

# Colorado Community College System supports successful student enrollment with improved availability

“During this infrastructure assessment project, our IT team found working with HP and SunGard Higher Education beneficial. Collaboration by all parties was excellent and everyone was totally engaged with resolving our performance problem.”  
Pat Fay, Associate Vice President, Business and Information Technology, Colorado Community College System



COLORADO COMMUNITY  
COLLEGE SYSTEM

## Objective:

Resolve server performance issues experienced in peak transaction periods to ensure business continuity, student satisfaction and revenue streams

## Approach:

Replicated the production environment, built test scenarios, conducted load tests and made hardware modifications to find the root cause of the problem

## IT improvements:

- Performance issues were resolved by increasing the available memory from 32GB to 64GB, boosting availability and thereby supporting increasing transaction levels
- Space, power and cooling costs forecasted to reduce by 35 percent through consolidating the server landscape and implementing the latest HP BladeSystem ProLiant server technology

## Business benefits:

- By replicating the production environment within a laboratory, downtime of the enrollment web portal was avoided
- Improved system performance enhances business practices and processing, freeing staff to focus on student support and services
- Uninterrupted access improves student satisfaction and supports a 20 percent rise in enrollment numbers
- Reduced power and cooling requirements reduce costs as well as the colleges' carbon footprint, improving their environmental standing with students, parents and the state regulators



Established in 1967 and headquartered in Denver, the Colorado Community College System (CCCS) is the only educational establishment in the U.S. responsible for both community colleges and vocational education P-16. More than 151,000 students currently study at 13 community colleges across the state. A nine-member State Board for Community Colleges and Occupational Education, appointed by the State Governor and confirmed by the State Senate, oversees the system.

## HP customer case study:

Colorado Community College System resolves performance issues for mission-critical applications

## Industry:

Higher education



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### Performance issues threaten student enrollment

CCCS’s web enrollment portal is the primary point of entry for students seeking higher education. HP Converged Infrastructure technology is utilized in a data center in the Denver office including HP BladeSystem ProLiant server blades and HP StorageWorks storage technology. It hosts the SunGard Higher Education Banner Digital Campus application which processes student information, payments and financial aid data. In addition, Oracle Enterprise Resource Planning (ERP) software supports back office processes such as payroll and human resources.

During the majority of the academic year the IT infrastructure comfortably handles between 30,000 and 50,000 online transactions per day. However, during the peak enrollment periods in August and January, daily transaction volumes increased to approximately 117,000 and users were unable to access services due to inexplicable performance issues.

“Under high load, our IT system experienced downtime or slowness ranging from a few minutes to over an hour, disrupting business services during important periods of the academic year,” explains Pat Fay, associate vice president, business and information technology, CCCS. “With registration periods lasting only two to three weeks, downtime is unacceptable because it creates student dissatisfaction and adversely impacts staff productivity at the colleges.



“We also noticed the performance problems were getting progressively worse because student enrollment numbers had increased by 20 percent due to the economic climate. We simply could not let this situation continue; high system availability is essential. We did a number of items to improve performance while experiencing issues, but were unable to identify completely the root cause during this time.”

### HP and SunGard Higher Education partnership

Initially, CCCS turned to SunGard Higher Education and Oracle for advice. They made several modifications to the database software and conducted some performance tuning. However, during the next registration process, difficulties persisted and system availability figures fell to between 93 and 94 percent. CCCS’s system availability goal is to be at 100 percent during peak periods.

“We continued fine tuning the system but could never be certain that the problem would go away before the next peak period,” continues Fay. “We considered purchasing load testing software to replicate the problem within a test environment rather than experimenting with the production landscape. However, this option proved too costly and there was insufficient time to train our staff before the next registration period.”



While CCCS continued working with SunGard Higher Education it also engaged HP due to its trusted position as a key IT infrastructure provider. “Working closely with SunGard to identify the root cause of the problem, HP suggested replicating our infrastructure at their Application Solutions Center in Cupertino, California. SunGard Higher Education took responsibility for designing the test plan, building test scenarios and scripting files for our business processes,” states Fay. “Ultimately we needed the partnership with HP and SunGard Higher Education because of the complexity of fixing a production environment during a heavy load period. HP and SunGard’s collaborative partnership really helped our IT team.”

CCCS decided to lease some additional memory to add to the replicated production environment to see if that could alleviate the problem. Available memory was doubled from 32GB to 64GB and during the week long testing period, CCCS staff employed HP LoadRunner software to detect application performance issues.

“Within the test laboratory we successfully replicated our performance issue under high transaction loads,” states Fay. “However, when we increased the available memory, system performance and availability improved, giving a clear indication that lack of memory was responsible for the problem. Although we had already optimized several parts of the production environment, raising the available memory was the final piece to a solution for a very complex scenario.”

## Customer solution at a glance:

### Primary hardware

- 10 x HP ProLiant c-Class BL680c G7 server blades
- 7 x HP ProLiant DL380 G6 servers
- 1 x HP ProLiant DL580 G5 server
- 1 x HP ProLiant BL680c G5 server
- 1 x HP StorageWorks 8400 Enterprise Virtual Array (EVA)

### Primary software

- Oracle
- SunGard Digital Campus
- HP LoadRunner
- Red Hat Enterprise Linux AS 4.8 (both 64 bit and 32-bit)

### HP Services

- HP Technology Services
- Application Solutions Center

## Improved system performance

After increasing the available memory in its live production environment, CCCS has not experienced any availability problems: “Users now have continuous access to our mission critical applications, such as registration, even under heavy loads,” comments Fay.

While in Cupertino, CCCS took the opportunity to assess their applications’ performance on the new HP ProLiant c-Class BL680 G7 Server Blades. “Seeing the latest HP blade servers perform effortlessly was wonderful and enables us to benchmark and validate what we had already planned on purchasing. The HP ProLiant blade servers are perfect for our infrastructure upgrade program,” says Fay.

CCCS's infrastructure upgrade strategy involves gradually consolidating and converging its server landscape by 35 percent using HP BladeCenter technology and increasing storage capacity to handle an increase in the number of scanned documents and the creation of an image repository. It will shortly deploy ten additional HP ProLiant c-Class BL680 G7 Server Blades to reduce space, power and cooling as well as cope with increasing transaction levels. With space limited in the Denver data center and the colleges' carbon footprint from an environmental standpoint, these are important considerations.

"Thanks to the determination and commitment of HP and SunGard Higher Education, we have successfully resolved our problems under tight time constraints. Working in such a professional and collaborative environment was a beneficial and informative experience for all participants. Over the coming months, we intend to move away from standard servers to HP BladeCenter next-generation blade technology to lower our power consumption by 35 percent," concludes Fay.

## Partner:

**Company:** SunGard Higher Education

**Headquarters:** Malvern, PA

**Telephone:** +1 800 223 70 36 (within U.S.)  
+1 610 647 59 30 (outside U.S.)

**Number of employees:** 2,700

**URL:** [www.sungardhe.com](http://www.sungardhe.com)

**Business:** Enterprise solutions for higher education; software, professional services and technology services

**Products:** Banner Digital Campus, PowerCAMPUS Digital Campus, Professional Services, Technology Management Services, Portal, Mobile solutions

## Partner:

**Company:** Oracle Corporation

**Headquarters:** Redwood Shores, California

**Telephone:** +1 650 506 7000

**Number of employees:** 105,900

**URL:** [www.oracle.com](http://www.oracle.com)

**Business:** Enterprise software and hardware systems

**Products:** Database, enterprise resource planning, customer relationship management and supply chain management software, server and storage systems

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