

# University of Maryland College Uses Attunity Software to Replicate Data to the AWS Cloud

UMUC wanted to organize and derive insights from a combination of the following four core datasets, totaling 10 terabytes:

- Learning Management System: Data related to online student activities including attendance, academic progress, participation and tool usage.
- Student Information System: Data related to student enrollments, course schedules, degrees awarded, faculty information and many other important functions.
- Financials: General Ledger and Student Financials data related to revenues, expenses and student payments.
- Customer Relationship Management (CRM): Data related to prospective students, applicants and service center inquiries.

The source data exists largely in a structured format and is currently stored in a mix of on-premises Oracle and SQL Server databases, Salesforce, and other cloud-based service applications. UMUC's challenge is to aggregate these disparate data sources, normalize the data, and then load it into a data warehouse so they can analyze the data. This is a classic 'data integration challenge' that includes:

1. Extract data from source systems
2. Stage the data in a relational database and apply transformations
3. Load data into a data warehouse
4. Run analytics and provide a visualization layer

As a first step, UMUC selected Amazon Redshift for its data warehouse, citing its high performance and low cost. To address the data integration challenge, UMUC turned to the AWS Marketplace and chose Attunity for Amazon Redshift.

## Attunity and Amazon Web Services: A "Better Together" Solution

In the past, UMUC was using Oracle Streams to collect data from Oracle Databases and load it into an ODS (Operational Data Store) for transformation using Oracle Data Integrator (ODI), before ultimately loading into a data warehouse for analysis. However, some of the data sources are located on Microsoft SQL Server



University of Maryland University College's (UMUC) mission is to provide a quality education at an affordable cost to busy professionals, mainly adults who are juggling work and families and, often times, military service.

Providers of higher education like UMUC face increasing pressure to attract the best students and supply a quality education at the right price. To stay ahead of the curve, colleges and universities must ultimately seek a competitive advantage, constantly identifying opportunities for improvement. To achieve this, UMUC launched a big data strategy on the strengths of Amazon Web Services.

*"To improve student outcomes and attract new students, our team set out to combine disparate data sources from throughout the University and leverages analytics to extract patterns and identify actionable opportunities."*

- Darren Catalano  
VP of Analytics at UMUC

databases and Oracle Streams is not able to load from non-Oracle databases. To work around this challenge, the team at UMUC had to manually extract data from their SQL Server databases and combine it with their Oracle source data—a time-consuming process.

UMUC leveraged Attunity software to both speed up their data movement and have a single point of management for all data movement. This gives the University greater visibility and flexibility when they choose to add or remove data sources or targets in the future. The engineers at UMUC also found that Attunity software was far easier to setup and debug than their old Oracle Streams-based workflow. Specifically, UMUC uses Attunity to move the data from hosted Oracle DB and Microsoft SQL Server into an Operational Data Store (ODS) located in an Amazon RDS Oracle Database instance. ETL transformations are then applied and data loaded into Amazon Redshift where it can be accessed by various business intelligence tools for analysis. UMUC also uses Attunity to occasionally move some of the previously loaded data in Amazon Redshift back into Amazon RDS to be referenced by stored procedures in support of institutional research.

Sourcing data from these core datasets, UMUC can now make sense of patterns, including:

- Understanding enrollment trends and demand for academic programs
- Measuring student and faculty engagement in online course
- Analyzing patterns of re-enrollment and course taking behaviors
- Identifying 'at risk' students that need assistance
- Drilling down on the effectiveness of marketing campaigns

Beyond just saving time, the engineers at UMUC realized that Attunity software could be used to quickly validate the data replication processes. In their case, student data could be stored in a variety of systems such as Oracle Peoplesoft, Amazon RDS and Microsoft SQL Server. Attunity software is able to extract and combine data from all source systems and load into a common database stored in Amazon Redshift. From there it's easy to execute simple SQL queries to isolate any differences in the data stored across multiple tables originating from different data sources.

UMUC used the AWS Marketplace to purchase Attunity software and had it configured in a matter of hours, replicating data shortly thereafter. Even with the complex data flow, UMUC's centralized management of Attunity tasks runs on just a single Amazon EC2 machine, achieving near real-time replication across the mesh of sources & targets.

Attunity provides a detailed walk-through for installing Attunity software, including how to configure replication for both on-premises and Amazon RDS-based Oracle DB and Microsoft SQL Server data sources.

## Conclusion

Calling upon the strengths of Amazon Redshift, Amazon RDS, the AWS Marketplace, and Attunity, UMUC successfully implemented an end-to-end data analysis platform. UMUC achieved operational cost savings and they're now able to identify actionable opportunities to increase enrollment and provide the right education to the right students.

### ABOUT ATTUNITY

Attunity is a leading provider of data integration and Big Data management software solutions that enable access, management, sharing and distribution of data across heterogeneous enterprise platforms, organizations, and the cloud. More information can be found at [www.attunity.com](http://www.attunity.com).