems department.

JOBS consists of two main components which are both provided with your Eden Server software. The client interface portion of the system is a standard CICS based series of transactions that allow users a choice among the following options:

- Enter job specific parameters and submit batch jobs for processing on Eden Server.
- Monitor the Eden Server Job Queue including viewing JCL logs, even logs for running jobs.
- View and search report files from batch jobs online.
- Print reports including selective printing by page #'s.

Administrator functions are also included as part of the JOBS client interface:

- Maintaining the list of batch jobs that the JOBS system supports including detailed job specific information on control-card and command line parameters as well as reports and other advanced features such as email notifications and pre and post run dependencies.

Access to all features of the Eden Server JOBS systems are controlled via the standard user security settings available in EManager. See the EManager Reference for information on setting up user security.

The server side components of JOBS are the Background Manager and Job Scheduler plugins. Together these two plugins provide the system support functions that enable Eden Server to run your batch jobs as well as provide the support functions necessary for the client JOBS functions.

Using the JOBS System

Access to JOBS, as previously stated, is controlled by your sign-on privileges which have been setup by your system administrator. For standard Eden Server users, i.e., not JOBS administrators, one or more toolbar buttons will be displayed in the Eden Client toolbar. The buttons, and their functions are:



Is displayed if your login privileges include the ability to submit jobs to Eden Server



Is displayed if your login privileges include the ability to view and or control entries in the Eden Server Job queue.



Is displayed if your login privileges include the ability to view and or control entries in the Eden Server Print queue.

Note that information on the JOBS Administrator functions is provided separately in the JOBS Administrator reference.

Note that Eden Client automatically displays the JOBS toolbar buttons as soon as user login is complete. If your installation does not use Eden's single-sign-on feature you must therefore run the CSSN login transaction prior to accessing JOBS.

Once the toolbar buttons are displayed you may use JOBS at any time, even while you're using one of your normal transactions. JOBS is designed to capture all the current settings and displays of your client session when it is started and to restore these settings upon it's exit. This means that even if you're in the middle of your regular work, JOBS may be used without interrupting any work you may already have in progress.

JOBS has also been designed to work only in Eden Client's GUI mode. If your normal screen display is in character mode you will notice that the client display window will automatically switch from character mode to GUI mode upon entry to JOBS. The screen mode is also automatically reset to it's original setting, character or GUI, upon exit from JOBS.

Submitting Jobs

Submitting a job to Eden Server is accomplished using the Job submit notebook. The submit notebook provides the ability to select jobs for submission, enter any specific input items that may be required as well as the ability to set advanced properties for the job such as pre and post run dependencies and repeating run schedules.

The screenshot shows the 'Eden Client - 0001' window with the 'Job Selection' tab active. The interface includes a toolbar with navigation icons, a tabbed menu (Job Selection, Schedule, Advanced, Dependencies, Miscellaneous), and three main sections: Job Selection, Request parameters, and Execution settings. The Job Selection section contains a list of jobs and filter controls. The Request parameters section has a table for defining parameters. The Execution settings section includes dropdowns for Priority and Class, and radio buttons for Output type. At the bottom, there are navigation buttons (Up, Down, Submit, Cancel, Exit) and a status bar with job details.

Parameter	Value	Data value format
run date	<input type="text"/>	MMDDYY date (Req)

Execution settings: Priority: Normal, Class: E

Output type: Public , Private

Buttons: Up, Down, Submit, Cancel, Exit

Status bar: JOBS2, JOBSEL, 004/014, Inactive, a, [icons]

Sample Job Submit notebook

To start the job submission process, locate the desired job in the Job Selection list and highlight it with your mouse. If the job you want to run is not listed, you may change the Class and or Region filters and use the Refresh button to rebuild the list of jobs you're authorized for. Note that both the region and class filters, as well as the list of authorized jobs, will only reflect those items for which your login privileges allow you access to.

Once a job has been highlighted the Select button will be enabled and can be clicked to start the submission process. Note that all input fields on this tab will be disabled until a job has been selected. Also, the other tabs in this notebook will also be disabled until a job is selected.

Clicking the Select button will cause the default settings and properties for the job to be displayed across the full set of display tabs. The displayed information may be changed or accepted as is prior to clicking the Submit button.

If your job requires specific input from you, the middle area of the Job Selection tab will be used to display the list of input items. In the sample image shown above, the job being submitted includes one user input item. In this case the input item is labeled as being the 'Run Date'. The field shown under the 'Value' column is provided for your particular input value. Also note that the 'Data value format' column provides a brief description of the data to be entered and whether or not the item is required (Req) or optional (Opt). Also, if your system administrator has included it in this jobs default properties, the Eden Client context sensitive help toolbar button may be used at this stage to display specific help information for each input item as well as the overall job itself. To view this help click the toolbar mouse help button and then move your mouse to the screen item you want help with.

The Request Parameters area will show up to 8 input items at a time. If the job being submitted allows for more than 8 items, the Up and Down buttons may be used to scroll the input items. Note that all items marked as 'required' must be completed prior to the Submit button being clicked. An error message will be displayed if Submit is clicked prior to completing all required input items.

The lower portion of the submit window allows you to set certain run time settings for your job as follows:

The 'Execution Priority' drop down list allows you to tell Eden Server how important your job is. The value you select here will be used by Eden Server to determine in which order jobs are executed. This setting does not affect the speed of a job once it has started to run.

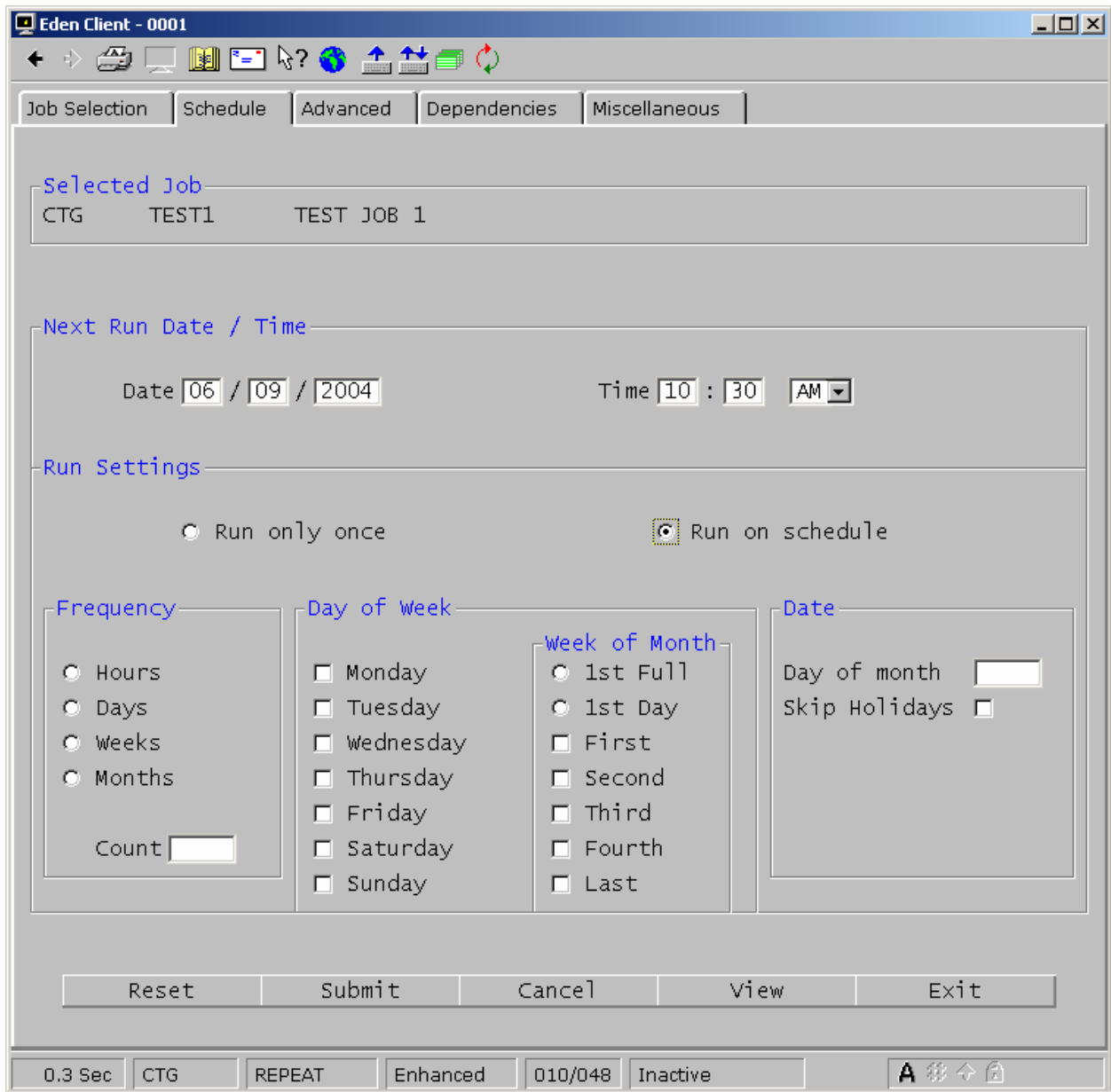
The 'Output Type' radio buttons allow you to specify whether the report(s) from your job should be stored as Public or Private. If you want your report to be saved in the Public area, click the Public button, other wise click the Private button to store the reports in your own private area.

Once you have completed all entries on the screen and you are ready for your job to be run, click the Submit button to send your job to Eden Server. Once submitted, your request will be assigned a Job number and an entry in the Eden Job Queue will be created. Job numbers are unique nine digit identifiers for all jobs run via Eden Server and, with respect to the JOBS system, are the primary means of identifying individual jobs and reports.

If you want to run your job repeatedly or have it start at a specified date and time, the Schedule tab provides a full range of scheduling options. The Advanced, Dependencies and Miscellaneous tabs also provide a number of additional settings for your job.

Job Scheduling

The Schedule tab, as shown in the sample image below, allows a number of different one time or repeating schedule scenarios to be created.



Sample Job schedule tab

Eden Server has the ability to run jobs based on a number of different scheduling options. Through selection of items on the Job Schedule display, jobs may be scheduled for execution to “Run once” either immediately or at a pre-defined future date and time or to “Run on a repeating schedule” based on a number of options.

To run a job only once, click the Run Once check box and ensure that the Next Run Date and Time values are set to the desired values. Once entered, click the Submit button or continue making entries on the remaining tabs.

To create a job with a repeating schedule, the “Run on schedule” radio button must be selected.

Note that when this choice is selected, the remaining entry items on the screen are enabled. Clicking the “Run Once” radio button disables and resets all screen items in the lower portion of the screen.

The items displayed in the Frequency, Day of Week and Date areas are used to define both the type and extent of a repeating schedule. Schedules may be set to repeat on a fixed frequency by Hour, Day, Week or Month. Schedules may also be tied to a particular day of week, with or without a week of the month filter. Lastly, schedules may be day of the month driven.

The following notes detail these different type of schedules and how to enter each of them.

Every ‘n’ Hours is specified by selecting the Hours radio button in the Frequency area and also entering the number of hour(s) after which the job should be repeated. Note, this option may be combined with a day of the week schedule.

Every ‘n’ Days is specified by selecting the Days radio button in the Frequency area and also entering the number of day(s) after which the job should be repeated.

Every ‘n’ Weeks is specified by selecting the Weeks radio button in the Frequency area and also entering the number of week(s) after which the job should be repeated.

Every ‘n’ Months is specified by selecting the Months radio button in the Frequency area and also entering the number of month(s) after which the job should be repeated. Note, this option may be combined with a day of the week schedule.

Day of the Week is specified by the Day(s) of the week on which to run the job. Note that more than 1 day may be selected.

A Day of the Week schedule may also include an entry in the Week of the Month area. The first, second, third, fourth and last check boxes in the Week of the Month area act as filters for Day of the Week schedules, thereby allowing job schedules to be created for frequencies such as ‘Last Tuesday’ or ‘First Friday’ of the month. The two radio buttons in the Week of Month are used to instruct the job scheduler how to interpret the weeks of a month. For example, the ‘1st Full’ option tells the scheduler that the first week starts on the first Monday of the month, whereas the ‘1st Day’ option tells the scheduler that to select the particular day of the week chosen (i.e., Friday) based on it’s nth (i.e., first or second, etc) appearance in the monthly calendar. For example, consider the following calendar for June 2004:

Mon	Tue	Wed	Thu	Fri	Sat	Sun
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Notice that the first week of the month does not contain a full 7 days. Therefore, selecting the ‘1st Full’ method will cause a job scheduled to run on Monday during the first week, to be scheduled for execution on Monday June 8th. Selecting the ‘1st Day’ method would cause the job to be scheduled for Monday June 1. In a similar way, choosing the ‘Last’ week check box is based upon full or partial weeks. For example, choosing a job that is to be run on the last Wednesday of a month would either be scheduled for Wednesday June 23rd, or June 30th depending upon whether the ‘1st Day’ method (which would pick June 30th) or the ‘1st Full’ method is used (which would select June 23rd).

A Day of the Month schedule may be accomplished by either using an Every 'n' Months type schedule, or by using the Day field in the Day of Month area. Note that the primary difference between these methods is that the Day of Month area allows for the figurative constant 'LAST' to be entered for the Day thereby eliminating problems relating to months of differing numbers of days.

The Skip holidays option will cause the job to not run if the scheduled date is identified as a holiday on the Eden Server calendar. In such a case, the job will be rescheduled to run on it's next appointed date and time.

For all jobs submitted to Eden Server, the 'Next Run Date / Time' fields control when the next, or first, execution of the job is to occur. The Eden Server Job Scheduler will begin execution of this job when these values match the current date and time. If in the event the scheduler determines a job contains a Next Run Date / Time value that is over three hours in the past (expired) the job will be marked as 'Missed'. Note the default 'Missed Job' processing may be overridden by using items on the Advanced tab.

In the case of jobs that run repeatedly, the Eden Server Job Scheduler creates a new job queue entry with a new job number upon completion of original job. Therefore, as time passes and jobs are re-scheduled it should be noted and expected that future runs of the job will be identified by a new job number.

Some examples of how to set up repeating schedules are shown below:

Desired schedule	Required settings
Every Monday	Select the 'Monday' check box only, the job will run every Monday, starting at the time entered in the Next Run Date / Time fields.
Every first Monday of the month	Select the 'Monday' check box and the '1 st Day' radio button as well as the 'First week' check box. The job will run on the first Monday of each month starting at the time entered in the Next Run Date / Time fields.
Every month on Monday during the first full week.	Select the 'Monday' check box and the '1 st Full' radio button as well as the 'First week' check box. The job will run on Monday during the first full calendar week of each month.
Every hour of the day on Fridays	Select the 'Hours' repeat frequency and enter a 1 in the Frequency Count field. Also select the Friday check box. The job will be run every 60 minutes on Fridays. Note, the first run time on each Friday is the time entered in the Next Run Date / Time fields.
The Last Friday of each Month	Select the 'Friday' check box and either the '1 st Full' or '1 st Day' radio button as well as the 'Last' check box. The job will run on the last Friday of each month starting at the time entered in the Next Run Date / Time fields. Note: If 1 st Day is selected it is possible that the Last week of a month has no Friday in it, in which case the next future month that does have a Friday in it's last week is selected as

	the next run date.
The Last day of every month	Select the Months repeat frequency and enter a 1 in the frequency count field. Also enter the word 'LAST' in the Day of Month field.

Note: if a day of the week and an hourly repeat frequency are combined, Eden will use the initial start time as the time of day to start the job on each new day. For example, if a job was scheduled to run every 8 hours on Tuesdays and Fridays, starting at 10:30 Monday June 1st, 2004, the following schedule would be used:

Run Time	Notes
06/01/2004 @ 10:30	This is the first run of the job
06/01/2004 @ 18:30	This date selected as it is 8 hours past the previous run, and because the date is still a Tuesday.
06/04/2004 @ 10:30	This date selected as it is the next eligible day of the week beyond the previous run (note 8 hours beyond 6:30 PM on June 1, 2004 is 00:30 on June 2, 2004. June 2 is a Wednesday, making it in-eligible as our schedule is just for Tuesdays and Fridays. Note, the time selected is the original 10:30 am time. This time was used instead of the 00:30 time, because the schedule crossed a day boundary.

Note also that in addition to the scheduling capabilities provided on this tab, the Pre and Post run dependencies features, including the date filters therein, may also be used to provide a very robust operational environment capable of supporting even very complex run schedules

Advanced Tab

The Advanced tab of the job submit notebook provides the ability to override Eden Servers default 'missed run time' processing as well as the ability to control job execution based upon data file presence and or size. A sample image of the Advanced tab is shown below.

The screenshot shows the 'Edens Client - 0003' window with the 'Advanced' tab selected. The interface includes a toolbar with navigation icons, a tabbed menu with 'Job Selection', 'Schedule', 'Advanced', 'Dependencies', and 'Miscellaneous', and a main content area with four sections: 'Selected Job', 'Missed run time actions', 'File arrival delay', and 'File size delay'. Each section contains input fields and checkboxes. At the bottom, there are 'Reset', 'Submit', 'Cancel', and 'Exit' buttons, and a status bar with job details.

Section	Field/Option	Value/State
Selected Job	Selected Job	JOBS2 CHQADD UNPRINTED CHECK REPORT
	Consider Missed after	[Empty]
	Auto Reschedule	<input checked="" type="checkbox"/>
Missed run time actions	Suppress Errors	<input type="checkbox"/>
	File Name	[Empty]
File arrival delay	Retry Interval	[Empty]
	Max Wait	[Empty]
	Max Age	[Empty]
	No Show RC	[Empty]
File size delay	File Name	[Empty]
	Retry Interval	[Empty]
	Max Wait	[Empty]
	Min Bytes	[Empty]
	Too Small RC	[Empty]

Buttons: Reset, Submit, Cancel, Exit

Status Bar: JOBS2 | ADVANCE | 000/000 | Inactive

Sample Advanced tab display

The Missed Run time actions on this tab allow the Job Schedulers default actions to be overridden. The default actions taken in the event of a job missing it's appointed start time is to consider the job as actually missed after three hours, at which point the Job Scheduler generates a system error message and reschedules the job.

These default actions will be enforced unless changes are made to the entry items in the Missed Run time actions area. The entry items in this area may be used as follows:

The **Consider Missed** after field allows for the input of a time value in the format of HH:MM:SS. The time entered will be used by the Job Scheduler in place of its default 3 hour value when determining if a job has actually been missed.

The **Auto Reschedule** check box controls whether or not the job will be automatically rescheduled to run on its next future run date and time. Un-select the check box to cause the job to be left in a 'Missed' status without being rescheduled.

The **Suppress Errors** check box will cause the Job Scheduler to suppress generation of any system error messages. Note, error message suppression will only occur if the job included at least one email address in the 'Missed Job email address list', which is displayed on the Miscellaneous tab of this notebook.

The **File Arrival Delay** settings area allows for the entry of a disk file name and several other settings. The file name and settings are queried when the Job Scheduler is about to start the job. If settings are present in these items, the Job Scheduler will verify whether or not the named file is present before allowing the job to actually start running. Using this feature of the Job Scheduler is useful in situations where, for example, a job must be started after a file from a remote system is FTP'ed to Eden Server. By configuring the job to wait for the file to arrive at Eden Server, proper processing of the file can be ensured.

The items that may be configured for a File Arrival Delay are as follows:

The **File Name** field should contain the fully qualified drive and path (or UNC name) of the file.

The **Retry Interval** should specify a time period in HH:MM:SS format. In the event that the file in question is not present at job start time, the job scheduler will not start the job, but will retry starting the job after the retry interval period has elapsed.

The **Max Wait** entry should also contain an HH:MM:SS time period which indicates the maximum amount of time the job scheduler will wait for the named file to arrive. If the named file does not arrive within this time period, the job scheduler will mark the job as 'Missed' and set the Max / Final RC value to the value set in the No Show RC field. Note that the No Show RC value is optional. If no value is specified for a No Show RC, the system will use an RC value of 34056 and the job will be treated as though a standard pre-run requirement had failed.

The **Max Age** field allows for the specification of an HH:MM:SS time value indicating the age (i.e., elapsed time since creation) of the named file. A file that is determined to be older than the specified age value will not be considered to have arrived. Note if no Max Age value is specified no age checking of the file will occur.

The **No Show RC** field allows for the setting of a specific Max / Final return code. Entry in this field is optional, and if no value is specified the system will apply the standard 'Missed Job' RC value of 34056. Use of the No Show RC field is provided so that special post-run processing may be specified through the use of the systems Post-Run dependency settings.

The **File Size Delay** items may be used to control starting of a job based upon the size of an existing disk file. Use of the File Size Delay option is intended for situations where batch processing should only occur when a file reaches or exceeds a pre-set size threshold. For example, batch processing of application produced log or journal files.

The items required for processing a File Size Delay are as follows:

The **File Name** field should contain the fully qualified drive and path (or UNC name) of the file.

The **Retry Interval** should specify a time period in HH:MM:SS format. In the event that the file in question has not reached or exceeded the indicated minimum size at job start time, the job scheduler will not start the job, but will retry starting the job after the retry interval period has elapsed.

The **Max Wait** entry should also contain an HH:MM:SS time period which indicates the maximum amount of time the job scheduler will wait for the named file to reach its minimum size. If the named file does not reach or exceed this minimum size within this time period, the job scheduler will mark the job as 'Missed' and set the Max / Final RC value to the value set in the Too Small RC field. Note that the Too Small RC value is optional. If no value is specified for a Too Small RC, the system will use an RC value of 34056 and the job will be treated as though a standard pre-run requirement had failed.

The **Min Bytes** field specifies the minimum size the file must have for the job scheduler to allow the job to actually start. This value should be specified as a specific byte size, i.e., 1000000 for a million bytes. Do not enter file sizes in terms of 'K', 'Meg', etc.

The **Too Small RC** field allows for the setting of a specific Max / Final return code. Entry in this field is optional, and if no value is specified the system will apply the standard 'Missed Job' RC value of 34056. Use of the Too Small RC field is provided so that special post-run processing may be specified through the use of the systems Post-Run dependency settings.

Dependencies Tab

Eden Server provides two separate, and distinct, methods of allowing interdependent jobs to be processed. The first method defines fixed relationships between jobs. These relationships are defined using the Dependencies Tab as described below. The second method provides a more flexible way to define inter-job relationships which is suitable for use where given jobs relationships are not static. For information on this second method, see the Programmers Reference section entitled 'Job Scheduler Script Files'.

The dependencies tab allows you to specify pre and post run dependencies for the job. Note that in some cases your system administrator may have already defined such dependencies when the base job properties were defined. In such a case you should consult your systems administrator or other source prior to changing any existing dependencies. A sample image of the dependencies tab is show below.

The screenshot shows the 'Edens Client - 0002' window with the 'Dependencies' tab selected. The interface is divided into several sections:

- Job Selection:** Shows 'CTG TEST1 TEST JOB 1'.
- Pre run dependencies:** A text area containing the dependency: 'TEST1 must have ended with an RC = 000000 within the last 12:00:00'. Below this are 'New', 'Change', and 'Remove' buttons.
- Configuration:** Fields for 'Job name' (TEST1), 'Condition' (Must have), 'Event' (Completed), 'Max RC' (EQ 000000), 'Max Latency' (12:00:00), and 'Retry Cnt' (0). 'Dates', 'Save', and 'Cancel' buttons are also present.
- Post run dependencies:** An empty text area with 'New', 'Change', and 'Remove' buttons below it.
- Additional Settings:** Fields for 'Max RC', 'Job name', 'As new job' (radio button), and 'As async PID' (radio button). 'Dates', 'Save', and 'Cancel' buttons are present.
- Bottom Buttons:** 'Submit', 'Cancel', and 'Exit' buttons.
- Status Bar:** Displays '0.3 Sec', 'CTG', 'DEPEND', 'Enhanced', '004/000', 'Inactive', and a help icon.

As shown in the above figure, there are two types of dependencies supported by JOBS; pre-run

and post-run.

Pre-run dependencies are used to define events that must have (or may not have) occurred prior to the start time of the job in question. Post-run dependencies are used to define actions that Eden Server should take upon completion of the job in question.

Pre-Run Dependencies

Pre-Run dependencies provide the ability to have the running of a job be dependent upon the status of a previously run job, as well as the ability to prevent concurrent executions of the same job.

Using the Pre-run selection list, and the New, Change and Remove buttons, the list of specific requirements may be maintained as needed.

To add a new item, simply click the New button, which is enabled at all times unless a change or add of a pre-run item is already in progress (as is shown in the above figure). Up to 100 pre-run dependencies may be added to a job.

To change an existing item, or to remove one, simply highlight the item with the mouse pointer and click the appropriate button.

After using either the New or the Change button, the entry items in the Pre-Run requirements area are enabled and may be set to their required values. The items that define a pre-run requirement, and their meanings and uses are as follows:

Job Name defines the name of the job which will be checked prior to starting this job. The Job name drop down list will include all jobs for the same region as the job being defined that the user also has security access to.

Condition defines the logical comparison that will be performed by the Job Scheduler. Possible settings for condition are 'May not have' and 'Must have'. In either case, the condition chosen relates to the Event and other settings for the pre-run requirement.

Event defines the type of event that the job scheduler will be attempting to locate when processing this pre-run requirement. The event can be set to be either 'Completed', 'Started', 'Abended' or 'Run Concurrently'. **Completed** events are satisfied by locating a job queue entry for the indicated pre-run job name that has completed, regardless of the completion status. That is, Completed jobs include any job that started and then ended, including jobs that abended. **Started** jobs include any jobs that was started, including those jobs that are completed, abended and or still executing. Abended jobs include only those jobs which ended abnormally due to a JCL or other internal job processing error. Note that jobs that ended abnormally due to, for example, a file open error in a COBOL program are not considered to have abended. Abended jobs will also always have a maximum/final return code of 34034.

Max RC defines the pre-run job's maximum/final return code and the type of comparison to that return code that the job scheduler should perform. When entering a Max RC value, the format of the entry should be: CC nnnnnn where CC is a comparison code and nnnnnn is the return code value to compare against. The possible values for CC are:

EQ, meaning 'equal'

GT, meaning 'Greater Than'

LT, meaning 'Less Than'

GE, meaning 'Great Than or Equal' (note: a Max RC setting of EQ 000000 effectively means any/all return codes, as a job will always have an RC value of at least zero).

LE, meaning 'Less Than or Equal'

NE, meaning 'Not Equal'

Max Latency provides the ability to define a time frame during which the event in question must have occurred, or in the case of 'May not have' type of conditions that the event did not occur within a time period. For example, the pre-run example shown in the figure above includes a nineteen hour period during which the CHQADD job may not have completed at any time during the previous 19 hours. If a time is specified it must be entered in standard 24 hour notation in the HH:MM:SS format. The actual wall clock time for the period in question is determined by the job scheduler by counting backwards from the current time (meaning the base job's start time). If 00:00:00 is entered for a latency period, the job scheduler interprets this to mean the last time the pre-run job completed/abended/started, etc without regard to any specific time period.

Retry Count is used only in conjunction with 'Run concurrently' events. When specified, the retry count will be used as a count of 5 minute intervals during which the job scheduler will attempt to satisfy a 'may not run concurrently' event. For example, suppose job 'TEST1' has a 'may not run concurrently' pre-run requirement that specifies job 'TEST2' as its pre-run job name. Now, if TEST1 were scheduled to start and at the appointed start time job TEST2 is running, the job scheduler will retry starting TEST1 every 5 minutes until the retry count has been exhausted. Leaving the retry count field blank, or entering zero, will cause the pre-run requirement to fail in such a case.

Once settings for the pre-run requirement are complete, the Save button may be clicked. When clicked, the pre-run requirement is edited and then displayed as an easy-to-read sentence as shown in the above figure.

A maximum of 100 pre-run requirements may be defined for any given job. If for any reason a pre-run requirement fails, the job will not actually be executed, however a job log will be created and the job will be marked as 'completed'.

Note that by using the email features (see the Miscellaneous tab) it is possible to have Eden Server automatically notify a list of recipients in the event of a pre-run failure.

Post-Run Dependencies

Post-Run dependencies provide a method of triggering the execution of other jobs when the current job completes.

Using the Post-run selection list, and the New, Change and Remove buttons, the list of specific requirements may be maintained as needed.

To add a new item, simply click the New button, which is enabled at all times unless a change or add of a post-run item is already in progress (as is shown in the above figure). Up to 100 post-run dependencies may be added to a job.

To change an existing item, or to remove one, simply highlight the item with the mouse pointer and click the appropriate button.

After using either the New or the Change button, the entry items in the Post-Run requirements area are enabled and may be set to their required values. The items that define a post-run requirement, and their meanings and uses are as follows:

Max RC defines the post-run job's maximum/final return code and the type of comparison to that return code that the job scheduler should perform. When entering a Max RC value, the format of the entry should be: CC nnnnnn where CC is a comparison code and nnnnnn is the return code value to compare against. The possible values for CC are:

EQ, meaning 'equal'

GT, meaning 'Greater Than'

LT, meaning 'Less Than'

GE, meaning 'Great Than or Equal' (note: a Max RC setting of EQ 000000 effectively means any/all return codes, as a job will always have an RC value of at least zero).

LE, meaning 'Less Than or Equal'

NE, meaning 'Not Equal'

Job Name defines the name of the job which will is to be (conditionally) started upon completion of the current job. The Job name drop down list will include all jobs for the same region as the job being defined that the user also has security access to.

The **As new job** radio button specifies that the job to be run should be started as a normal job; that is, that it should acquire it's own PID and execute separately from the current job.

The **As async PID** radio button specifies that the job to be run should be loaded and executed within the context of the current job, however it should be run in an async PID. Async PID's are described in detail in the programmers reference – see the JCL section referencing the ASYNC command. Briefly, however, an Async PID may be thought of in the same manner as a CALL statement in a .bat file, except that control returns to the .bat issuing the CALL prior to completion of the .bat being CALL'ed.

Use of the Async option here is recommended for situations where multiple post-run jobs must be run and all such post run jobs may run concurrently. For example, consider the situation where multiple data files must be restored if a job ends with an RC indicating failure. By running multiple file restore jobs concurrently, the overall duration of the restore process can be significantly reduced.

Once settings for the post-run requirement are complete, the Save button may be clicked. When clicked, the post-run requirement is edited and then displayed as an easy-to-read

sentence as shown in the above figure.

A maximum of 100 post-run requirements may be defined for any given job. If for any reason a post-run requirement is unable to be started it is possible to have Eden Server automatically notify a list of recipients of the failed post run event. See the Miscellaneous tab for information on specifying email notifications.

Dependency Date Filters

In addition to the base capabilities pre and post run dependency provide, each of these types of dependencies may include Date Filters. Through the use of date filters a single job may be set up in such a way as to support complex scheduling requirements.

For example, suppose that a nightly run consists of a series of jobs that always starts off by running a system backup, however, the jobs executed after the backup vary depending upon the date or day of the week. A good example is 'month end' type processing, where the nightly schedule includes all those jobs that typically run every day, but on the last day of the month an additional series of job must be run. Eden Server supports this type of complex scheduling through the use of Date Filters applied to the pre- and post-run dependencies for the jobs in question.

Typically a dependency, either pre or post, is processed by the scheduler based solely on the settings of the dependency itself, for example job 'a' is run when job 'a' completes with a return code of 4 or less. Including a date filter for a dependency allows Eden Server to process or ignore a given dependency based on the date filter in comparison to the current run date.

When date filters are present for a dependency, Eden first analyzes the date filters and then determines if the current run date matches the filter. If the run date matches the filter, then the dependency is processed. If the run date does not match the filter then the dependency is ignored and Eden Server continues processing as though the dependency were not present.

The items that may be configured for a date filter are shown in the figure below.

The screenshot shows a dialog box titled "Dependency date filters". It is organized into four main sections:

- Months:** A grid of checkboxes for each month from Jan to Dec. The "Jan" checkbox is selected.
- Days and Weeks:** A grid of checkboxes for days of the week (Mon, Tue, Wed, Thu, Fri, Sat, Sun) and radio buttons for "1st Full", "1st Day", "1st Week", "2nd Week", "3rd Week", "4th Week", and "Last Week".
- Date:** A "Day of Month" text box, a "Skip Holidays" checkbox, and a "Filter type" dropdown menu currently set to "Matched".
- Buttons:** "Reset", "Ok", and "Cancel" buttons at the bottom.

The date filters dialog, shown above, is divided into four areas: The Filter Type, Months, Days and Weeks and Date areas. By combining various entries in these areas, complex filters may be built that may be used to describe nearly any type of scheduling requirements.

The controls displayed in each of these areas, and their uses are as follows:

The **Filter Type** drop down list describes what sort of comparison Eden Server should make when comparing the current run date to the date filter. The two possible choices are 'Matched' and 'Not Matched'. A setting of 'Matched' indicates that date filtering will 'pass' when the current run date matches the filter, thus causing the dependency to be processed. A setting of 'Not Matched' indicates that the date filtering will only 'pass' when the current run date does *not* match the date filter. Therefore, use of the Matched / Not Matched setting can be used to create two filters that will cause one of two outcomes. For example, creating a post-run dependency to run job 'a' on the last day of the month and run job 'b' on all other days of the month requires two 'last day of the month' filters – the first dependency is for job 'a' and should be 'Matched', the second dependency is for job 'b' and should be 'Not Matched'.

The **Months** area allows individual months to be selected as part of the filter. If a month is selected, the filter will apply only to that month. Note that multiple months may be selected. Also note that selecting all 12 months is the same as selecting no months. This is due to the fact that leaving all months un-selected causes Eden Server to disregard what month it is, which is the same as selecting all 12 months.

The **Days and Weeks** area allows individual days of the week and, optionally, a week of the month to be included as part of the filter. Selecting a specific day, or days, the filter can be made to apply only to those days of the week. For example, if a post-run dependency should only be processed on week days, selecting the 'Mon' through the 'Fri' check boxes will cause the dependency to be processed on Monday through Friday only.

Adding to the Days options are the Weeks options. If a dependency is only to be processed on a particular day of the week, during a particular week of the month, the week of the month check box for that week (or weeks) may be selected. Note that selecting a Weeks option is only allowed if a Days option is also selected. Also, note that when selecting a weeks option, selection of a 'weeks method' is also required. Eden Server allows for two methods when determining what 'week of the month' a date falls in. The first method is '1st Full' which causes Eden to consider the first week of the month to be the first full week. In this case, Eden counts weeks starting on Monday's. Therefore, the first week of the month starts on the first Monday of the month. The second method is the '1st day' method which allows Eden to start counting weeks on the first day of the month. In this case, if the first of the month were a Tuesday, selecting the first Monday during the 1st week would result in selecting Monday the 7th.

The **Day of Month** field allows for the entry of a specific date during the month, for example the 1st or 15th of the month. Additionally, the figurative constant 'LAST' may also be entered here to indicate the last day of the month. Note that use of the Day of the Month option may not be combined when using a Day of the week option. Use of the Day of Month option may, though, be combined with the Months options. For example, to create a dependency that is effective only on the last day of each quarter, select the 4 months during which the quarters end and also enter LAST in the Day of Month.

The **Skip Holidays** option works in conjunction with the Eden Server holiday schedule which allows for the definition of business holiday dates to be defined. By selecting the Skip Holidays check box, filters may be made to be 'holiday sensitive'.

The **Reset** button causes all items in the date filter to be reset to 'off', effectively removing the date filter from the dependency. To remove a date filter from a dependency use this button, then **Ok**, then save the dependency.

The **Ok** button causes the date filter to be edited for validity, and if no errors are found, the filter dialog is removed allowing further edits to the dependency. Note, the Ok button does not save the date filter, the Save button in the pre or post dependency area must still be used to save the date filters to the dependency in question.

The **Cancel** button removes the filter dialog display and causes any changes made to the filter to be ignored.

Miscellaneous Tab

The Miscellaneous tab allows for the specification of email addresses that should be notified in the event of certain error conditions that may arise during processing of the job.

The entry items on this tab are as follows:

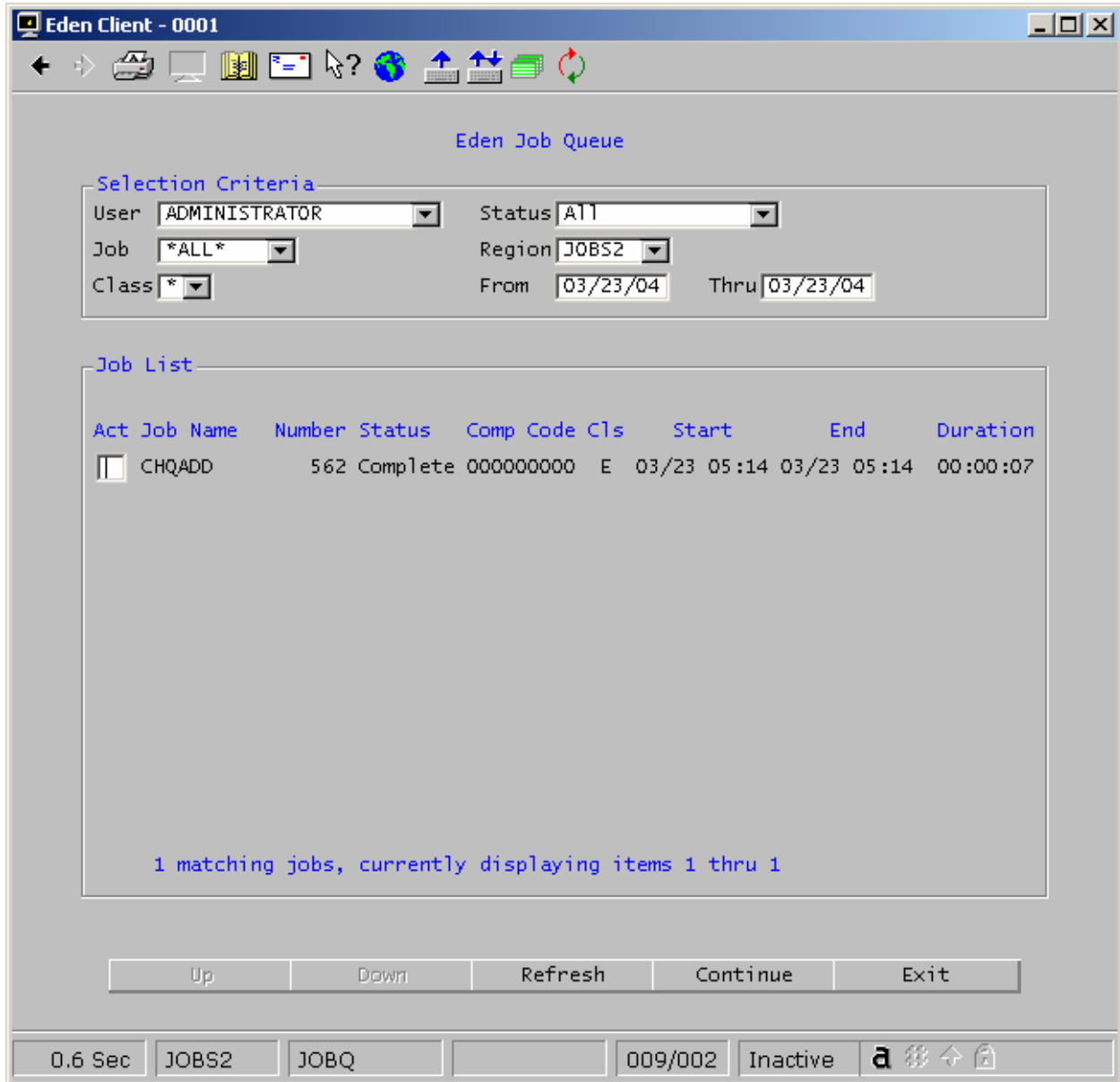
The **Pre-Run Failure** email address list allows for the entry of multiple email addresses. In the event of a pre-run failure of any sort, Eden Server will send an email notification detailing the failure and the exact reason for it to each recipient listed here. Note that when entering multiple recipients their email addresses must be separated by either a space or a comma.

The **Job Abend** email address list allows for the entry of multiple email addresses. In the event this job abends due to either a JCL error or other internal processing error, Eden Server will send an email notification detailing the abend and the exact reason for it to each recipient listed here. Note that when entering multiple recipients their email addresses must be separated by either a space or a comma.

The **Post-run failure** email address list allows for the entry of multiple email addresses. In the event any of this jobs post-run requirements are unable to be started, Eden Server will send an email notification detailing the failure and the exact reason for it to each recipient listed here. Note that when entering multiple recipients their email addresses must be separated by either a space or a comma. Also, note that a 'post-run failure' does not include post-run requirements that are ignored due to their return code checking indicating they are not needed. Instead, a post-run failure is only indicated by an internal processing error, such as the post-run job's JCL member being not-found or some other similar type of error.

The Eden Job Queue

The Eden Job Queue serves as the repository for all jobs run by Eden Server. From the Eden Job Queue display, shown in the image below, users can fully manage their own jobs. Access to jobs owned by other users is only granted if sufficient login privileges are in force.



Sample Job Queue display

The Job Queue initially displays all entries in the job queue that belong to you and are associated with the current region you are logged in to. Through the use of the filters provided you may however view additional Job Queue entries. The filters provided, and their uses are as follows:

The **User** field initially displays your user name (which will always be your Windows Login name). The User field drop down list also contains the constant value “*ALL*”, which may be selected.

The **Status** filter drop down list contains the possible status descriptions for a job. Selection of an entry other than 'All' will cause the resulting display to list only jobs flagged with the specific status value chosen.

The **Job** filter drop down list contains all job names for which your login privileges grant you access to. The list also contains the constant '*ALL*', which will cause the resulting list to include all jobs for which you have security authorization.

The **Region** filter drop down list contains the list of Eden regions for which you have at least some level of security authorization. Note the region filter also includes the '*ALL*' choice which causes region filtering to be ignored.

The **Class** filter drop down list includes all class values for which you have at least some level of Job Queue security authorization. The asterisk ('*') value may be used to cause all job queue entries for which you have class based authorization to be included in the displayed list of job queue entries.

The **From Date** and **Thru Date** filters may be used to limit the list of displayed jobs to include only those jobs whose start date fall within the from/thru range. Initially, the from and thru dates contain the current date, however these dates may be altered to include any valid date range.

After changing any of the Selection criteria filters, the Refresh button should be used to cause the displayed list to be rebuilt and displayed.

If matching jobs are found in the Eden Job Queue, each such matching job will be listed in the Job List area of the screen. The job list area will display up to 10 jobs at a time, and if more than 10 jobs are present in the overall list to be displayed the Up and Down buttons are enabled and may be used to scroll the list up and down one screen at a time.

For each job listed, entries in the 'Act' column allow individual jobs to be processed as follows:

C	Sends a cancel request to Eden Server if the job in question is currently marked as Running.
D	Deletes the Job Queue entry and associated job log files. Note that report files produced by the job, if any, will still remain in the Eden Print Queue.
L	Displays, in the standard JOBS report view window, the JCL logs produced by Eden Server during execution of the job. Note, JCL logs are not created until at least the job is marked 'Running'.
R	Displays the Eden Print Queue window including only those report(s) produced by this job.
S	Displays the Job Submission notebook which will be formatted to show all the current job properties, allowing changes to made to any of the properties that are normally enter-able during the job submission process.
E	Displays the Job Completion dialog which allows a new job completion code to be set.
T	Displays the Job Restart dialog which allows the job to be restarted.
J	Displays the JCL Editor, which allows changes to JCL to be made and saved.

To process an action code against a job entry, simply type the action code and click the Continue button or hit the Enter key. Once processed, the action code field is reset. If an action code cannot be processed, for example you cannot delete another users jobs, an error message will be displayed and the color of the job and requested action code will be changed

allowing you to easily relate the displayed message to the particular job that encountered the error.

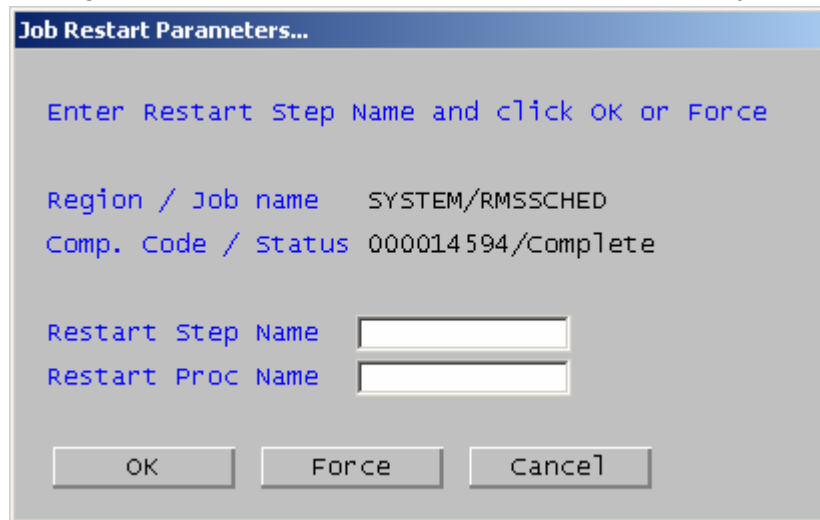
The buttons displayed at the bottom of the Job Queue screen provide the following functions:

Button	Purpose
Up	Scrolls the displayed list of Job Queue entries up one screen towards the first entry in the list.
Down	Scrolls the displayed list of Job Queue entries down one screen towards the last entry in the list.
Refresh	Causes the displayed list of jobs to be updated with the most current information from Eden Server.
Continue	Processes action codes entered in the 'Act' column.
Exit	Ends your session with the Eden Job Queue.

You may find it helpful to allow your Job entries to remain in the queue for some time; however, after an extended period of time you should 'clean up' the queue by deleting very old jobs. The JOBS system administrator may also configure Eden Server to automatically delete jobs after a maximum number of days in the queue.

Job Restart Dialog

The Job Restart Dialog, shown below, allows authorized users to restart jobs.



The dialog box is titled "Job Restart Parameters...". It contains the following text and fields:

- Enter Restart Step Name and click OK or Force
- Region / Job name SYSTEM/RMSSCHED
- Comp. Code / Status 000014594/Complete
- Restart Step Name
- Restart Proc Name
- Buttons: OK, Force, Cancel

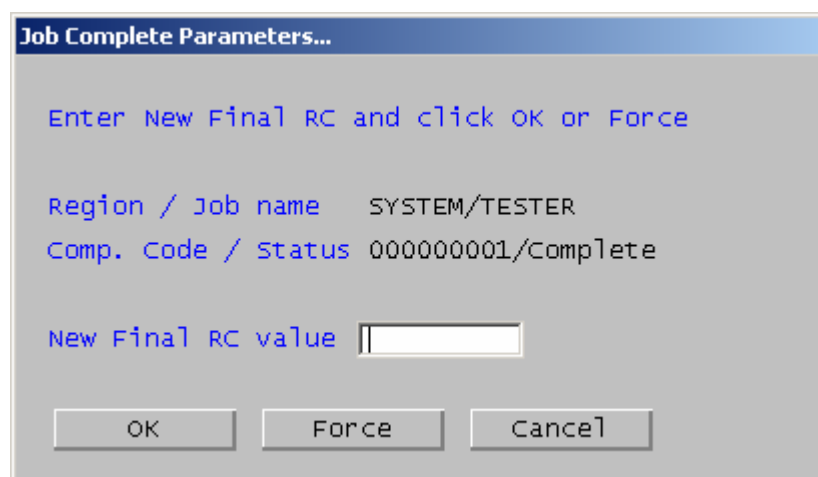
Accessing the Restart Dialog is done by using the 'E' function code on the Job Queue list screen. The only required input item for this dialog is the step name at which to restart. The name specified must exist in the job's JCL and should be entered in the 'Restart Step Name' field. The 'Restart Proc Name' field is intended for use only for those jobs/JCL members that use in-line PROC's. Use of the Restart proc Name field is required when the step being restarted is within a called procedure within the actual job.

If the job in question did not previously complete normally (as indicated by the displayed data in the 'Comp Code / Status' area) the Force button should be used. Use of the OK button for such a job will not cause Restart processing to occur.

Note that if the job being restarted is a scheduler script, neither the Restart Step nor the Restart Proc Name fields will be accessible. This is due to script's requirements of only being able to be restarted on a full job boundary. If the already executed jobs within the script are not currently all set to 'Complete', the restart will not be allowed. Refer to the Programmers Reference for information on restarting scripts.

Job Complete Dialog

The Job Complete Dialog, shown below, allows authorized users to reset the final completion code of a job, thereby allowing pre-defined post-run dependencies to be processed.



The dialog box is titled "Job Complete Parameters...". It contains the following text and fields:

- Enter New Final RC and click OK or Force
- Region / Job name SYSTEM/TESTER
- Comp. Code / Status 000000001/Complete
- New Final RC value
- Buttons: OK, Force, Cancel

Accessing the Job Completion dialog is done by using the 'T' function code on the Job Queue list screen. The only input item for this dialog is the step name at which to restart. The name specified must exist in the job's JCL.

If the job in question did not previously complete normally (as indicated by the displayed data in the 'Comp Code / Status' area) the Force button should be used. Use of the OK button for such a job will not cause a completion code reset to occur.

JCL Editor

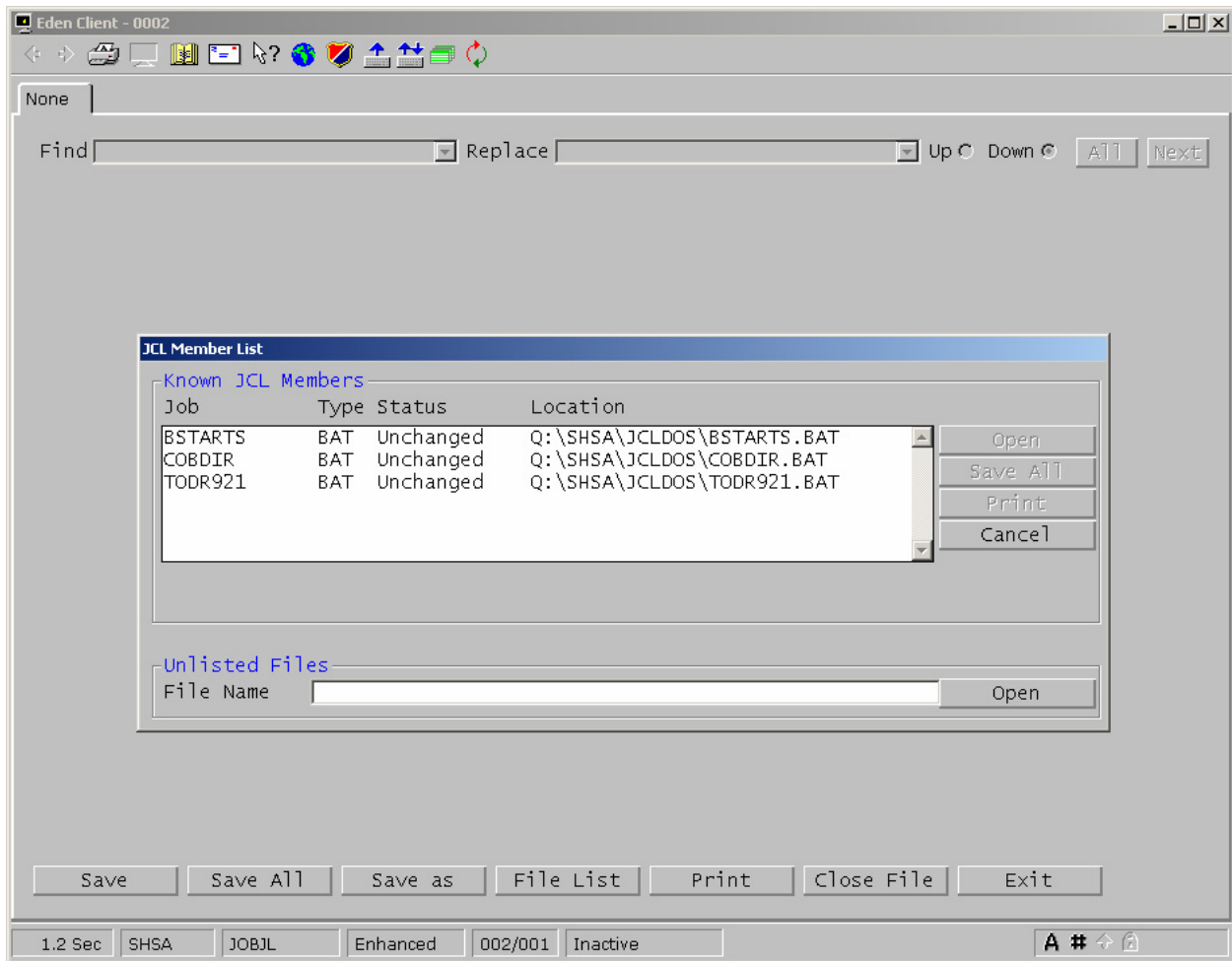
The Eden JOBS system includes a built in JCL Editor which provides additional security, operational control and usability improvements over simply using a basic text editor such as Notepad.

The primary benefits of using the JCL Editor are:

- Quickly navigate to any JCL member accessed by a job, including called procedures and SYSIN members.
- Forces saving of changed files to Eden Server's temporary JCL folder, thereby providing tighter control over your JCL inventory.
- Allows up to 10 files to be edited concurrently using a tabbed display.
- Easy to use find and replace features.
- Allows off-hours operations staff access to JCL for the purposes of correcting abends, without requiring staff members Windows privileges to server directories.

Note, in order to use the JCL editor a job must already be submitted and in the Eden Server Job Queue. If present in the Job Queue, the job may be edited so long as the job is not currently running. To begin the JCL Editor, locate the desired job in the Job Queue (see the beginning of this section) and use action code 'J'.

When first started, the JCL editor will parse through the main JCL member associated with the job being edited, and locate all subsidiary JCL members that may be invoked during the job. The JCL Member List, as shown below, is then displayed.



Before discussing the particular features of the JCL Editor, it is important to be aware of the two different types of files that can be edited.

As already mentioned, the JCL Editor reads and interprets the JCL assigned to a particular job, the results of this processing is the list of files in the 'Known JCL Members' list, as shown above. Note that these files may be located on network drives for which the currently logged on Windows user has no read or write access to. Therefore, accessing any of the files listed here is handled by Eden Server. Because the files listed here, regardless of any Windows privileges, are considered to be 'production' files, the JCL editor will only allow any changes to be saved to the Eden Server temporary JCL directory, which is the \TEMPJCL\ sub-directory located under your Eden Server install directory or to a local directory on the client workstation. It should also be noted, that the 'Location' information provided is relative to the Eden Server machine. That is, in the above display, the "Q:\SHSA\JCLDOS" directory is an Eden Server view of a network share, which may be completely different from any network shares defined on the client workstation. To avoid any confusion with this, it is always advisable to define a region's JCL location (via EManager) as a UNC name instead of a discreet drive letter.

Also, in addition to these 'known' files, the JCL Editor also allows any file in the network, for which the current user account has valid access to, to be opened, edited and saved. Access Control for these files is handled by Windows and the privileges assigned to the current user.

In all cases, the user may always save copies of any file they opened; on any disk their Windows user account has write privileges.

To edit a file in the known list, simply highlight the file and then click the Open Button.

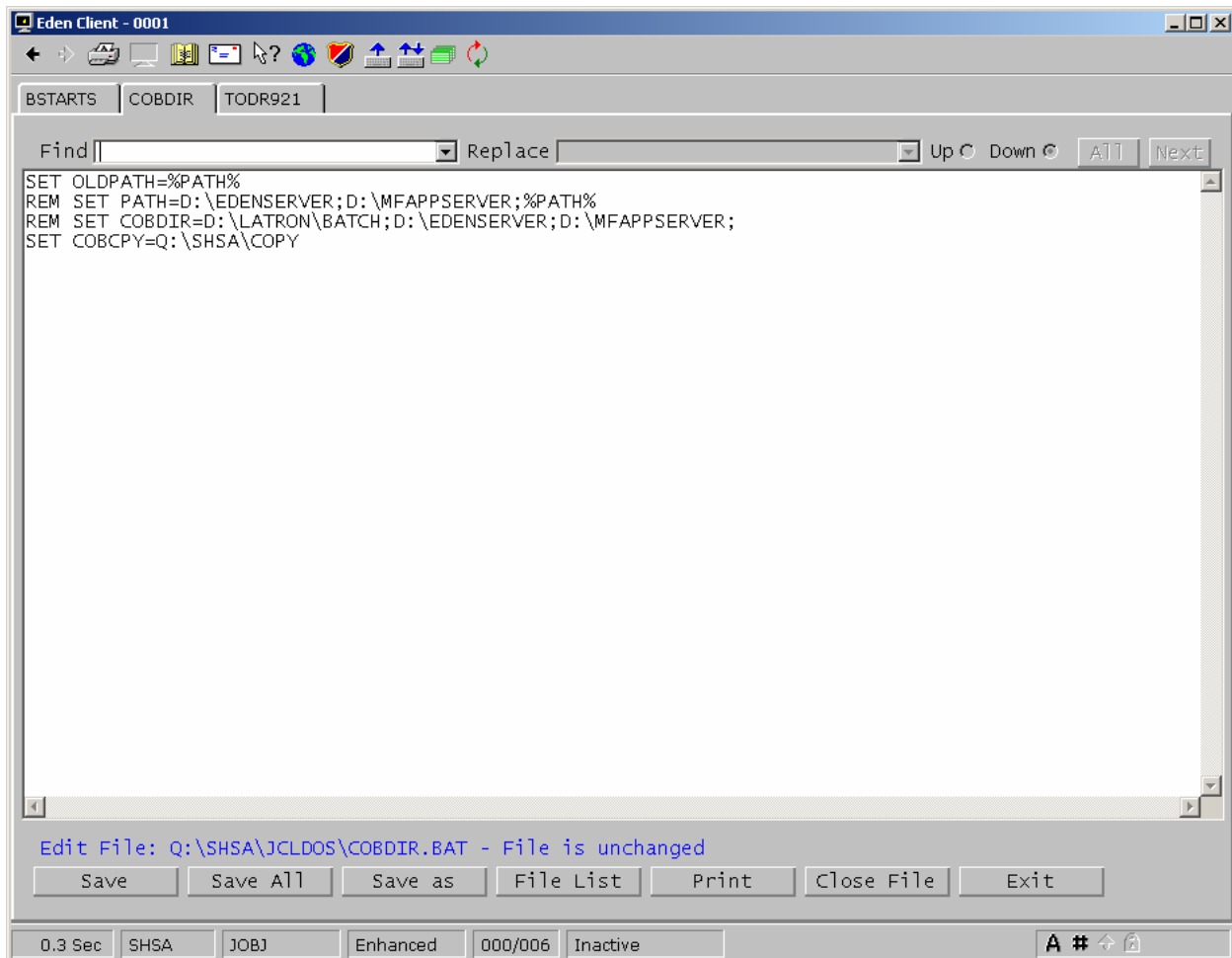
To edit any unlisted file, type the fully qualified file name in the Unlisted Files field and click it's associated Open button. If you are unsure of the exact file name or location, leave the file name field blank and click the Open button; this will display a standard File Open Dialog that will allow any accessible file to be located and opened.

Note that if an 'unlisted' file is opened, it's name will appear in the 'Known JCL Member' list, however, the JCL Editor remains aware of how the file was opened. This is important to be aware of, as the 'Save' function in the JCL Editor functions differently based on how the file in question was opened:

Any file that was included in the original 'Known JCL Members' list may only be saved to the servers temporary JCL directory (by using the Save or Save All button), or to another network share or local drive (by using the Save As button).

Any file that was opened by using the 'Unlisted Files' Open button will either be saved back to it's original location (by using the Save or Save All button), or to another network share or local drive (by using the Save As button).

Once opened, a file will be displayed in an edit window. Note that the overall client display is tabbed, and will allow up to 10 files to be opened concurrently.



To switch from one file to another, simply click the corresponding tab.

The Find and Replace functions are provided through the controls directly above the edit area. Note that until something is entered in the 'Find' field, the 'Replace' and other controls will remain disabled. Note also, that both the find and replace fields are multi-function combo boxes. This means that you may type any characters you want, or you can select a previously entered item from the drop-down list. Each field, Find and Replace, will remember the 10 most recently entered strings.

To simply find text, enter the case-sensitive string in the Find field and then either click the 'All' or 'Next' button at the right hand side of the window. To Find text in a particular direction from the current location, choose either the 'Up' or 'Down' radio buttons and click the Next button. Note that using the 'All' button will cause the Up and Down buttons to be ignored. Use of All will cause the current position in the file to be reset to the first character prior to any search taking place. Using All will also cause the message area to indicate how many, if any, occurrences of the string were found.

To replace text, enter the current string, as it exists in the file, in the Find box, and the replacement string in the Replace box. Note that if a value is present in the Replace box, the 'All' and 'Next' buttons will cause replacements to be made ! To ensure undesired replacements are not made, always be sure to check the Replace field before clicking All or Next. When doing a Replace, and clicking the All button, the JCL Editor will scan the text to determine the number of replacement about to be made. The JCL Editor will then display the count and request the All or Next button be used to begin the actual changes. If the All button is used, all possible replacements will be made. If the Next button is used, the JCL editor will cycle through alternately finding and replacing occurrences of the desired text until all possible replacements have been made. Note, as with simple text 'Finding', the Up and Down buttons are taken into consideration when using the Next button during a replace.

In addition to the Find and replace functions, the JCL Editor also provides additional functions and features through the push buttons at the bottom of the window. These buttons, and the functions are as follows:

The **Save** button causes the file on the current tab to be saved. The actual location to which the file is saved is dependent upon how the file was opened:

- Any file that was included in the original 'Known JCL Members' list may only be saved to the servers temporary JCL directory, or to another network share or local drive (by using the Save As button).
- Any file that was opened by using the 'Unlisted Files' Open button will either be saved back to it's original location, or to another network share or local drive (by using the Save As button).

The **Save All** button is the equivalent of using the Save button on each open file. The same type of 'save-to' location processing as is performed with the Save button is also performed with the Save All button.

The **Save As** button causes a standard 'save as' dialog box to be displayed, allowing the current file to be saved to any valid location. Note, the JCL Editor uses standard Windows network privileges to determine valid 'save to' locations.

The **File List** button causes the originally displayed list of files to be re-displayed. Note that

when re-displaying the File List dialog, the status of all files (changed, unchanged, saved, etc.) will be updated, and any un-listed files that have recently been opened will now be displayed in the list area.

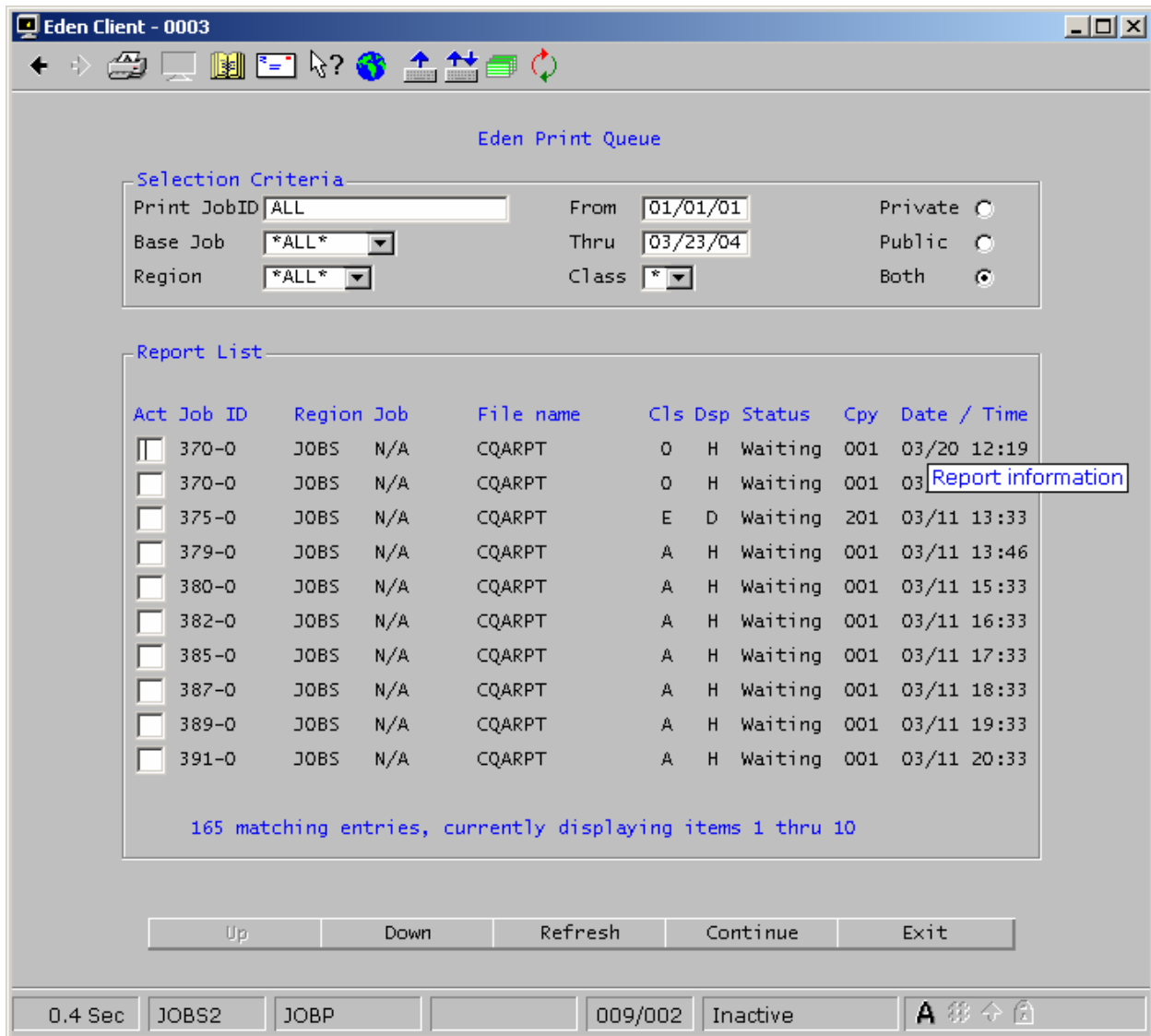
The **Print** button displays a standard Printer Selection dialog, allowing the file to be printed on any workstation accessible printer.

The **Close File** button will close the current file, and will prompt for saving if the file has been changed and not yet saved.

The **Exit** button closes the JCL Editor and returns Eden Client to the Job Queue Display.

The Eden Print Queue

Output produced by batch jobs is stored in the Eden Print Queue. The print queue listing screen as shown in the sample image below, allows you to print, view, change and delete entries that your login privileges allow you to access.



Sample Print Queue image

The Eden Print Queue screen is divided into two main areas, the top portion being the Selection Criteria and the lower portion of the screen being the Report List.

The Selection Criteria entry items, and their values are as follows:

The Print **JobID** filter allows for the specification of a specific report's JobID. Note the value of 'ALL' may be entered or the JobID field may also be left blank to cause the displayed list to include queue entries regardless of their associated JobID. If, though, a specific print JobID is entered, the remaining filter values are ignored and only the requested JobID is displayed.

The **Base Job** filter drop down list includes all jobs that your current login privileges will allow

you access. By selecting a specific job name, the resulting list of print queue entries will include only those entries produced by the specific job selected here. Note that the contents of the list is based upon the value selected in the Region filter. If the Region filter is set to the “*ALL*” value, all job names from all regions for which you have at least some security authorization will be included.

The **Region** filter drop down list includes the names of all regions for which you have at least some login privileges. Note that changing the value in the region filter will automatically cause the contents of the Job filter to be rebuilt. Selecting a specific region name causes the displayed list to include only jobs which are defined for the specific region.

The **From** and **Thru** date filters may be changed from their default values of today, so that reports produced on different dates will be listed. Both the from and thru date filters are compared against the date each print queue entry was originally produced. Note that future dates are not supported for either the from or thru dates.

The **Class** filter drop down list includes the class values for which your current sign-on privileges allow you access to. Selecting a specific class value causes only reports with matching class values to be included the displayed list. Selecting the asterisk (‘*’) value in the class list will cause all print queue entries for which you have class based authorization to be included in the displayed list.

The **Private**, **Public** and **Both** radio buttons may be used to select which type of reports to be listed, i.e., reports saved in your private area, reports saved in the general public area or both public and private reports.

If changes are made to any of the selection criteria entry items, the Refresh button displayed at the bottom of the screen should be clicked in order to rebuild the displayed list.

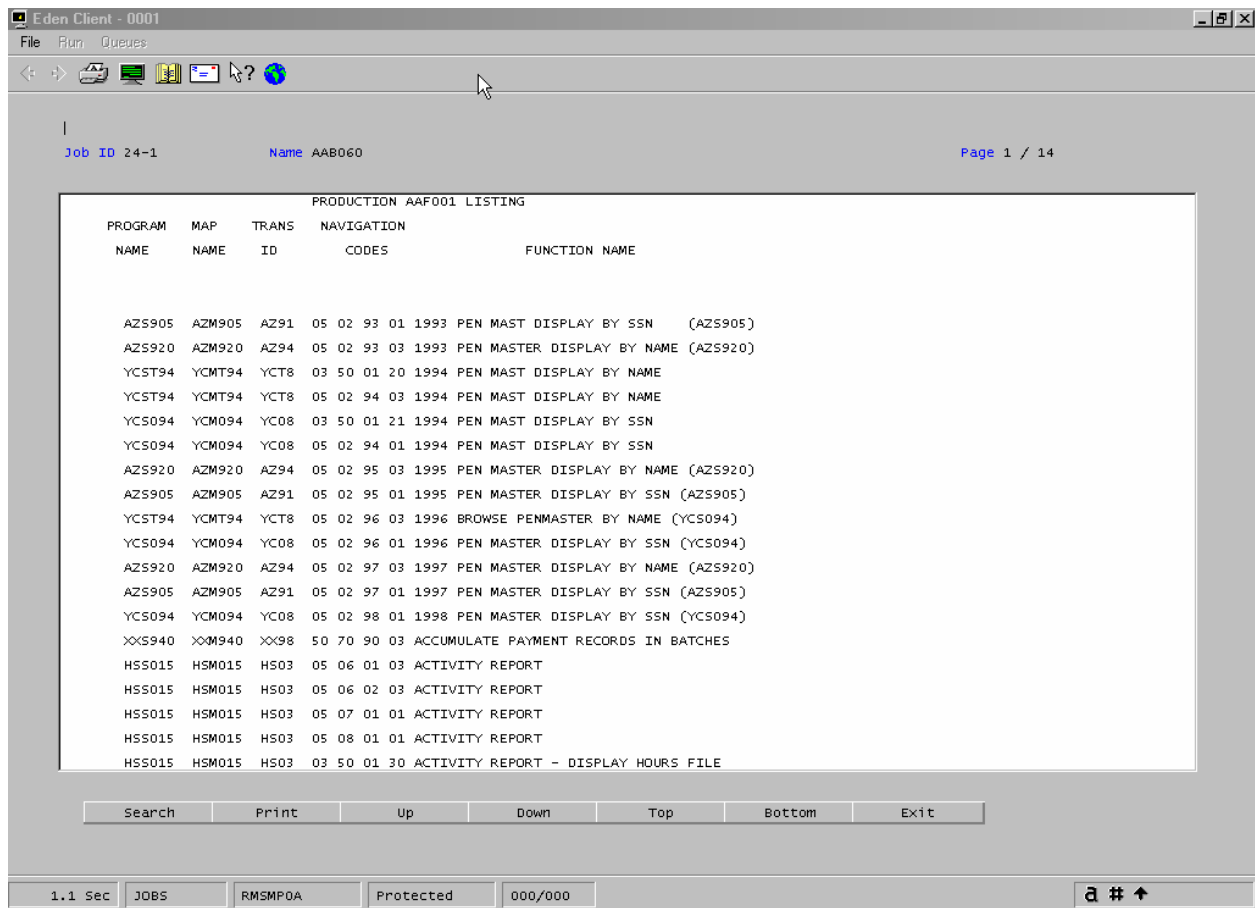
Once a list is displayed, the bottom line in the Report List area will display the total number of reports and a ‘currently displaying x of y message indicating where the displayed list is currently positioned.

The displayed list also allows for the entry of several action code values which may be used as follows:

Action Code	Description
D	Deletes the print queue entry, providing your login privileges grant you ‘control’ type access to the class the particular report is saved under.
P	Sends a print request to the Spool Manager residing Eden Server. The Spool manager will print the queue entry on the first available printer defined to Eden Server. Note this method of printing is desirable for large print jobs that may otherwise tie up the client workstation.
C	Displays the Change settings dialog box where the Class, Disposition and number of copies may be changed. Note that your login privileges must grant you Control type access to the class for which the particular entry is saved under.
I	Displays the additional Information dialog which shows the Owners user name (i.e., Windows Login name) and the print queue entry size in bytes.
V	Shows the contents of the print queue entry in the Report Display Window. The report display window allows the report to be viewed, searched for particular strings and printed in part or total on any available network or locally attached printer.

Report Viewing Screen

The JOBS Report Viewing screen, shown in the figure below, is a text based display screen that allows you to browse through a report, search for particular items in the report and print all or a portion of the report.

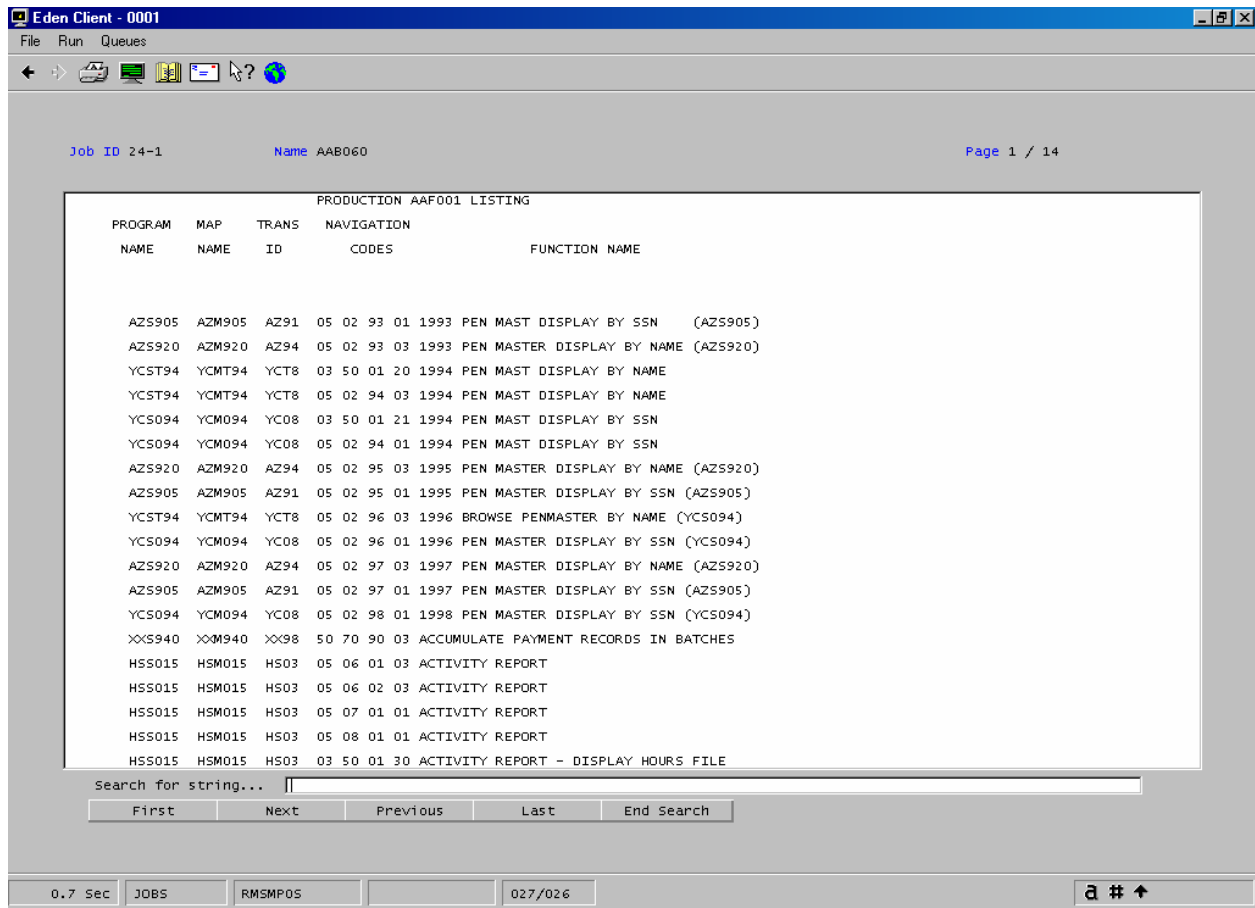


Report Viewing Screen

Note the image above is compressed as this screen allows for reports of up to 132 character wide. A screen resolution of at least 1024 x 768 is recommended when using this screen.

While displaying reports, the buttons displayed at the bottom of the screen allow you to enter search mode, to print all or part of the report or simply to browse through the report.

Button	Description
Search	Changes the display window to include the Search field and buttons. See figure 8 below for information on Searching.
Print	Displays the Print setup dialog, where the printer, page appearance and print range may be specified.
Up	Scrolls the displayed report up one screen towards the top of the report.
Down	Scrolls the displayed report down one screen towards the end of the report.
Top	Sets the display to the beginning of the first page of the report.
Bottom	Sets the display to the beginning of the last page of the report.
Exit	Returns the display window to the previous screen.



Report Search

Displayed reports may be searched for strings by first clicking the 'Search' button. Once clicked, the display window changes to include the 'Search For' field as well as replacing existing buttons with the search buttons.

To begin a search, type the string to find in the space provided and click the appropriate button. The buttons available for searching are:

Button	Description
First	Positions the screen to the first occurrence of the entered string within the report.
Next	Positions the screen to the next occurrence of the entered string.
Previous	Positions the screen to the previous occurrence of the entered string.
Last	Positions the screen to the last occurrence of the entered string.
End Search	Returns the display to normal view mode.