

ELLUCIAN BANNER MANAGED SERVICE ON ORACLE CLOUD

Ellucian Banner Upgrades

Can customers control the schedule of Ellucian Banner upgrades?

- ✓ All upgrades are executed upon mutual agreement between the customer and Astute. For planning purposes an upgrade schedule will be maintained. This plan will include schedules for PROD and Non-PROD environments.

Can the customer choose applicable upgrades?

- ✓ Yes. Customers can choose that upgrades will be applied. The upgrade plan is tailored to each customer. This plan is a working document and is subject to change to suit the needs of the customer.

Can customers request specific upgrades to be applied to development and later request for production?

- ✓ Yes. This is possible. We understand that many of many users set their upgrade cycle and release management policy based on financial aid dependencies. Astute will work with the customer to determine the minimum release, and ensure that it is bug-free, before applying it to the customer Ellucian Banner environment. We will also decide in the upgrade plan whether or not the customer wants to be on the bleeding edge with the latest Ellucian Banner upgrades.

How are Ellucian Banner upgrades applied and managed?

- ✓ Oracle customers who already own a license to PeopleSoft applications may use the Oracle Cloud to host instances of their licensed applications. There are no additional application license requirements for using Oracle Compute Cloud resources. Oracle Cloud is a subscription priced offering in addition to your PeopleSoft license and support payments.

Can the customer control when upgrades are applied to production?

- ✓ Astute will apply only mutually agreed-upon upgrades and updates to the customer Banner environments, and will do so as per a defined schedule. Typically, any change applied to Production will go through a change control process that Astute will establish as part of the managed service. The customer will provide business approval as part of the change control workflow before Astute proceeds with the change. In short, the customer controls the release schedule.

How are code changes managed when customers have Ellucian Banner 8 and Ellucian Banner 9 together?

- ✓ Astute will support UMB Banner 8 and Banner 9 environments, as part of the continuous improvement we will propose alternatives to reduce technical debt, preserving Banner functionality.
- ✓ Banner 8 Forms and Reports are stored and updated in BANNER_HOME directory, following Banner technology rules. Here is where Banner 8 baseline forms live, among with the customizations added by the client.
- ✓ Banner 9 is part of BANNER_HOME. It is integrated all together with Banner 8 packages in a specific structure where all packages are stored (Banner 8 baseline plus in house customizations).
- ✓ Banner 8 and 9 can coexist in an exclusive way, based on support for Ellucian Banner 8, which has a tentative final support date of late 2022.

Does Astute use Ellucian Solution Manager (ESM) to manage Ellucian Banner?

- ✓ Astute recommends using ESM as a best practice to manage Ellucian Banner. If the customer is not using ESM at present, Astute will implement ESM as part of the managed service.
- ✓ ESM is a system that allows for the implementation and updates to the Ellucian Banner environments. Currently, ESM is an optional system, however Astute will use it to streamline updates and change requests in Banner to boost best practices to administrate Banner, reduce technical deficit and support the use of new functionalities.

Can Astute help customers reduce their technical debt or level of modification while preserving Ellucian Banner application functionality?

- ✓ Yes. Astute has services to help customers evaluate their current modification and recommend solutions to reduce or eliminate modification as part of the ongoing managed service.
- ✓ Astute will support Banner 8 and Banner 9 environments, as part of the continuous improvement we will propose alternatives to reduce technical debt, and preserving Banner functionality.

We use Ellucian Banner printing on-premise today. If we migrate Banner to Oracle Cloud, will Ellucian Banner printing change?

- ✓ Printing will remain on-Premise. Astute will resolve Cloud to on-premise printing, as part of the Cloud design. Page formatting will remain on-premise.
- ✓ Customer will be responsible for on-premise printer installation, maintenance and support. Astute will support print jobs and triage to troubleshoot printing issues.

What Ellucian Banner applications and modules are supported in a managed service?

Supported Modules within Ellucian Banner Baseline

Banner General
Banner Admin Pages
Banner Students
Banner Accounts Receivable
Banner Finance
Banner Human Resources
Banner Position Control
Banner Payroll

Non-Core Additional Supported Applications / Modules

Banner General
Banner Admin Pages
Banner Students
Banner Accounts Receivable
Banner Finance
Banner Human Resources
Banner Position Control
Banner Payroll

Ellucian Banner Access and Controls

How will I access Ellucian Banner on Cloud? Will anything change?

- ✓ The migration of your Banner application to Oracle Cloud can be made very seamless. All of the access methods and access controls that you have today with your Banner applications on-premise can be extended to the Oracle Cloud. We can also set up Oracle Cloud such that your Banner application URLs don't change when you move to Cloud further simplifying change management for end-users.

What are the roles and responsibilities of Customer vs. Managed Service Provider?

RACI Matrix

Activity	Responsible	Accountable	Consulted	Informed
Prepare the network and L&S questionnaire and share with customer	Astute	Astute	Oracle	Oracle
OCI Tenancy Provisioning	Customer/Astute	Customer/Astute	Oracle	Oracle
OCI Services support	Oracle	Oracle	Astute	Astute
Provide network details to build in OCI	Customer	Customer	Astute	Astute
Provide ACLs and other application VM /Database details from on-prem	Customer	Customer	Astute	Astute
Setup VPN endpoints on-prem	Customer	Customer	Astute	Astute
Prepare database backups and upload to OCI	Customer	Customer	Astute	Astute
Prepare VM configurations on-prem for migration to OCI	Customer	Customer	Astute	Astute
Application integration and configurations in OCI	Customer	Customer	Astute	Astute
System Integration Testing and UAT	Customer	Customer	Astute	Astute
Production cutover - validations	Customer	Customer	Astute	Astute
Third party integrations and SSO integrations	Customer	Customer	Astute	Astute
Provide SSL Certificates for OCI deployment	Customer	Customer	Astute	Astute
Deployment of Third party softwares and security management tools	Customer	Customer	Astute	Astute
Prepare Project plans and manage	Astute	Astute	Customer	Customer
Banner Application maintenance & support	Astute	Astute	Customer	Customer

RACI Matrix (continued)

Activity	Responsible	Accountable	Consulted	Informed
Degreeworks application maintenance & support (Enterprise Plan only)	Astute	Astute	Customer	Customer
Weblogic/Tomcat maintenance & support	Astute	Astute	Customer	Customer
Application server monitoring	Astute	Astute	Customer	Customer
Application security support	Astute	Astute	Customer	Customer
Application patching and upgrades	Astute	Astute	Customer	Customer
Application Logs Monitoring	Astute	Astute	Customer	Customer
Application migration and configuration in OCI	Astute	Astute	Customer	Customer
Application load balancing and HA configuration	Astute	Astute	Customer	Customer
Non production refresh from Production	Astute	Astute	Customer	Customer
Code migrations	Astute	Astute	Customer	Customer
OCI IaaS Administration and Maintenance	Astute	Astute	Customer	Customer
OCI PaaS maintenance and support	Astute	Astute	Customer	Customer
Services Deployment and monitoring	Astute	Astute	Customer	Customer
Database Migration and Build	Astute	Astute	Customer	Customer
Database performance tuning (global settings)	Astute	Astute	Customer	Customer
Add-on Services				
Functional support**	Astute	Astute	Customer	Customer
Application performance tuning**	Astute	Astute	Customer	Customer
Application upgrade**	Astute	Astute	Customer	Customer
Application Modifications**	Astute	Astute	Customer	Customer

**** Add-on services for additional fee**

Ellucian Banner Security

How will you secure Ellucian Banner applications on Oracle Cloud?

- ✓ Astute has developed a multi-layered, comprehensive approach aligned with the standards of trusted security frameworks and industry standards for securing Ellucian Banner on Oracle Cloud. Our solution is built on Oracle Cloud Infrastructure which is compliant with a number of standards including SOC 1, SOC2, SOC3, GDPR, FIPS 140-2, ISO:27001, NIST, PCI DSS, and many more. For details of Oracle Cloud Infrastructure compliance, please visit <https://www.oracle.com/cloud/cloud-infrastructure-compliance/>

Who is responsible for Ellucian Banner application security?

- ✓ As part of the managed service, Ellucian Banner application security is a shared responsibility. Astute will implement network security, database security and infrastructure security based on best practices and Customer specific needs.
- ✓ Customer will be responsible for Banner application security, user logins and SSO.
- ✓ Customer can add-on optional Banner security management services to the managed service contract when needed.

Who is responsible for the Ellucian Banner database security?

- ✓ Astute is responsible for managing Banner database security on Oracle Database Cloud Service on OCI.
- ✓ Astute is responsible for the Ellucian Banner database security, including maintenance and support to the database (patches and bug solution), monitoring not authorized access, management of new database features and database access. Astute will coordinate the authorizations of access with the client as well as the tracking of security incidents.

Who is responsible for the Ellucian Banner infrastructure security?

- ✓ Astute is responsible for managing Banner infrastructure security on Oracle Database Cloud Service on OCI.
- ✓ Astute will design and deploy services that are required to administer the access to OCI. The client is responsible for the server security on prem and the devices used by their community that have access to the OCI services. The OCI infrastructure access is exclusive for Astute.

How are Ellucian Banner accounts provisioned and de-provisioned?

- ✓ The creation of accounts for applications (Banner Admin Pages, Self Services, Workflow, Degree Works, etc) will be responsibility of the client through Ellucian Banner security schema. Astute will administer oracle accounts for these applications.

- ✓ Ellucian Banner allows accounts provisioned for identity services (Ellucian Identity Services – EIS), in a native way. Ellucian Banner has the functionality to execute this on the client side, either manually or through workflows.
- ✓ Ellucian Banner can be connected to external identity services using EIS. Under this schema, the external identity service will provision and deprovision accounts.
- ✓ In OCI, the only change will be the administration of oracle accounts for the applications (Banner Admin Pages, Self Services, Workflow, DegreeWorks, etc).

Ellucian Banner Monitoring

How is the Ellucian Banner application monitored on OCI?

- ✓ Astute has developed a multi-layered, comprehensive approach aligned with the standards of trusted security frameworks and industry standards for securing Ellucian Banner on Oracle Cloud. Our solution is built on Oracle Cloud Infrastructure which is compliant with a number of standards including SOC 1, SOC2, SOC3, GDPR, FIPS 140-2, ISO:27001, NIST, PCI DSS, and many more. For details of Oracle Cloud Infrastructure compliance, please visit <https://www.oracle.com/cloud/cloud-infrastructure-compliance/>.

How is the Ellucian Banner JobSub monitored on OCI?

- ✓ Ellucian Banner JobSub service is maintained by the operative system. This service has the ability to re-establish the Ellucian Banner Jobsub service if necessary. Additionally, if the client has a monitoring service, it can be used to re-establish Ellucian Banner JobSub.

How is Ellucian Banner database monitored on OCI?

- ✓ Ellucian Banner database will be monitored using OEM (Oracle Enterprise Manager) and email alerts will be sent out for any monitored conditions as per the pre-defined rules.
- ✓ Customers can use existing tools, that can be configured to monitor the databases in OCI.
- ✓ Oracle sends notifications for any pre-planned maintenance activities scheduled in OCI by Oracle.

How is Ellucian Banner infrastructure monitored on OCI?

- ✓ Ellucian Banner VM's in OCI can be monitored using OCI monitoring and email notifications can be configured as per the monitoring rules setup in OCI.
- ✓ Also third party monitoring tools are supported, if the customer has centralized tools in place for monitoring, it can be very well integrated.

Ellucian Banner Infrastructure Patching and Upgrade

How is the Ellucian Banner database upgrade and patching done on OCI?

- ✓ The procedure is the same as when Ellucian Banner is running on-premise. The client must provide us an account to access Ellucian Support Center to configure the service to download software in ESM.

How is the Ellucian Banner infrastructure upgrade and patching done on OCI?

- ✓ Patching procedure is the same as in OCI for the middle tier VMs but for the database patching is managed by OCI console patches.
- ✓ **Ellucian Banner infrastructure upgrades**
Follow the Oracle Cloud Infrastructure upgrade process for upgrading the infrastructure hosting the banner applications. Oracle manages some of the infrastructure maintenance and sends notifications ahead of time. OS and infrastructure upgrades will be managed by the managed service provider.
- ✓ **OS Patch Management**
The Oracle Cloud Infrastructure OS Management service allows us to manage updates and patches for the operating system environment on your Oracle Cloud Infrastructure instances.
- ✓ Managed instance groups enable to group your instances together for updates or upgrade.

How do you apply CPUs?

- ✓ Oracle announces the quarterly CPU patches and Astute is notified as we are OCI gold partners.
- ✓ The Astute team shall notify the customer and create a support ticket and coordinate with the customer for approval and schedule downtime to apply them in OCI.
- ✓ Patches are released for the below components:
 - Oracle database - data patch and gird patch
 - VM Patch (Linux and Windows patches)
 - Java patch
 - Weblogic patch
- ✓ CPU patches are downloaded and applied on lower environments first and Support team perform smoke testing and handover to customer to perform testing.
- ✓ Customer will perform validations post applying the CPU patches.

Who is responsible for implementing and maintaining Ellucian Banner Disaster Recovery on Oracle Cloud?

- ✓ Astute's Managed Service for Ellucian Banner on OCI includes DRaaS (Disaster Recovery as a Service). In DRaaS, Astute uses Rackware's Disaster Recovery (DR) MM Server automated platform to implement, maintain and test the DR environments for all infrastructure compute and storage services. For Oracle Database Cloud Service, Astute uses Data Guard or Active Data Guard to implement and maintain DR.

How is the Disaster Recovery environment maintained? Patching?

- ✓ The Disaster Recovery environment is monitored and maintained in sync with the patches applied to the primary VMs and databases. Astute uses RackWare MM server to sync up the Disaster Recovery VMs in line with Primary application VMs.
- ✓ RackWare MM provides options to dynamically provision the target environments as an exact replica of primary and also allows to refresh selectively and to exclude certain files as per the Disaster Recovery requirement. RackWare also gives to provision the target systems and sync up based on the sync up frequency setup as per the RPO.
- ✓ **VM Patching**
All VM patches applied in Primary will be also applied in the Disaster Recovery environment and kept in sync all the time. RackWare MM server automatically copies all the patches applied in primary and uses the latest image of the primary server to provision the standby Disaster Recovery VMs.
- ✓ **Database Patching**
In case of CPU patches or any other required patches are applied in the Primary database/grid, the same set of patches will be applied in the Disaster Recovery database/grid and always keep them in sync.
- ✓ **Application Patching**
Application patches are also synced up either by RackWare sync up. If any other patches which can not be synced up with RackWare or Data guard will be applied manually on the Disaster Recovery application.
- ✓ Disaster Recovery environments are monitored for availability and sync up. Alerts will be sent out for any abnormal states of Disaster Recovery VM's and databases, monitoring is also enabled for data guard sync-up.

How is the Disaster Recovery environment tested?

- ✓ Disaster Recovery (DR) environments testing is conducted annually.
 - Astute uses Rackware MM Server to configure and deploy the DR systems,
 - During the annual DR testing, RackWare MM server will deploy the DR application middle tier components and also synchronize file objects from the primary server. Database will be synced up using Data Guard and will failover to perform the DR Testing

- ✓ DR Testing includes:
 - Failover from Primary to Standby
 - Application failover
 - Database failover
 - Application validation and smoke testing by both IT and Business
 - Switchover to Primary

How does Disaster Recovery failover work?

- ✓ Disaster Recovery Concepts

Two commonly used terms for DR are:

- Recovery Time objective (RTO) - The RTO is the target time that is required to restore your application functionality after a disaster happens. The goal is to measure how quickly you must recover from a disaster. The more critical the application, the lower the RTO.

- Recovery Point Objective (RPO) - The RPO is the acceptable time frame of lost data that your applications can tolerate. RPO is about how much data your applications can afford to lose in a disaster scenario.

To learn more about Ellucian Banner on Oracle Cloud, please contact an Astute team member at sales@beastute.com.