SPECIAL REPORT

MODERN TECH & PROCESSES

RESOURCES

Modern AV That Keeps Up with the Changing Face of Higher Education

The Long Wait: Why It's Time for Higher Ed to Embrace Automation

Self-Service Laptop Dispensing

eCampus News
Resources for Ed Tech Leaders

2022

Modern AV That Keeps Up with the Changing Face of Higher Education

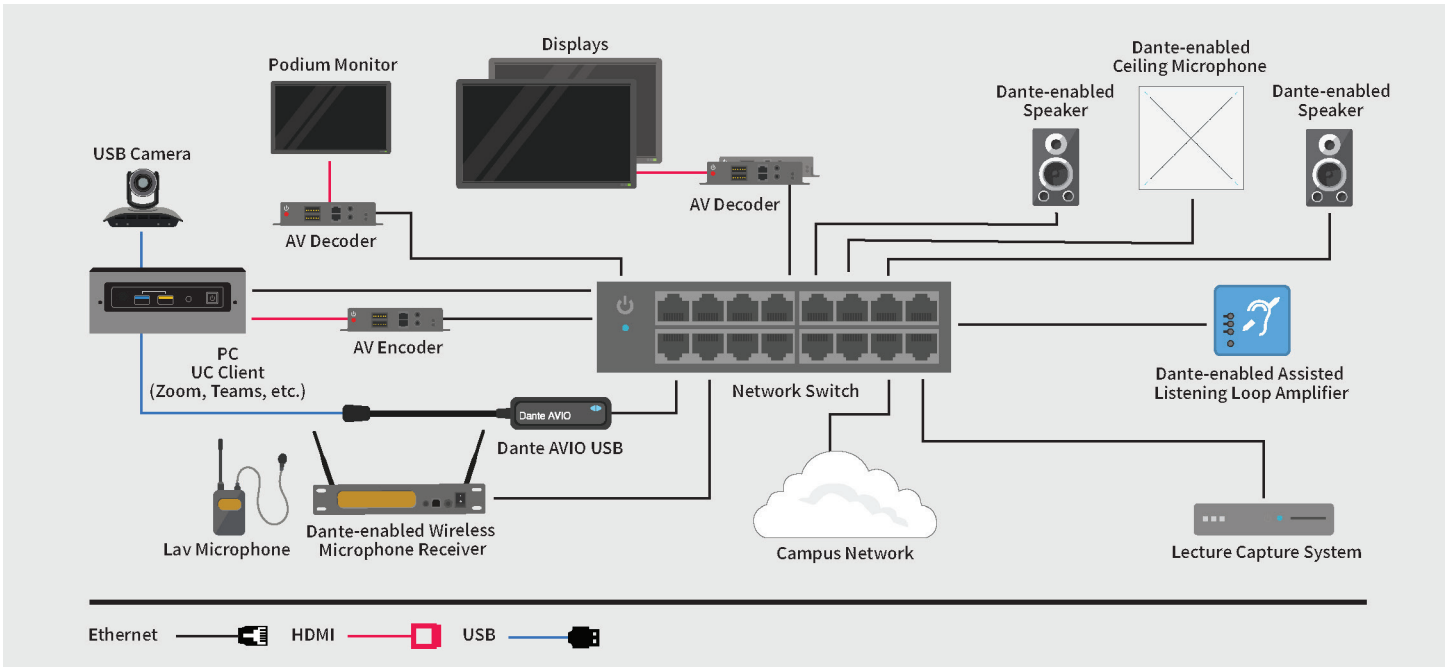
Universities and institutions of higher education have always been under pressure to solve complex technology challenges, but the pandemic has taken this to a new level. Now faced with demands for robust and high-quality remote connectivity, and the necessity to enable a wide range of hybrid learning models, campus IT and AV professionals are working diligently to design, deploy and manage AV networks to support the unique needs of their organizations — and to prepare to adapt systems to meet whatever the future may hold.

When setting up classrooms and lecture halls for hybrid or hyflex learning students need to experience class in an equal manner whether they are physically in the classroom or not. Professors need to communicate with both in class and remote students while ideally students are also able to interact with each other regardless of location. To facilitate this, a significant amount of AV gear is required – Microphones to pick up lecturers and students in the room, cameras and additional displays, computers to support video conferencing and LMS platforms, speakers to play audio from remote students and program content, signal processors to bring a variety of audio sources into the computer, and don't forget locations with amplified audio should support assisted listening devices. When adding all these devices to spaces AV and IT teams are faced with the question– How do we make this scalable and supportable? Thankfully, these challenges can be easily solved using networking to distribute real-time media. AV-over-IP solutions like Audinate's Dante deliver reliable, high-quality audio over standard computer networks free of the problems that limit legacy systems such as noise, distance, scalability, non-flexible routing, and lack of monitoring and management support.

This paper illustrates how Audinate's Dante — the most popular AV-over-IP solution on the market by far — and Dante Domain Manager transforms how educators deploy, support, and maintain campus AV.

"We're now in a situation where we would be ready to have everyone back on campus or go entirely remote. We're also ready for a hybrid scenario, where multiple rooms might need to be linked together and have a single presenter broadcast to each location. Regardless of what it looks like, we know we're going to be able to offer students the very best learning experience possible."
~ Joe Way, Director of Learning Environments at the University of Southern California

Networked classroom system diagram for hybrid learning.



AV reimagined

When getting started with networked AV, a flat network topology of devices (or AV VLAN) is often utilized. While this might work great for small systems, as multiple AV devices are added across 10s to 100s of classrooms, seeing all devices visible and editable at once in configuration software, can be confusing and difficult to work with. One possible solution would be to divide the system into multiple subnets but this creates segregated islands of AV that cannot communicate with one another, limiting the benefits of networked AV.

Dante Domain Manager solves both problems of access and clarity. It lets you divide your campus network into separately managed logical groups called Dante Domains that can be configured to correlate to rooms, buildings, departments, or event spaces. Domains can be used to break up and add clarity to larger single subnet Dante systems, or Dante Domain Manager allows Dante systems to be deployed across any number of subnets. Dante devices may be enrolled in Domains from any location on the campus network for centralized monitoring and configuration. Domains make it easy to deploy campus-wide systems like public address without having to change the existing network topology, and even allows remote campuses' AV to be managed and supported by staff located at the main campus.

When a user views the Domain in Dante Controller, they only see the devices and connections within — other devices in other Domains cannot be affected. Domains simplify use of the system and prevent unwanted and unintended changes from interrupting service elsewhere on the network. When bringing devices online in new classrooms Domains keep existing Dante systems like those in theaters and stadiums running smoothly.

Domains are easily created and managed with Dante Domain Manager, with no need to rewire or reconfigure individual devices. Dante Domain Manager is vendor-neutral and works with any up-to-date Dante-enabled products, allowing domains to be comprised of any devices you choose.

"We don't want to have to go to a building with a laptop to make changes or to check things, Running Dante Domain Manager allows us to manage all those different subnets wherever they may be."
~ Jim Wellings, Utah State University

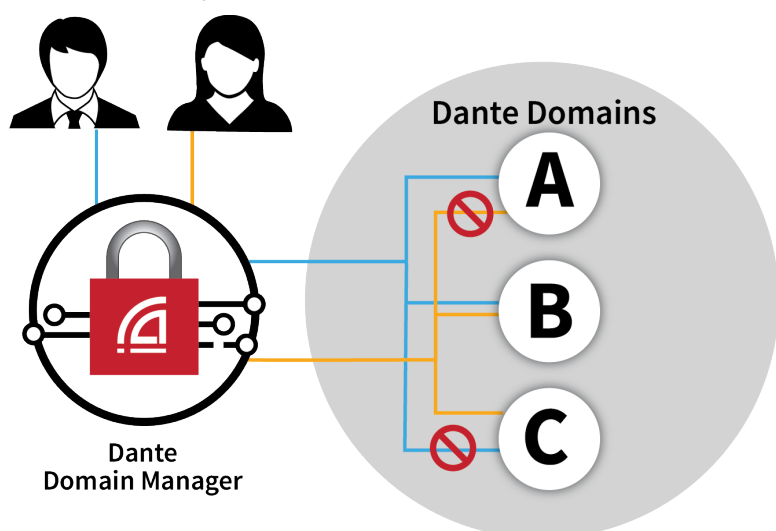
AV connections now secured

Legacy AV systems have little, if any, concept of user security. Simply put: if you can reach the products, you can change them.

"Until Dante Domain Manager came along, our security policy was just "don't touch anything or you're fired". No one wants to work that way."
~ Will Davidson, Media Systems Engineer at Brigham Young University, Idaho

In a campus environment, such a model forces AV departments to assign additional personnel to operate systems. This creates bottlenecks and increases costs. While there are lots of students who would like to learn and help, it can be risky to grant access to the entire network.

Users are granted access to devices on a per Domain basis.

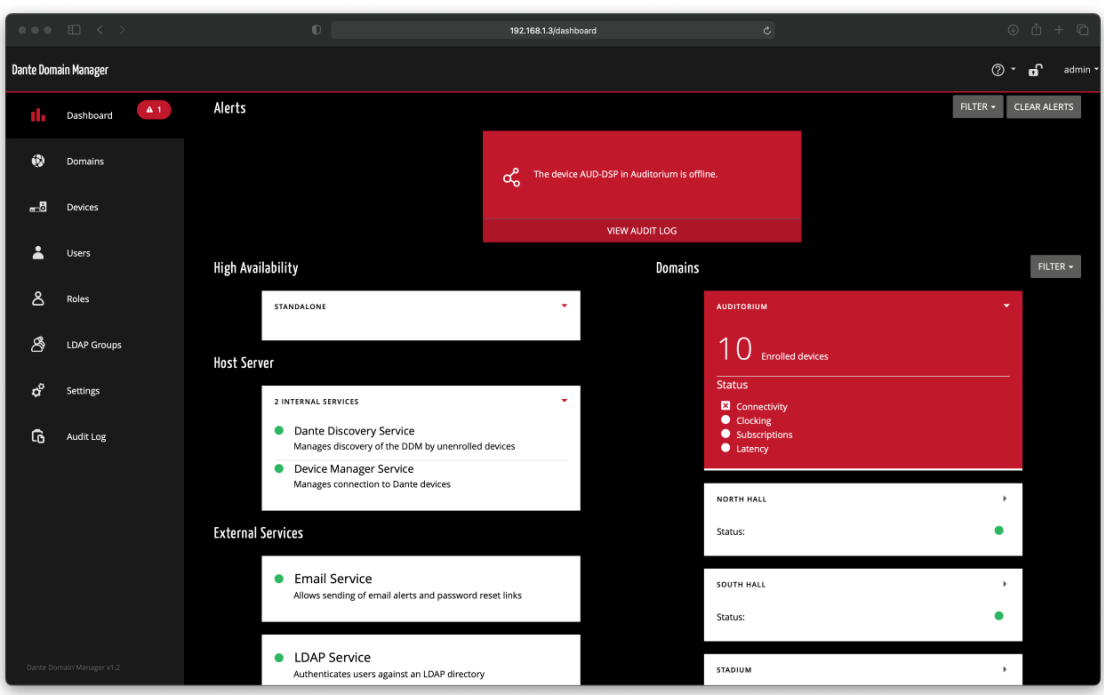


Dante Domain Manager lets you securely give staff, faculty, students, and contractors access to specific areas of your AV network to run events and class projects. Rules are centrally administered, and each user must be authorized by an administrator to access Dante devices enrolled in Domains. The administrator can create roles for each user, from view-only to full access. Users may be defined within Dante Domain Manager or using existing services such as LDAP/Active Directory. This approach allows an AV department to confidently allow staff, faculty, students, and third parties to use the system with safe and appropriate levels of restrictions. Instructors may be given access to route audio in their own classroom. Select students may be allowed to use parts of the system for performances. And all this can happen without jeopardizing configurations elsewhere on the network. Tampering issues are eliminated, as are many unintentional mistakes.

AV managed at last

In legacy point-to-point systems, cables and connectors dictate most signal paths. Configuration happens on devices themselves, and it usually requires a trip to wherever the gear is installed. This often means redundant equipment in different areas of campus, and a constant drag on AV department resources.

In a Dante system routing is done entirely at the logical level over the network. Ethernet cables remain static while channels may be reassigned and configured in nearly any imaginable fashion – a task that may be accomplished from any point on the campus network with simple software and appropriate permissions from a Dante Domain Manager administrator. The use of Dante Domains greatly simplifies the task of managing system organization and routing in safe and understandable ways, even over a distance. By dividing the system into smaller, functional sections it is easier than ever for an administrator to clearly see how each domain is configured and by whom, while each authorized user sees only the devices for one domain at a time.



Dante Domain Manager Dashboard alerting user to connectivity issue with device in the Auditorium Domain.

Dante Domains help maintain system integrity. Rather than allowing the system to gradually become more disorganized over time as pieces are borrowed, broken, and moved, Domains allow any administrator to instantly see the complete inventory of the AV system and take steps to ensure that all components remain in place and are working.

In legacy AV, it's a frustrating yet familiar drill: a connection fails, but no one bothers to mention it and so there it sits until an important event makes it a sudden priority. This sends staff scampering to solve the issue often on the other side of the campus.

A networked AV system with Dante Domain Manager stops this from happening. A user-configurable dashboard provides a complete set of real-time alerts to administrators, letting them know instantly if there is a problem and precisely where and what that problem might be on the Dante network. Unauthorized gear, device failures, user errors and latency or clock sync issues are immediately visible from any point on the network, while email alerts can be configured to keep administrators informed no matter where they are. Legacy system failures may induce head-scratching puzzlement, but Dante Domain Manager knows what's happening 24/7.

Complete time-stamped and user-tagged audits of all device and user activity allow administrators to clearly see patterns of use, helping them to spot potential problems before they become severe. Is one device power cycling twice a day? Now you know, and you can address it. Is there one user who makes many routing mistakes before arriving at the right set of connections? Perhaps that person needs some training - and now you know.

"The less time you have to stand in a room fiddling with something in front of 200, 300 people, the better."
~ Guy Eckelberger, Director of Information Technology, University of Oregon

Conclusion

With the continuation and increased interest in offering hybrid and hyflex classes in a post-pandemic world, Higher Education AV systems are bound to keep expanding. A Dante network coupled with Dante Domain Manager offers educators a completely managed, easy-to-use, subnet-traversing solution that spans multiple vendors over an incredibly wide range of devices and applications. Only Dante with Dante Domain Manager supports the scale and range of vendors that IT and AV departments demand.

To recap, Dante networks with Dante Domain Manager provide:

- Domain organization for clear, easy management of the system by all users.
- Subnet traversal for complete coverage of all network regions.
- User authentication for to secure access control by staff, faculty, and students.
- Management, configuration, and support from anywhere using any connected computer.
- Alerts and audits to keep administrators instantly informed about all system changes and activities allowing issues to be quickly identified and resolved.

With more than 3,000 products from more than 500 manufacturers with which to deploy your system, Dante with Dante Domain Manager fits perfectly into AV designs for colleges and universities.

For more information about Dante, please visit https://www.audinate.com

The Long Wait: Why It's Time for Higher Ed to Embrace Automation

No other segment will benefit more than education, where rote work abounds.

Damien Eversmann
Chief Architect for Education, North America Public Sector
Red Hat

WHILE THE PANDEMIC INTRODUCED A NEW appreciation for all things digital, its close cousin, automation, hasn't gained nearly the same renown. And it should. So often in digitally transformed activities, as people interact with bits and bytes, the processes get automated and improved too. In retail, customers still put their potential purchases in a cart; but when they change their minds at the checkout, nobody has to plod across the store to place the discarded goods back on the shelf. In government, citizens still file their requests; but a mapping app can help road maintenance create the most efficient route for filling the potholes.

Then there's education. While other sectors have begun to reap the rewards of enterprise automation in dramatic ways, education is lagging. Yet, I'm convinced that no other segment will benefit more. Nothing highlights the advantages of automation like rote work, which abounds in higher education IT.

The 3 Flavors of IT

What's unique about education from any other kind of organization is that the typical institution has central IT, of course, but also instructional IT and research IT. If I'm in central IT and I'm standing up an HR application, my goal is to put that system in place with the expectation that it will run forevermore. IT's job is to keep it running.

But in instructional IT, I may be standing up a classroom environment that is only going to last a semester or a lab that's going to last a couple of weeks. Then I need to tear it down and stand up a brand new one the next time that class or lab is offered.

In research IT, I'll need to spin up hundreds or thousands of nodes to process data for astronomical photography, chemical analysis or whatever the research problem is. When the processing is done and the results are generated, I stop it and scale it all back down again.

There's a temporary nature to so much of what education encompasses and the many systems it relies on. And that's where automation can really make a big difference.

Finding Automation Success

Automation success, however, depends on meeting the needs of its three players: the individual, the team and the enterprise.

Progress always starts with the individual. After all, if the edges of your organization don't see a benefit, automation efforts will fail: "What am *I* going to get out of this?" That's where a lot of apprehension and misunderstanding come from, because too often, people hear the word, "automation," and they think layoffs are sure to follow. They don't think about the real reason for automation – taking the repetitive toil out of their jobs.

> As humans, when we start doing things repetitively, we get bored and distracted, we let our minds wander, and we stop paying attention to what we're doing. Positioned well, automation is really a win-win for both the IT worker and the institution. The organization gets more accuracy and more reliability in repetitive tasks, and the worker doesn't have to focus on doing the same work over and over.

As humans, when we start doing things repetitively, we get bored and distracted, we let our minds wander, and we stop paying attention to what we're doing. Positioned well, automation is really a win-win for both the IT worker and the institution. The organization gets more accuracy and more reliability in repetitive tasks, and the worker doesn't

have to focus on doing the same work over and over.

At the team level, when you enable your IT crew to automate with the right tools, you're documenting and codifying their institutional knowledge too. That's important as schools face the prospect of losing hordes of baby boomers and Gen Xers — and their hard-earned experiences — to retirement. By automating the day in/day out processes, anybody you bring in with the basic knowledge of the job will be able to get up to speed much more quickly. The adoption of automation technologies provides a common language for enabling teams to communicate with each other.

At the enterprise level, automation reaches across silos. As it stands now, too much in IT takes weeks instead of the hours it should require because the various stages of the work are held up when somebody isn't at their keyboard. When you automate repetitive tasks, and reach out to others with their own automations, you can chain those tasks together into a "workflow." You don't need everybody sitting at their desks at the same time in order to achieve a fast response.

Innovation Over Rote

The use of a solution such as **Red Hat Ansible Automation Platform** makes automation — that chaining together of various tasks — something IT people innately understand. Ansible uses plain text and data elements that match whatever software IT is interacting with. It's not compiled; it's easily readable and reviewable. And the automation will continually improve as updates — a patch, a bug fix, an optimization — are added to links in the chain.

The next time a lab needs to be set up or a research project receives its funding, the IT organization will be ready to kick into action, even as someone in the workstream takes a day off to care for a sick child or a team has to deal with a cybersecurity crisis. By removing the rote work, automation enables people. Each person who may have been sitting around doing those repetitive jobs is now solving new problems and challenges — innovating — for which the human brain is aptly designed.

Damien Eversmann *is Red Hat's chief architect for education for the North America Public Sector. Most recently, Damien has traveled the country with Red Hat to share the news of digital transformation. He has a penchant for teaching and demonstration and his expertise includes DevOps culture, application modernization, enterprise automation and the intersection of history with tech.*

Laptops Anytime Highlight Video

Checkout Laptops, Tablets, Power Chargers and More

100% Self-Service Automated Kiosk

WATCH NOW>

Dispense laptops, tablets, portable power chargers and other items to the right people at the right time, anytime, anywhere.

LaptopsAnytime can adapt to your requirements and software needs. Providing you a better, more cost efficient (self-check) system that secures, dispenses assets all while providing full accountability.

WATCH HIGHLIGHT VIDEO