

DANTE

IN BROADCAST

DANTE SYSTEMS IN BROADCAST APPLICATIONS

DANTE BROADCAST APPLICATIONS

RADIO

- Live broadcast and production studios.

REMOTE PRODUCTION

- Remote trucks, portable systems, fly away kits, etc..

TELEVISION

- Used by major networks for in studio, live, and recorded events.

BENEFITS OF DANTE IN BROADCAST

- ✓ Audinate guarantees the interoperability of Dante devices from all manufacturers.

- ✓ Easy to install, configure, and integrate into existing Gigabit infrastructure.

- ✓ The most licensees of any AoIP protocol out there. Over 350, with over 1000 Dante products now available.

- ✓ Glitch-free redundant networking is available on many Dante-enabled products.

DANTE FOR RADIO



Radio Darmstadt in Germany

- Three studios that are used for either live broadcasting or pre-production.
- AoIP infrastructure based on Studer OnAir 1500 mixing consoles, Studer SCORE routing and Audinate's Dante audio networking technology.

"The new Studer consoles allow us to extend Dante integration and unify our entire workflow. We are proud to be one of the first radio stations to integrate Studer mixing consoles, I/O routing, call management systems, third-party systems and software with Dante."

Günter Eisbach, Managing Director of Studio, Broadcast, and Technology at Radio Darmstadt.



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A local radio station in Darmstadt, Germany has switched to an AoIP (audio-over-IP) infrastructure based on Studer OnAir 1500 mixing consoles, Studer SCORE routing and Audinate's Dante audio networking technology.

Radio Darmstadt broadcasts a wide range of programming, including news, sports, culture, entertainment and more.

In addition to the OnAir 1500 consoles, it has also implemented a Studer CMS Lite call management system, an mAirList payout and Dante Via software, providing the studio with a cutting-edge production setup designed streamline its entire production process.

Each studio is equipped with a 12-fader OnAir 1500 surface with Studer NANO SCORE DSP and I/O Engines. The mAirList payout system and DAW (digital audio workstation) are already integrated via Dante.

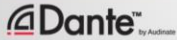
The entire system drastically reduces the amount of audio cabling required, with control (CAB, CMS, GPIO) and data running on a minimum number of CAT7 network lines.

The system also provides efficient integration options for running general-purpose I/O, such as CD players and signal lights, and makes it efficient to transfer media to other applications and studios.

DANTE FOR RADIO

Radio Renascença, outside of Lisbon, Spain - Equipment and commissioning by AEQ



 Dante™
by Audinate

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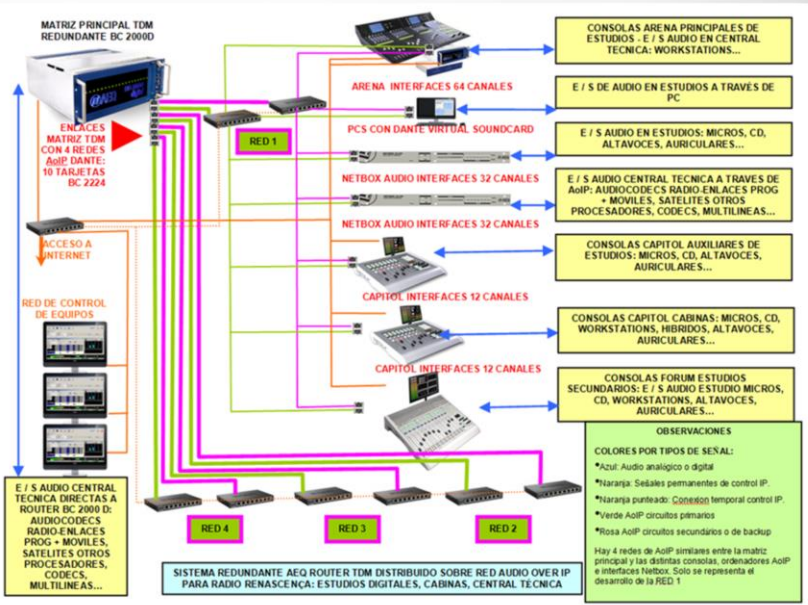
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Radio Renascença has launched in its new headquarters on the outskirts of Lisbon a new studio facility where the production and distribution of audio using equipment by AEQ.

To achieve this objective all the studies are related based on a centralized infrastructure that allows any signal anywhere with high level of reliability and availability.

AEQ Arena, Capitol, and Forum consoles where used in the studios.

DANTE FOR RADIO



DANTE FOR REMOTE PRODUCTION

NEP Provides a trio of trucks featuring Dante for the WWE



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WWE's trucks, which debuted April 25, 2016.

WWE relies on a 100%-fiber infrastructure throughout the trucks and into each venue (all copper has been eliminated) and Dante-based IP audio and comms.

The unit features a 40-Gbps infrastructure within the trucks and 10-Gbps connectivity to drops throughout the venue. In addition, WWE leverages an enterprise-class Cisco network throughout the trucks, allowing the IT team to more easily integrate with each venue and manage the massive event that WWE delivers on top of the linear telecast.

DANTE FOR REMOTE PRODUCTION

All Mobile Video's Zurich Remote Truck with Dante AoIP



 Dante™
by Audinate

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All Mobile Video (AMV) debuted a new remote truck in late February 2016 at iHeartRadio's inaugural iHeart80s Party in Los Angeles with 11 Focusrite RedNet converters installed to handle management and distribution of the audio communications, IFB and camera control circuits throughout the video and audio production environment.

RTS Intercom, RedNet, Studer, and others.

DANTE FOR TELEVISION



SSL's flagship Broadcast production platform System T, and Live Series consoles include high capacity Dante connectivity and can be combined with SSL's Network IO range. The console control surfaces make use of the Dante API and are routing controllers for any Dante device from any manufacturer on the network.

System T consoles and infrastructure started shipping shortly after NAB 2016 and have been installed here in the US, in the UK, France, Denmark, Japan and Brazil among others.

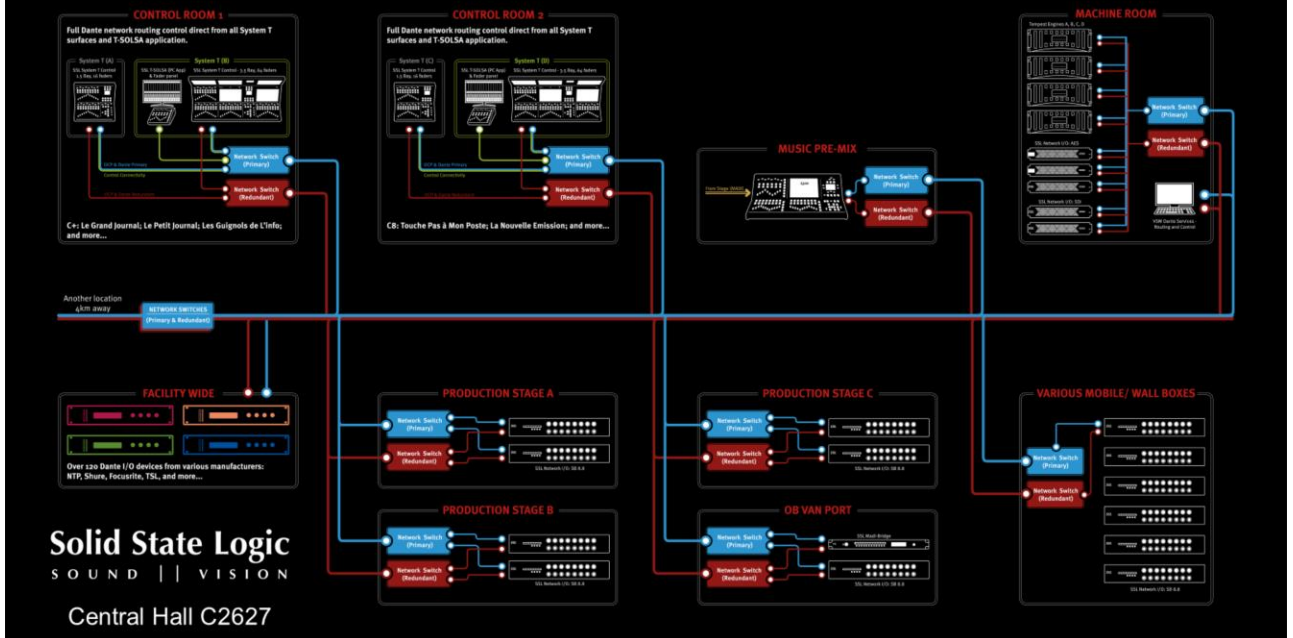
DANTE FOR TELEVISION



Canal Factory, a recently developed production facility for French premium subscription channel Canal+, and the free to air channel C8, has undergone a major upgrade to its technical infrastructure. The studio has moved its audio and video workflow to a facility-wide network, which includes the installation of four large-scale SSL System T broadcast audio production systems, an SSL L500 Live console, and SSL Network I/O interfaces.

Canal Factory is responsible for much of the Canal+ and C8 core daily live programming and music events broadcasts. The C8's daily talk shows, as well as its nightly news and talk shows such as *Le Petit Journal*, plus live music and the major sports shows Canal Football Club and Canal Rugby Club are all broadcasting using the new systems. When not in use on live productions the new studios are used for pre-records of shows such as the popular satirical puppet show *Les Guignols*.

System T Installation: Canal+, Boulogne.



All of these are connected via a high-capacity (120+ devices, 6000 x 6000 audio channels), fully redundant Dante AoIP network that shares the core Canal Factory IP infrastructure.

The facilities include two main audio control rooms, three production stages, and a music pre-mix studio. All audio I/O is connected to the fully redundant Dante network on Cisco network switches. This provides comprehensive, ultra-low latency distributed routing with full device discovery and more than 6,000 x 6,000 system channel capacity across over 120 Dante devices. Audio IO devices include Network IO from SSL, but also devices from Focusrite, NTP, Shure, TSL Products and others. Routing of all of these devices can be both controlled from the SSL System T surfaces and routing control panels connected to the network.

The Dante Network has also been extended to Canal+'s Lumière studios, which are in a separate building, via a fibre link, so that studio's existing MADI infrastructure is now incorporated into the new network. The same network infrastructure's shares control communication and SMPTE 2022-6 Video.

DANTE FOR TELEVISION



"This facility is proof that a large-scale AoIP network infrastructure can serve a sophisticated round-the-clock broadcast operation. It's made us more flexible - ready for anything."

Charles Lesoil, Head Of Engineering, Canal+



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The two audio control rooms at Canal Factory each feature a 64-fader System T control surface, an additional 16-fader 1.5-bay pre-mix surface (right), and SSL's T-SOLSA control software with a 16-fader panel, all connected to SSL Tempest Audio Engines capable of 800 paths of processing.

DANTE

DOMAIN MANAGER

COMPLETE NETWORK MANAGEMENT FOR DANTE SYSTEMS



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What is Dante Domain Manager? It is a global view of all of your Dante devices everywhere around the campus, enterprise or any installation. The solution provides you with the ability to monitor the health, manage the users and devices, and secure any person, device or computer that touches the Dante network. We have brought IT best practices for network security to the AV industry.

WHAT IS DANTE DOMAIN MANAGER?

- ✓ Dante Domain Manager is server-based software that manages your Dante network

- ✓ Runs on Windows or Linux, desktop and server platforms, or virtual environments

- ✓ Managed with a web browser from computer, tablet or phone

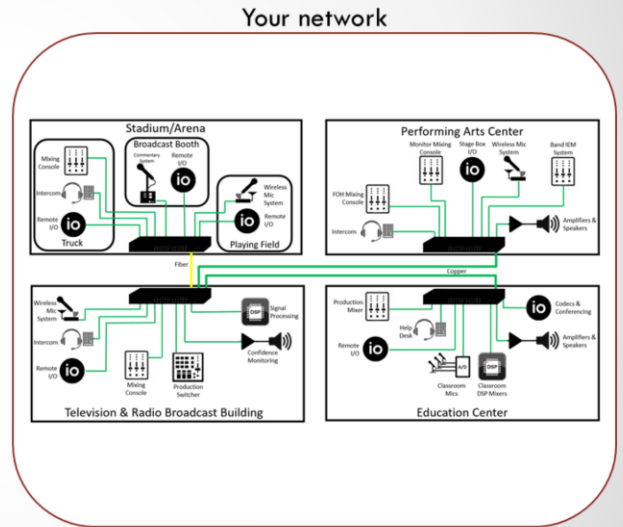
- ✓ Not in the audio path – audio continues even if the server has failed or is unreachable

Dante Domain Manager is server based software that can run in a Windows, Linux or virtual environment. The server provides the ability to use any browser to access a dashboard view of the Dante environment under your responsibility. The server does not sit in the audio path of your Dante network so if your server fails it does not effect the audio of your installation.

Before I show you the solution let me explain to you what a Dante Domain is:

ABOUT DANTE DOMAINS

- ✓ A Dante Domain is a logical group of devices and users with access controls
- ✓ A Dante Domain may be used to represent a location, building, zone, ...
- ✓ Many Dante Domains can share one underlying network
- ✓ A Dante Domain may span IP subnets
- ✓ A Dante Domain can be isolated



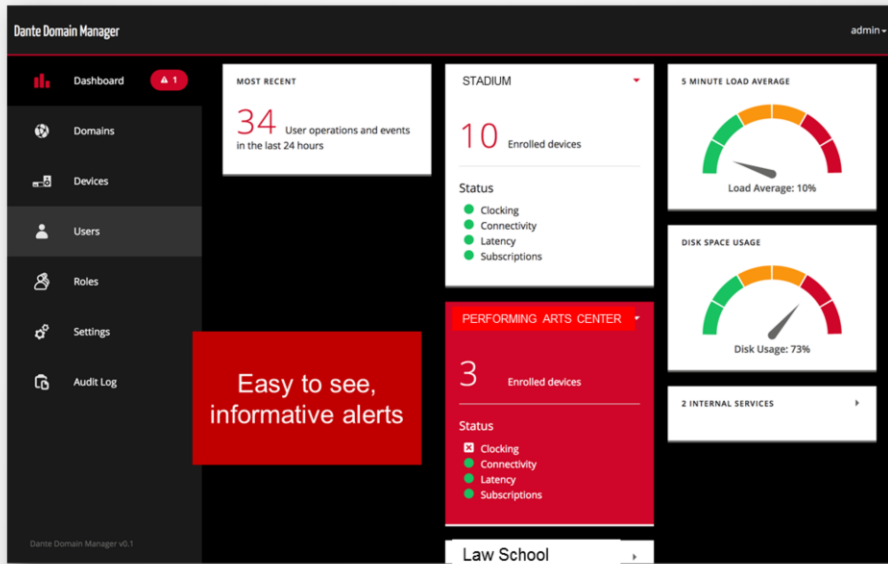
A Dante Domain and a network domain are different.

A Dante Domain is a group of Dante-enabled devices arranged together in a group that make sense to you. On a university campus as shown here on the screen a Dante Domain could be all of the products used in the stadium installation. It would also be all of the products in each of the 3 other areas. So this screen shows 4 different Dante Domains in the university installation. All of the areas can monitored, managed and secured from a central location.

And since Dante is built on layer 3 technology, this means when you are utilizing Dante Domain Manager you will also have the ability to send audio across multiple subnets. This is something that is brand new and will really change the way systems can be implemented.

Lets take a look at Dante Domain Manager:

DANTE DOMAIN MANAGER



Here is a quick dashboard view that provides the health of your Dante network at a glance. This can be customized to fit your needs showing alerts, the status of all your Dante Domains, changes to the environment, etc... .

In this scenario the Dante Domains are called Stadium, Performing Arts Center and Law School.

You can look at each of the Dante Domains and see if you have green lights for all of your monitoring areas such as clocking, Connectivity, Latency and Subscriptions. You can notice that there happens to be an issue with the clocking in the Performing Arts Center. When this first took place you would have seen this alert in the dashboard, but you could have also received an email letting you know that this has taken place.

Lets dive a little deeper!

DEBNET CROSSING

The screenshot shows the Dante Domain Manager web interface. On the left is a navigation sidebar with options: Dashboard, Domains, Devices, Users, Roles, Settings, and Audit Log. The 'Domains' section is active, showing a list of domains: Performing Arts Center, Stadium, and Law School. A red box labeled 'Domains' points to this list. On the right, the 'Devices' section is active, showing a table of devices for the subnet 10.10.70.0/24. A red box labeled 'Devices in domain' points to the table. Below this, another table for subnet 10.10.72.0/24 is partially visible. A red box labeled 'Subnets in domain' points to the subnets section.

| NAME | ENROLL STATE | CONNECTIVITY |
|---------------------|--------------|--------------|
| Stage Manager - Mic | ENROLLED | ONLINE |
| Stage Box | ENROLLED | ONLINE |
| House DSP | ENROLLED | ONLINE |
| FOH Console | ENROLLED | ONLINE |
| RTL Intercom | ENROLLED | ONLINE |
| House Amplifier | ENROLLED | ONLINE |

In this view you have the ability to see all of the devices that you have in each Dante Domain. Any new Dante device connected to the network will always first appear in an Ad-hoc network until someone with specific privileges enrolls the device into a Dante Domain. When a device is in an Ad-hoc state they can be seen by everyone who is connected to the Ad-hoc network using Dante Controller. Just like a normal Dante system.

An Administrator is able to move the devices into a Dante Domain. And once the device is in a given Domain, say the Performing Arts Center, for example, only those users with access and privileges can connect to the Performing Arts Center system.

Doing this ensures that someone cannot plug a device into the network and change, disrupt, or route audio channels. In other words, no one will be able to connect a device, route audio to it and be able to listen to a private or classified meeting. Dante Domain's are isolated from the Ad-hoc network.

Notice the fact that you can have multiple subnets in the same Dante Domain.

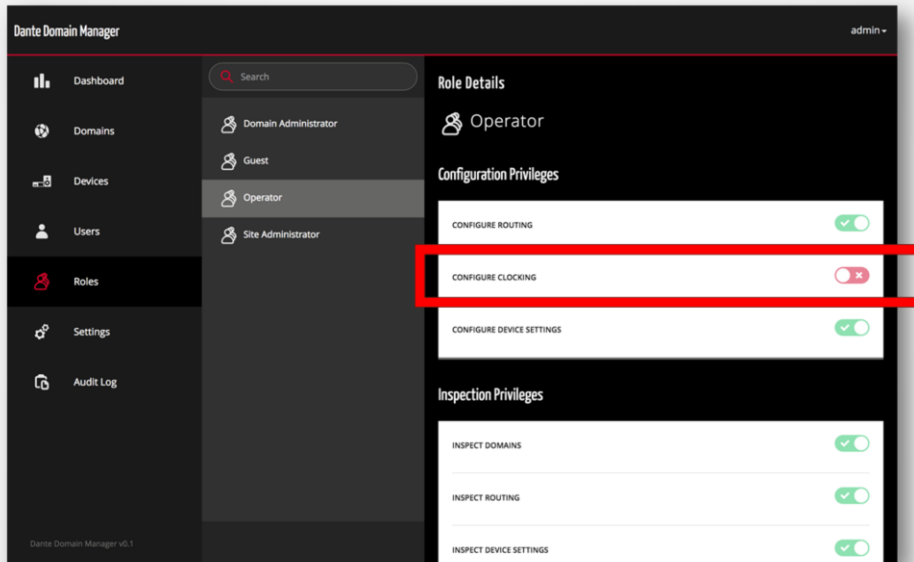
DEFINE USERS AND PRIVILEGES

The screenshot shows the Dante Domain Manager interface. The left sidebar contains navigation options: Dashboard (with a notification badge), Domains, Devices, Users (highlighted), Roles, Settings, and Audit Log. The main content area is titled 'User Details' and shows the profile for 'Danu V'. The form includes fields for USERNAME* (Danu), PASSWORD* (masked), CONFIRM PASSWORD* (masked), and EMAIL ADDRESS (dvano@example.com). Below these is a 'Privileges' section with a dropdown menu for 'DEFAULT ROLE' set to 'Domain Administrator'. A red box highlights this dropdown. At the bottom, there is a 'Domain-Specific Privileges' table with columns for DOMAIN and ROLE. The table shows 'Stadium' as the domain and 'Domain Administrator' as the role, with a 'REMOVE' button next to it.

Speaking of privileges: Dante Domain Manager provides you with the ability to create specific rights for each person in the system. Rights are not only assigned by the Administrator for each person in the system they can also limit where each person has privileges. In this scenario you will notice the employee Danu has Domain Administrator privileges, however he only has that privilege in the Dante Domain called, Stadium. He does not have privileges to any other Dante Domains except the Stadium.

If your organization uses LDAP or Active Directory these privileges can be assigned within that system and passed along to Dante Domain Manager. So when a new employees starts they will only be provided access and rights to the appropriate AV equipment. This mimics the same way they are given rights with all of the other IT equipment on the network, such as computers, printers, access badges, etc...

LIMIT ACCESS TO KEY FUNCTIONS



There are four roles that someone can be assigned in the system. Guest, Operator, Domain Administrator, Site Administrator. A guest might be a contractor that is coming to work on the system. It could also be a guest such as the media and you only want to provide them with a stereo feed with no other rights. An Operator would be the day to day user of the system. The Domain Administrator has full rights but only over a single Dante Domain. A Site Administrator has full access to everything in all Dante Domains.

Each role can also have different functions. You can provide different privileges to people with the same Role.

AUDIT LOG

| Timestamp | Action | Details | User | IP Address |
|-----------------------------|-----------------------|---|-----------------|----------------|
| Thu Jan 26 2017 11:46:27 AM | Created user account | Created user account Kelly S - fullname: Kelly S, password: *****, email: ksmith@example.com, defaultRole: Operator | admin | 10.8.0.6 |
| Thu Mar 09 2017 6:47:39 PM | Relabelled Tx channel | Added label Pgm R to Tx channel 4 | admin | 169.254.60.246 |
| Thu Mar 09 2017 6:47:29 PM | Labelled Rx channel | Relabelled Rx channel 4 to Main Mix Out | admin | 169.254.60.246 |
| Thu Mar 09 2017 6:47:13 PM | Labelled Rx channel | Relabelled Rx channel 3 to ALS Out | admin | 169.254.60.246 |
| Thu Jan 26 2017 10:10:41 AM | Clock out of sync | Clocking of UltimoX2-900010 enrolled in green out of sync | UltimoX2-900010 | 10.10.70.65 |
| Jan 26 2017 10:10:40 AM | Clock sync restored | Clocking of BKNII-06ea1c enrolled in green restored | BKNII-06ea1c | 10.10.70.74 |
| Jan 26 2017 10:10:39 AM | Clock sync restored | Clocking of Ultimo4-0a180f enrolled in green restored | Ultimo4-0a180f | 10.10.72.51 |

Who did what,
and when

Have you ever been called out to a customer site because of issues and you swear something in the system was changed by the customer. You will now have the ability to see who did what, where and when to your Dante implementation. The audit log will go down to the littlest of details, like someone changed the name of a route. This log can be exported to a third party system if you like such as Crystal Reports, Excel, etc....

SNMP INTEGRATION

The screenshot displays the ServiceNow IT Service Management Suite interface. At the top, the header reads "servicenow™ IT Service Management Suite". The user is logged in as "ITIL User" in the "global" domain. The main content area shows an incident record for "INC11092" with details such as "San Diego West" location, "3 - Low" impact and urgency, and "4 - Low" priority. The short description is "new meeting office 365".

A search window titled "Add to Knowledgebase" is overlaid on the incident record, showing search results for "new meeting office 365". The search results include two articles:

- How to: Show-IT - Create a meeting in Outlook Web App in Microsoft Office 365.** (5 stars) - Click Outlook, click New, click Meeting Request option.
- How to: Create a calendar meeting in Outlook Web App in Microsoft Office 365.** (5 stars) - Click Outlook, click New, click Meeting Request option.

The bottom of the screenshot shows a system status bar with various performance metrics and alerts, including "High Transport Percent Utilization" and "Perf_Txn_Mail9120".

As long as we are talking about sending information to 3rd party systems, let's talk ways that we handle alerts. I mentioned earlier about the fact that an alert will show up in the dashboard. However, you also have the ability to have an email or text message sent to you when there is an alert. If your environment is more automated, you can have an SNMP trap created for the alerts and have it sent to whatever your 3rd party system is for monitoring larger AV environments such as Crestron Fusion. If your company has a more traditional IT-centric system, you may want to have the SNMP traps sent to your IT Service Management system, something like Solarwinds. You even have the ability to have your alerts / SNMP traps sent off to an online service that provides Service Management such as Service Now. If your company provides its own Service Management solution to manage your customers' environments, the information can even be passed on to your hosted solution.

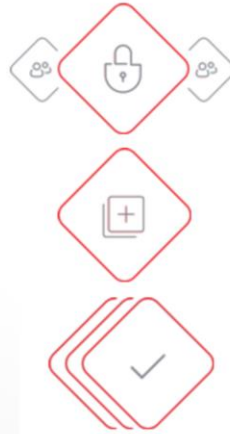
WHY DDM SHOULD BE IN EVERY DEAL

DANTE DOMAIN MANAGER

SECURITY

SCALABILITY

VISIBILITY



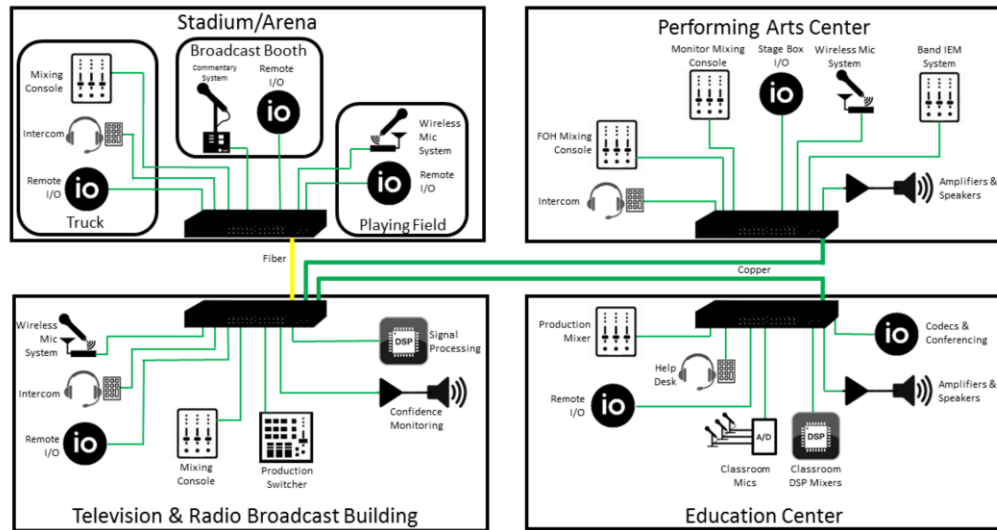
CONTROL

FLEXIBILITY

ACCOUNTABILITY

DDM is not just a solution for the big installations. It can meet the needs of the very small install to the very large install. An install that is as small as a single executive boardroom will be very interested in the security that DDM provides for the conversations. This is especially true if they are a publicly held company, Department of Defense or government customer. You will also find that certain customers would like to have audio cross into multiple subnets of their network. An AV Administrator will also have the ability to create reports to share with the organization regarding their environments, including errors, outages, and the ability to be proactive in handling issues. If there is an issue in a specific room you can call the person who has a meeting scheduled and let them know that they may need to reschedule their meeting for another conference room because there is an issue. They do not need to wait for someone to complain. In addition, DDM is the best insurance that allows your customers the ability to grow their environment with the flexibility to hold people accountable for their actions.

USE CASE: HIGHER EDUCATION



Lets take a look again at the Higher Education Use Case: This scenario in the past would be 4 completely different installations that would require that you log separately into each network to be able to see the environment.

Or it could be one giant subnet. But the risk being that someone in the Education Center could change the audio routing of the Stadium, or Performing Arts Center, etc..

However since Dante is built on Layer 3 technology you now have the ability to create Domains and get a view into all of these different environments from your desk at the same time. In addition if you need the ability to send audio from the big game in the stadium to the Education Center so the students can hear the game in the hallways between class you will have that ability. This solution will also provide them with the ability to alert as many people as possible to an issue on campus.

SEAMLESS INTEGRATION WITH IT

VIRTUAL SERVER SUPPORT

- Run Dante Domain Manager on virtual machines in data centers

ACTIVE DIRECTORY & LDAP

- Connect Dante Domain Manager to your Active Directory or LDAP server for user management

HIGH AVAILABILITY

- Support for redundant DDM servers in one site

COMMON TOOLS & METHODS

- SNMP Support, Email integration

In review, Dante Domain Manager was specifically designed to seamlessly integrate with almost every one of your customers IT environments. The solution can run on a virtual machine in the data center while connected to LDAP & Active Directory. At the same time it can run in a redundant, high availability state using SNMP traps to automate your alerting systems.

AV and IT have truly come together to create the most advanced management system for the AV industry.

WHAT CAN I DO WITH THE DDM?

**AV
Managers**



✓ Easily trouble-shoot AV System problems, identify root causes and take corrective actions quickly

**IT
Administrators**



✓ Use my Directory service to manage access to AV systems
✓ Prevent unauthorized changes to AV systems

**System
Integrators,
AV Consultants**



✓ Divide systems into manageable sub-domains
✓ Deploy Dante in campus routed IP networks

**AV System
Owners**



✓ Get notified of AV System issues so they can be actioned immediately

What can your customers do with DDM:

Easily find the root cause of an issue

Prevent unauthorized changes to the systems

Manage all of their the AV environments from a central location

Become proactive in their environment and report to management

with issues.

IT BEST PRACTICES HAVE COME TO AV

DANTE DOMAIN MANAGER

Do you have any questions about becoming an Audinate Partner / Reseller of Dante Domain Manager?

THANK YOU

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