

```
... object to mirror
mirror_mod.mirror_object =
operation == "MIRROR_X":
mirror_mod.use_x = True
mirror_mod.use_y = False
mirror_mod.use_z = False
operation == "MIRROR_Y":
mirror_mod.use_x = False
mirror_mod.use_y = True
mirror_mod.use_z = False
operation == "MIRROR_Z":
mirror_mod.use_x = False
mirror_mod.use_y = False
mirror_mod.use_z = True

#selection at the end -add
mirror_ob.select= 1
modifier_ob.select=1
context.scene.objects.active
("Selected" + str(modifier_ob.name))
mirror_ob.select = 0
= bpy.context.selected_object
data.objects[one.name].select

print("please select exactly

--- OPERATOR CLASSES ---

...types.Operator):
on X mirror to the selected
object.mirror_mirror_x"
mirror X"

...context):
context.active_object is not
```

WHITE PAPER • MARCH 2018



Improving Banner® ROI

Through job stream automation.

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Executive Summary

Ellucian's Banner® is the only fully integrated, Oracle-based, Internet-native technology solution available today for the higher education community. Banner is the market-leading suite of software applications for student information, advancement, human resources, financial aid, faculty and advisors, finance and more. However, you can significantly improve your ROI for Banner by automating batch processing and report generation, eliminating server overload and improving output distribution.

CA is a leading provider of enterprise scheduling products that have automated business applications, improved efficiency and significantly reduced IT expenses for a vast array of companies and educational institutions worldwide. CA Automic Workload Automation can be integrated with Banner to automate business processes, prevent server overload and improve report generation and distribution.

This white paper examines the enhancements CA Automic Workload Automation brings to Banner and explains why CA Automic for Banner is the best solution for providing these enhancements.

If you have not yet purchased Banner or are just starting a Banner implementation, we discuss at the end of this paper the benefits of early adoption of CA Automic Workload Automation.

SECTION 1

Ellucian's Banner: Opportunities for Enhancement

When you purchased Banner, your goal most likely was to automate recurring business processes such as administration and record-keeping while complying with state and federal reporting requirements. You probably purchased one or more of the following Banner solutions:

- Banner Advancement
- Banner Finance
- Banner Financial Aid
- Banner General
- Banner Human Resources
- Banner Student

The level of automation provided by these solutions justified the cost and was a great improvement over the manual procedures they replaced. However, if your experience is like that of many other educational institutions that have implemented Banner, you quickly became aware of the areas that could be enhanced: batch processing, report generation, load-leveling on servers and output distribution.

Most batch processing and report generation in Banner requires you to manually run a series of jobs in the correct order, with the correct parameters. The parameters must be entered manually, a process that is always subject to error. The series of jobs required to run a batch process or report can be lengthy, with the user having to wait for one job to complete before running the next job in the sequence. The entire series of jobs can take a long time—sometimes hours—to complete. Errors are often not detected until the final report is produced, requiring a time-consuming rerun of the entire process.

Banner does not include a scheduler. Typically, each department in a college or university submits its own Banner jobs. Departments can choose to run the jobs at the same time, potentially overloading the servers. There is no way to centrally control the submission of jobs unless all jobs are run by the IT staff. The additional IT staffing required to run the jobs centrally is often too costly for academic institutions.

Banner produces valuable reports but has limited report distribution capabilities. While it does offer online viewing, Banner requires reports to be stored in a database table to be viewed. This is an expensive solution in terms of database resources. Other alternatives include transferring the report file to a desktop, then viewing and printing it from the desktop, or printing the output to a UNIX® printer and physically distributing the report to the users.

The next three sections in this white paper discuss how CA Automatic for Banner can enhance each of the areas described above: batch processing automation, centralized scheduling and report distribution.

SECTION 2

CA Automatic for Banner: Automated Batch Processing and Report Generation

While Banner solutions pay for themselves many times over, the most effective way to boost your ROI for Banner is to automate batch processing and report generation. Institutions that have automated these functions with CA Automatic for Banner have benefited in the following ways:

- Government financial aid file processing.
- A community college in the Southeast estimated it could reduce processing time by over 80 percent. It was running six job streams that required 147 manual steps and at least 40 hours per week. After implementing Banner Automation from CA Technologies, it estimated the same processes would require

only 17 steps and a little over seven hours per week. Yearly savings were projected to be 1,700 hours a year.

- At a university in the East, a letter generation process that once took a dedicated user two to three hours each day to run was fully automated. Now data is automatically pulled from the database each night, and CA Automic for Banner generates the letters without human intervention.
- By using CA Automic for Banner to build and maintain job schedules, an IT department at a Midwestern university had more time to concentrate on critical IT requests rather than deal with Banner job submissions from end users.
- A California university eliminated recovery costs associated with corrupt data caused by incorrect parameters being entered into the Banner system. The savings in recovery costs were by themselves sufficient to recoup the cost of CA Automic for Banner.

CA Automic for Banner brings more efficient processing to the key Banner processes, including:

- Government financial aid file processing
- Transcript generation
- Letter generation
- Check processing
- Student billing

How CA Automic for Banner automates and streamlines each of these processes is described on the following pages.

Government Financial Aid File Processing

In the financial aid department, Banner users have to download government files that contain information about approved government student loans. After the download is completed successfully, the user has to manually run a number of Banner jobs to process the file. This is a frequent procedure, and one that is labor-intensive when done manually. Using CA Automic for Banner, the entire process can be automated.

CA Automic for Banner is particularly valuable when applied to the following financial aid areas that often require high levels of manual effort:

- Check processing
- Disbursements
- Award letter mailings
- Ineligible letter mailings
- Missing documentation letters
- Pending letters
- Originations
- Loans

Transcript Generation

In Banner, transcript generation is a lengthy, labor-intensive process. The user must search for transcript requests, generate the transcripts, and then repeat the search later in the day. CA Automic for Banner fully automates the process. It can be set to constantly monitor the database for transcript requests and generate them throughout the day, or to generate them in batches at set times of the day or night.

Letter Generation

In an academic institution, there are multiple types of letters that need to be generated.

CA Automatic for Banner can automate the entire process by monitoring the Banner database and automatically determining what letters need to be printed.

For example, in the registrar's office, CA Automatic for Banner can read Banner term codes and letter codes, then determine for each letter code which type of letter needs to be generated: acceptance, rejection or incomplete information. CA Automatic for Banner runs the appropriate letter generation reports and sends the output files to a PC for merging, or to a third-party printing product such as eVisions that can completely automate the printing of the letters on the school's letterhead.

Using CA Automatic for Banner, custom criteria can be applied to letter generation. For example, a large university in the Midwest wanted to delay processing student admission denial letters for up to seven days after the decision was made, to make sure that the student's non-refundable application fee check was cashed before that student received the denial letter in the mail. In the past, students had cancelled their checks after they found out they were denied admission. CA Automatic for Banner can automatically recalculate the letter generation process schedule to add seven days to the denial letter jobs, ensuring the university has time to cash the checks.

Alumni (also called "advancement" in Banner) letters communicate information about fundraisers, membership dues and other charitable-event donations. Alumni generate millions of dollars in revenue for universities. To maintain the flow of revenue, the letters must be accurate and sent out as scheduled. CA Automatic for Banner automates the process and ensures both accuracy and timeliness.

Check Processing

Printing checks needs to be secure, accurate and prompt. In Banner, there is a complex set of steps that must be completed before the checks get printed. The printing is usually done at a bank with the help of third-party software such as eVisions IntelliCheck. The pressure to get these steps completed accurately is very high.

With CA Automatic for Banner, all the Banner batch jobs are processed accurately, and the checks are printed on time with minimal end-user involvement. If there are any inconsistencies or job failures, CA Automatic for Banner immediately sends email notifications to the appropriate personnel.

Student Billing

Student billing is, at best, a very long procedure. If the school has a large number of students and limited server capacity, the processing time can become uncomfortably long. CA Automatic for Banner automates the process and protects against server overload.

The school can use CA Automatic for Banner to streamline and automate the process by building a process flow.

The process flow can process all student billing in one pass or be configured to process students in smaller groups. For example, the process flow could be set to run three times, once each for students with last names starting with A through H, I through R and S through Z. To avoid server overload, student billing can be scheduled to run at off-peak hours.

Improving Cross-Departmental Processing

In many cases, a Banner process includes steps that must be completed by more than one user in different departments. When one user completes a step in the process, they call over to the other departments to continue the process. This can result in delays between the steps. CA Automatic for Banner automates all processes in all departments, eliminating the delays and ensuring processes are completed as scheduled.

SECTION 3

CA Automic for Banner: Preventing Server Overload

Banner solutions and processing are usually spread across many departments in an academic institution—for example, financial aid, alumni and the registrar. Each department may be responsible for running its own jobs.

This can result in two problems: Departments may choose to run large reports at the same time (such as at the end of term), and they may end up running some of the same reports. The result can be overloaded servers.

CA Automic for Banner can prevent server overload using a combination of features:

- By serving as a central automation platform, CA Automic for Banner can promote coordination among the different departments. Personnel can review scheduling forecasts for the entire institution and pinpoint scheduling bottlenecks. They can also spot duplicate runs of the same reports.
- When scheduling bottlenecks cannot be avoided, CA Automic for Banner provides “queues” to control the number of jobs that can be submitted to a server at any given time. Limits can be set on the total number of jobs that can be processed on a server at any given time.
- Both jobs and queues can be assigned priorities so the most important jobs get processed first. Impromptu reports submitted by individuals can be delayed until all regularly scheduled reports are processed.
- Server overload is costly. With CA Automic for Banner, server overload can be eliminated from Banner systems.

CA Automic for Banner can provide automated report distribution: The information contained in reports is useful only when it gets into the hands of staff, faculty, decision makers and students. Speed up the distribution of information and the whole operation will become more efficient. Departments operating efficiently can mean faster collection of revenue and lower costs.

CA Automic for Banner provides several output distribution functions that give users fast access to reports:

- Immediately after reports are generated, users can view them online from their workstations using the CA Automic for Banner viewer or an application of their choosing, such as Microsoft Word or Excel. Reports do not need to be stored in the Banner database, as with the Banner online viewer.
- Users can print reports to a local printer directly from their workstations.

- Reports can be sent (usually via email) to any number of users.
- Reports can be sent to any number of print devices anywhere in the network.
- Reports can be sent automatically to the e-Print Reports utility.

With e-Print Reports, reports in PDF format are sent via the Internet to users connected to the server. Reports can be read within minutes after completion.

Report distribution is often an afterthought. With CA Automic for Banner, it becomes an integral part of the Banner solution.

How the CA Automic for Banner Integration Works

Each Banner job is represented by a job in CA Automic for Banner. The jobs are combined into process flows that model the Banner job streams. The process flows can be run by Banner users when needed, or they can be scheduled to run at specific times and on specific days.

CA Automic for Banner runs Banner jobs by submitting jobs directly into Banner. A special interface script passes the job parameters, runs the jobs, traps errors and captures output. CA Automic for Banner even works with Banner security by using Banner logins.

CA Automic for Banner automates much of the initial setup for Banner. For example, it imports all Banner jobs and printers and creates the corresponding objects in CA Automic for Banner. This can save hours of development time.

CA Automic for Banner: Benefits of Early Implementation

If you are considering purchasing Ellucian’s Banner or have just purchased it, you are aware that implementing Banner is a major undertaking. You can greatly reduce your implementation costs by using CA Automic for Banner from the beginning of the project.

It’s easy to think of CA Automic for Banner as just a job-scheduling tool that automates Banner processes. But CA Automic for Banner also is a powerful development tool that can be used to:

- Automate Banner processes without writing scripts
- Automate testing

- Document process flows and procedures
- Maintain a history and audit trail of production runs
- Automate migration from development to test to production environments
- Reduce training

In short, CA Automic for Banner becomes part of the infrastructure supporting Banner.

Go Scriptless

CA Automic for Banner greatly reduces, and many times eliminates, the need for developers to write shell, PERL or batch scripts to automate scheduling, enabling you to deliver Banner solutions more quickly.

CA Automic for Banner job and process flow building provides an online “point-and-click” interface to model the Banner processes and run the programs. We have taken existing schedules and reduced the original scripts by more than 80 percent.

In fact, this functionality can be extended to the whole development environment to reduce scripting in all projects, not just Banner. It now becomes possible to integrate Banner with other applications in your institution.

CA Automic for Banner manages the dependencies, thread logic, parameter passing and validation, and abort and restart logic, leaving the development team to concentrate on the real functional code.

Future maintenance or changes to processes are easy to manage because CA Automic for Banner is object-oriented. This means you only need to define Banner jobs, printers, logins and other objects one time. You can then reuse them in as many process flows as needed. If you make a change to an object, that change is automatically applied everywhere that job is used. This can save you a significant amount of development and maintenance time.

Using CA Automic for Banner, you can model complex Banner processes without having to repeat the coding effort normally associated with scripting. The CA Automic for Banner object methodology—write once, use many times—provides a key tool for rapid development of schedules and integrated applications.

Automated Testing

During development, you must test the Banner procedures you create. For example, you may need to test the letter generation procedure. Without CA Automic for Banner, this is a time-consuming manual procedure that someone must

complete step by step.

Manual procedures are always vulnerable to human error. CA Automic for Banner automates the procedure and frees your development staff to work on other tasks while the test is being run.

History and Audit Trail

During testing, it is important to track each action taken so that if problems occur, you can determine the cause. If you are running the Banner processes manually, this will require a significant amount of effort to record each step.

CA Automic for Banner automatically keeps a history of every job run, the parameters that were used and the output generated at each step. These records are readily available for viewing online and can be printed for reference.

Documented Process Flows and Procedures

One of the most critical aspects of a Banner implementation is documentation of the process flows and procedures.

CA Automic for Banner provides tools that make documentation an integral part of the development process.

In CA Automic for Banner, each step in a process flow is represented by a component. CA Automic for Banner can display process flows graphically, giving you a visual representation of the workflow. By printing the graphic displays, you have a diagram for each workflow.

To provide additional information, you can attach written documentation to each process flow and component within that process flow. The documentation can explain the function of the process flow or component and provide information to operators in case of a problem.

Automated Migration

One of the more error-prone tasks is migrating procedures from a development environment to a test environment, and subsequently to a production environment. The CA Automic for Banner export and import utilities make migration an error-free, repeatable process. Variables such as database logins, printers and libraries can be mapped when moving CA Automic for Banner jobs and process flows to a new environment, eliminating potentially erroneous code changes and reducing the time to deliver new Banner solutions.

For more information on the general features and benefits of CA Automic for Banner, see the white paper titled “Beyond Job Scheduling.”

CA Automic for Banner Increases the Return on Your Investment in Ellucian's Banner

You purchased Ellucian's Banner to streamline your administrative functions and make them more efficient—a critical move if your institution is to remain profitable in these challenging times.

Now it's time to take the next step and further improve your ROI by automating batch processing and report generation, balancing the load on your servers and automating report distribution. If you are just beginning a Banner implementation, streamlining the implementation process will increase overall ROI while shortening your development time significantly.

CA Automic for Banner is the clear choice. It is a true automation platform that is fully integrated with Ellucian's Banner, enhancing Banner in all critical areas. It provides a development environment that can shorten implementation time.

SECTION 4

Ellucian Partner

CA Automic for Banner is the only scheduling solution for Banner that is certified by the Ellucian Partner program. The Ellucian Partner program is an industry-leading group of technology product and service providers that complement Ellucian's software, services and technologies and deliver reliable and effective integrations with Ellucian products.

For more information, please visit ca.com/automation

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