12843 Foothill Blvd. Suite C
Sylmar, California 91342
V: 818.898.3380
F: 818.898.3360
sales@dnfcontrols.com
www.dnfcontrols.com

Tally Control System: Centralized vs. De-centralized

Selecting a control system is foremost about selecting a design and operational philosophy— Centralization or De-centralization. Tally Manager™ supports both design and operational philosophies.

Centralization's chief characteristics are:

- One operating controller (plus offline backup when redundancy is required) that touches every aspect of the facility from routers to production switchers to multi-viewers to camera and device tallies
- One set of configuration files that encompass every device connected to the system
- One device from which to control system configuration and operation

De-centralization's chief characteristics are:

- More than one operating controller to distribute connections to routers, production switchers, multi-viewers, camera and device on-air tallies across multiple pieces of hardware in some logical manner
- Each operating controller contains its own configuration files for those devices it is connected to and the functionality that it is tasked with
- Multiple devices from which to control system configuration and operation

Ultimately, centralization and de-centralization accomplish the very same end result using very different approaches. Each approach has its advantages and disadvantages in the various build phases as described below.

System Design

A centralized system will typically use less hardware than a de-centralized system. Less hardware can mean less design effort, less number of drawings, and less system cost. A centralized design identifies the number of serial ports, GPI/O, and Ethernet connections required. How the system will be used and configured is deferred to the System Installation phase.

A de-centralized system requires more design thought upfront to identify each of the areas that it will be deployed in and how it will be used. How it is deployed will impact the quantity of hardware required, typically more than a centralized design. More hardware can mean more drawings and more system cost. Since more design thought was expended in this phase, the System Installation phase, aside from physical installation is a shorter configuration implementation phase.

System Installation

For a centralized system, this is the phase where the system use and operation will be defined and then implemented. For a de-centralized system, the use and operation have already been detailed in the System Design phase so that this phase is configuration implementation.

The centralized system has one device at which the system configuration files are built and system operation is specified. The user interface is typically a computer or terminal connected to this central device. The configuration process involves accessing and manipulating multiple screens of data.

A de-centralized system has multiple devices which need to be configured individually and their operation specified. The user interface is a computer running a web-browser that connects to each system component at its own IP address. Like a centralized system, the user will access and manipulate data across multiple web pages. Unlike the centralized system, the built configuration files will reside on their respective system components.

The test phase on a centralized system may be perceived as being easier due to there being less hardware and less system components. In actuality, the test effort may be the same or greater on the centralized system due to the inability to break the system into manageable parts and bring up each part individually, like a de-centralized system. In the end, effort is expended on both types of systems which each having its own bring up challenges.

System Use

Daily use is the longest phase of the system build, stretching years and tens of years. User satisfaction with a centralized vs. de-centralized system will be greatly dependent upon how they are using the system.

At one end of the Use Continuum is a static system configuration where one customer / client / user uses the system with a single setup that does not change, ever. At the other end of the Use Continuum is a dynamic system configuration that supports many changing users with ever changing needs, typical of a commercial production facility. “Changes” includes adding, replacing, and moving equipment; making client requested changes due to personnel, workflow, or show changes. The challenge during the System Design phase is identifying where on the Use Continuum the facility will fall.

By the nature of its design, a centralized system centralizes risk. Another way of looking at it is that a change made on a centralized system has the potential to take down that system. A de-centralized system spreads risk among its various system components. A change made to a system component has the potential to take down that unit but not the system.

On a centralized system, all production control rooms are attached to the one system. Configuration changes made to one room may impact the operation of other control room that are being used. Restoring a configuration for one room will change the configuration of the other rooms. In a de-centralized system, production control rooms are connected to isolated system components such that changes made in one room

have no impact on the other rooms. Restoring a show configuration in PCR #A will have no impact on PCR #B, which is currently on-air.

Due to its inherent nature, system changes are more risky on a centralized system than on a de-centralized system. The potential cost of making a change is taking down the system or adversely impacting other rooms that are in use. For this reason, it is not uncommon for facilities to ask the manufacturer of the centralized system to make any system changes or to discourage system changes. If the facility is closer to the dynamic end of the Use Continuum, then its ability to meet the client's needs in a reasonable time frame is severely impacted. If the facility is closer to the static end of the Use Continuum, there may be no significant impact.

On a de-centralized system, changes can be made easily and quickly, at any time, impacting only the room in which the change is being made. Facilities closer to the dynamic end of the Use Continuum can easily meet a client's needs in a reasonable timeframe. Additionally, ease of use encourages an openness to making changes that may simplify, enhance, or improve a client's production experience. For facilities closer to the static end of the Use Continuum, ease of use may not be a significant factor in system selection.

System Maintenance

System maintenance is the second longest phase of a system build. System maintenance can include monitoring the system's operation, troubleshooting operational and system issues during and after productions, performing software upgrades and doing hardware and infrastructure repairs.

Infrastructure repairs may include correcting wiring and power related problems, and fixing equipment connected to the system—routers, production switchers, multi-viewers, etc. Operational issues may include operator errors that occur due to incorrect system usage or system mis-configuration.

On a centralized system, all problems can potentially affect the whole system. Correcting a mis-configuration in PCR #A by changing a configuration file may impact PCR #B while it is in use. Troubleshooting a cabling issue on the back of the central processor can adversely impact other devices and rooms connected to the back of the processor. Because of their inherent concentrated risk, centralized systems require maintenance personnel with a higher level of skills and experience with the system and the facility configuration. It is not unusual for a facility to appoint one maintenance person to perform this role. Additionally, system troubleshooting may be delayed and a client asked to live with or work around an issue until it can be addressed without impacting the other rooms or the maintenance person is available.

On a de-centralized system and in conjunction with a system design that isolates rooms from each other, problems can be addressed quickly and easily without impacting other rooms. With only general knowledge of the system and its configuration, maintenance personnel can easily identify what is working and is not, to isolate, identify and resolve a problem. Troubleshooting can occur while other rooms are in use without impacting their operation. System changes can be made without requiring a high level of experience or system knowledge.

For facilities close to the static end of the Use Continuum, maintenance's primary role may be to service the system when problems occur, otherwise they will not need to touch it. For facilities at the other end of the continuum, maintenance's role may be to make system changes as needed and when needed, as well as keep the system up and operating correctly.

Summary

Selecting a tally control system is foremost about selecting a design and operational philosophy— Centralization or De-centralization— that best serves the facility based upon how it will be used and its position on the Use Continuum. Ultimately, centralized and de-centralized systems accomplish the very same end result but using very different approaches and presenting different levels of ease of use.

At each phase of a facility build, different levels of effort are required based upon the chosen system. The use phase, the longest of all phases, followed by the maintenance phase must rank higher in consideration than the design and installation phases simply because they have a much greater impact on the function that the facility was created for. Understanding how the facility will be used and its location on the Use Continuum will go far towards selecting a tally control system that best fits the facility's near-term and long-term needs.