



WyreStorm AVoIP Scalability: Building AV Systems Ready for What Comes Next



A multi-room AV system should solve today's communication needs without creating tomorrow's infrastructure problem. As organizations add meeting rooms, classrooms, digital signage displays, divisible spaces, and shared content sources, traditional point-to-point distribution can become difficult to expand and manage.

WyreStorm NetworkHD and other WyreStorm AV-over-IP solutions can provide a flexible foundation for distributing audio, video, and control across an IP network: when the system is properly engineered from the beginning.

The important distinction is that scalability does not come from selecting an AVoIP product alone. It comes from coordinating the platform, network architecture, endpoint strategy, control design, documentation, and commissioning process. That is where experienced AV and IT engineering makes the difference.

What scalability means in an AVoIP system

A scalable AV-over-IP design should make it practical to:

- Add transmitters and receivers as spaces grow
- Route sources to new destinations without redesigning the entire system
- Support different room types and display requirements
- Expand control capabilities over time
- Maintain predictable network performance
- Troubleshoot issues without relying on guesswork
- Coordinate AV traffic with the organization's IT standards



WyreStorm's NetworkHD platform is designed for IP-based distribution and can support systems ranging from smaller installations to large deployments. WyreStorm documentation describes NetworkHD as highly scalable, with testing involving up to 1,000 transmitter and receiver devices in appropriate configurations.

That does not mean every project should be designed around a maximum endpoint number. The right capacity depends on the selected product series, resolution, compression, switching infrastructure, uplink capacity, control requirements, and the physical layout of the facility.

Scalability is a design outcome: not simply a specification on a product page.

Start with network planning, not equipment placement

The network is the transport layer for an AVoIP system. Before selecting switch ports or drawing endpoint locations, the design team should understand how the AV system will operate.

Important planning questions include:

1. How many sources will be connected?
2. How many displays or destinations are required today?
3. Which rooms need independent routing?
4. Which spaces may be combined in the future?
5. What resolutions and refresh rates must be supported?
6. Will audio, video, and control share the same physical infrastructure?
7. Will AV traffic use a dedicated network or a shared enterprise environment?
8. Where are the core, distribution, and edge switches located?
9. What growth is expected over the next three to five years?
10. Who will own network monitoring and ongoing support?

A useful design should document both the current requirement and the expected expansion path. For example, a headquarters may begin with 12 meeting rooms but have a master plan for 30 rooms. Designing only for the initial deployment can create unnecessary costs later if the core, uplinks, rack space, or switch capacity cannot accommodate growth.

An AV integrator and IT team should review the network topology together before installation begins. This allows the design to account for existing standards, security policies, fiber pathways, power requirements, redundancy expectations, and maintenance procedures.



Bandwidth must be calculated by system design

Bandwidth requirements vary by WyreStorm series and by the resolution and format being transported. A 1080p distribution system will not place the same demands on the network as a 4K system with higher-quality color sampling and less compression.

For some 1GbE NetworkHD configurations, WyreStorm documentation identifies video traffic of approximately 150 Mb/s per transmitter. That figure should be treated as a model-specific planning reference: not a universal value for every WyreStorm AVoIP product.

A basic planning exercise may look like this:

- 10 active transmitters
- Approximately 150 Mb/s per transmitter
- Rough aggregate video traffic of 1.5 Gb/s before allowing for other traffic, protocol overhead, and future growth

The calculation is only the starting point. Engineers must also consider:

- Switch backplane capacity
- Oversubscription between edge switches and the core
- Uplink speed and utilization
- Multicast replication behavior
- Concurrent streams



- Receiver placement
- Control and management traffic
- Network traffic already present on shared infrastructure

The selected switch fabric should be able to carry the expected AV traffic without creating avoidable congestion. In larger systems, uplinks may need to be 10GbE or greater, depending on the platform and traffic design.

The [WyreStorm NetworkHD Technical Reference Guide](#) should be consulted for product-specific requirements before finalizing the network architecture.

VLANs and multicast: keeping traffic where it belongs

AVoIP systems commonly use multicast to distribute one source stream to multiple destinations efficiently. Without proper multicast controls, that traffic may be forwarded to network ports that do not need it, consuming bandwidth and making troubleshooting more difficult.

WyreStorm NetworkHD documentation identifies the importance of managed-switch features such as:

- IGMP snooping
- IGMP querier functionality
- Multicast filtering
- Correct VLAN assignment
- Appropriate port-forwarding behavior

A dedicated AV VLAN is often a practical way to separate AV traffic from general corporate data. WyreStorm notes that NetworkHD does not strictly require multiple VLANs, but the platform still depends on correct multicast configuration on the managed network.

Whether the AV system uses one VLAN, multiple VLANs, or a separate AV switch fabric should be determined with the organization's IT team. The answer depends on the size of the system, the security model, the existing network, and the operational preferences of the customer.

The goal is not to add network complexity for its own sake. The goal is to create predictable traffic paths and clear ownership.

A properly planned AV VLAN can help the team:

- Limit unnecessary multicast propagation
- Simplify monitoring and fault isolation
- Establish clear access policies
- Reduce the risk of AV traffic affecting unrelated devices
- Create a repeatable model for future room additions



Plan for endpoint growth

Endpoint growth is more than adding extra ports to a switch. Each new transmitter or receiver may affect power, rack space, cooling, IP addressing, labeling, control programming, network capacity, and service procedures.

A scalable WyreStorm design should reserve capacity in several areas:

Switch capacity

Leave sufficient available ports and switching capacity for planned additions. If every switch port is consumed on day one, even a small expansion may require replacing equipment rather than adding endpoints.

Uplinks

An edge switch may have enough local ports but still lack the uplink capacity needed to carry additional streams back to the core. Uplink planning is especially important when sources and destinations are distributed across multiple floors or buildings.

Rack and power requirements

Additional endpoints require physical space, power, cable management, and thermal planning. These requirements should be reflected in rack elevations and installation drawings.



Addressing and naming

A clear IP addressing and naming convention helps IT and AV teams identify endpoints quickly. Names should reflect the room, function, and device role rather than relying only on serial numbers.

Control expansion

Future rooms may need room combining, presets, source selection, display control, audio control, or integration with a broader building automation system. The control architecture should leave room for these requirements.

Source and destination flexibility

One of the primary benefits of AVoIP is the ability to separate sources from destinations. A source in one room can potentially be routed to one or more displays elsewhere, subject to the capabilities and configuration of the selected WyreStorm platform.

That flexibility can support many applications, including:

- Sharing a presentation across several meeting rooms
- Distributing a town hall event throughout a building
- Sending a common information feed to digital signage displays
- Routing classroom content to overflow spaces
- Connecting production or command-center sources to designated destinations
- Supporting divisible rooms with different operating modes

However, flexible routing still requires clear user requirements. Not every source should necessarily be available everywhere. Permissions, control interfaces, content protection, and room-specific workflows should be established during design.

The system should make common actions simple for users while preserving appropriate administrative control behind the scenes.

Control architecture matters as the system expands

WyreStorm NetworkHD systems can use a dedicated control appliance such as the NHD-IP-CTL, with third-party control systems communicating through the control layer rather than directly managing switch multicast behavior.

This separation is helpful because it assigns distinct responsibilities:

- The network transports the AV streams
- The WyreStorm control layer manages routing and endpoint functions
- The room control system presents the user interface
- IT manages network policies, monitoring, and infrastructure standards



Depending on the platform and project requirements, endpoint control may include IR, RS-232, and Ethernet-based functions. The specific control capabilities should be confirmed against the selected WyreStorm models and the customer's control platform.

The larger the installation, the more important it becomes to define what users can control, what administrators can change, and how failures are reported.

Documentation turns a working system into a supportable system

Documentation is one of the most important parts of scalability. A system that works but cannot be understood by the next technician is expensive to maintain.

A complete project package may include:

- AV signal-flow diagrams
- Network topology drawings
- Rack elevations
- Device schedules
- Port maps
- IP address schedules
- VLAN information
- Cable labels and termination records
- Control-system documentation
- Configuration backups
- Test results
- Warranty and service information
- Recommended expansion notes

Documentation should be updated during installation and commissioning; not recreated from memory months later.

For integrators, clear documentation also improves handoff to the customer's IT and facilities teams. For end users, it provides a reliable reference when rooms are renovated, departments relocate, or new devices are added.



Commissioning verifies the design in the real environment

A system can appear correct on paper and still encounter problems during deployment. Commissioning validates that the equipment, network, control system, and user workflows operate together as intended.

A thorough commissioning process should verify:

- Every transmitter and receiver is online
- Video routes correctly at the required resolutions
- Audio follows the correct signal path
- Multicast traffic reaches only intended destinations
- IGMP behavior is working as designed
- Room controls perform the expected functions
- Displays wake, switch inputs, and power down correctly
- Sources can be routed to approved destinations
- Room-combine scenarios operate properly
- Network and AV faults can be isolated
- Configuration files and backups are stored securely

It is also valuable to test expansion assumptions. If the project is intended to grow, the commissioning team should confirm that spare ports, addressing conventions, rack space, and documentation are ready for the next phase.



Bring AV and IT together early

Successful AVoIP deployments are collaborative projects. AV integrators understand signal flow, room experience, endpoint behavior, and control. IT teams understand network architecture, security, monitoring, change control, and lifecycle management.

Neither discipline should be brought in only after problems appear.

At [Simply Innovative Unified Communications](#), our approach combines AV and IT planning to help organizations develop flexible, responsibly engineered systems. We support consulting, design, procurement, project coordination, deployment guidance, and service through a network of specialized partners.

The result should be more than a collection of encoders, decoders, switches, and displays. It should be a documented system with a clear growth path, predictable operation, and a practical support model.

Build for the next room, not just the current one

WyreStorm AVoIP can provide a strong platform for scalable distribution of audio, video, and control: but the network and engineering decisions surrounding the platform determine how well it performs over time.

When bandwidth is calculated carefully, multicast is controlled, VLANs are planned with IT, endpoint growth is anticipated, routing requirements are documented, and commissioning is thorough, an AVoIP system can adapt as the organization changes.

Planning a multi-room AV deployment or expanding an existing system? [Contact Simply Innovative Unified Communications](#) for an AVoIP engineering consultation. We can help evaluate your rooms, network, endpoints, control requirements, and future growth before equipment is ordered.

Sources and technical references

- [WyreStorm NetworkHD](#)
- [WyreStorm NetworkHD Technical Reference Guide](#)
- [WyreStorm NetworkHD product information](#)
- [Simply Innovative Unified Communications: What We Do](#)
- [Simply Innovative Unified Communications: About](#)