

INTERNATIONAL POWERLIFTING FEDARATION
EUROPEAN POWERLIFTING FEDARATION



The IT-Structure of IPF/EPF Competitions

Notes for Events Organizers

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The GOODLIFT is a desktop-based computer system. The system is a network of personal computers that process and display information about the powerlifting competitions. One master computer, the Server PC, is responsible for processing information and managing other computers on the network. The other few computers only display information. It is are called Client PCs. Display devices are connected to Client PCs. Each Client Computer can be connected from one to several Display Devices. Thus, the IT-structure of GOODLIFT can be divided into several interconnected parts (substructures or layers): 1) computers and computer network; 2) end-point display devices (Display Devices); and 3) devices and cables for transmitting video signal from Client Computers to end-point Display Devices. Also, there is a cable for connecting the Server PC to the Internet for transferring data to a remote web server, where the Online Scoreboard is displayed (See Figure 1).

The Parts of Structure. General View

I. The Computers and Computer Network

The GOODLIFT software work on the Windows operating system. It is recommended to use Windows 10, although it can work under any version of Windows, starting with Windows 7.

All computers must have an HDMI video connector (HDMI Type A – Full Size).

All computers are connected to a local network via a cable connection. It is strongly recommended to use a wired connection with equipment that supports gigabit connection or higher. All computers must have network cards that support a gigabit connection. The network switch must support a gigabit connection and contain the required number of sockets for connecting

computers. It is recommended to use network switches up 8 connectors or more. The network cable must be Category 5e or higher to maintain a high-speed gigabit connection. The connectors on the network cables must be reliably plugged in the sockets and locked.

II. Display Devices

These are end-point devices that display information. They can be varied - televisions, computer monitors, projectors and screens, screen walls and arrays, etc. All types of devices must provide a clear and high-contrast picture.

Full HD resolution (1920x1080) recommended for devices.

It is recommended to use HDMI connectors to connect the video signal cable.

The screen sizes of each device are determined by the type of displayed information and the capabilities of the organizers, but no less than the requirements that will be defined further in Table 1.

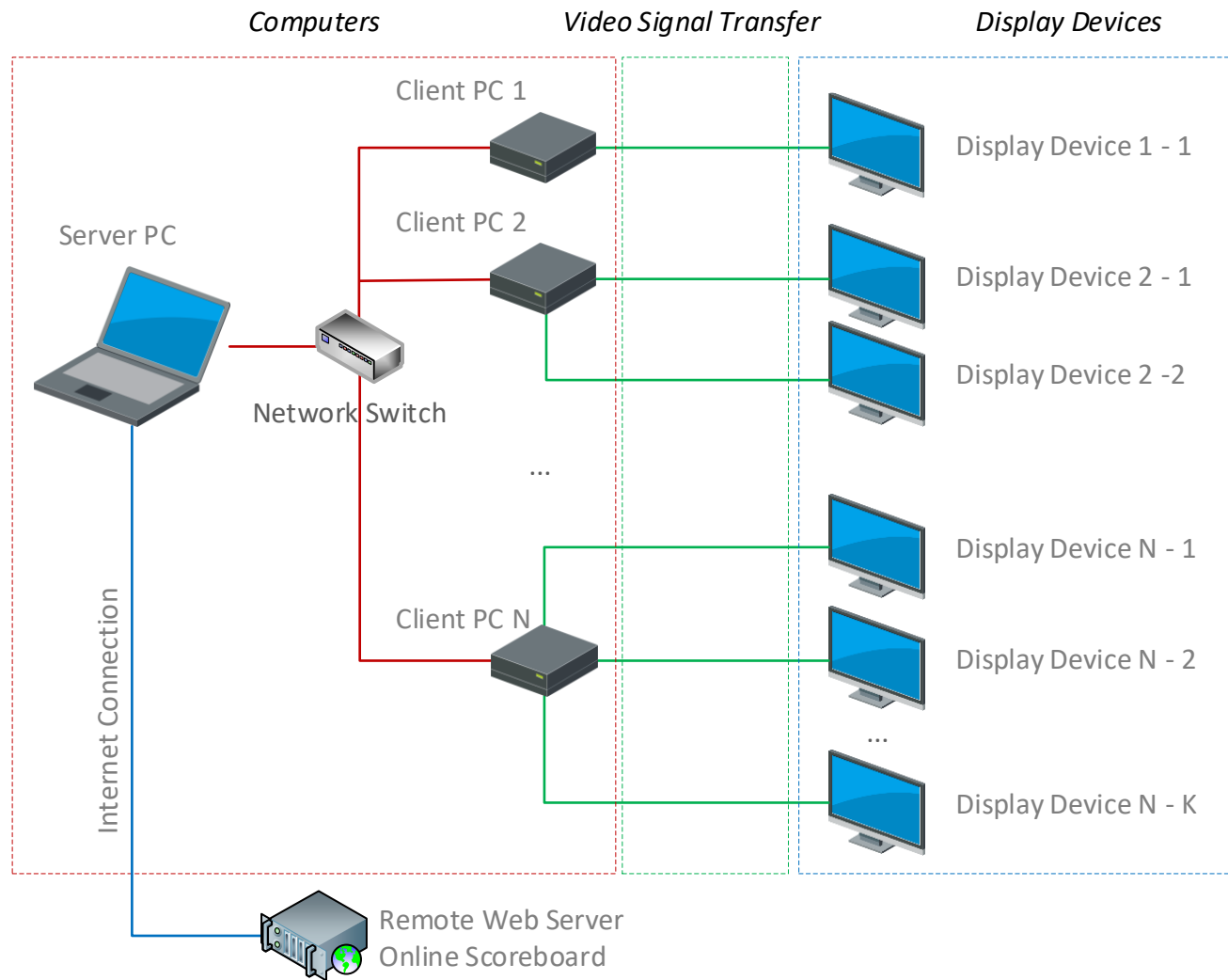
III. Video Signal Transfer

This part of the structure is made up of the cables and devices that are used to transmit a video signal from Client PCs to the end-point Display Devices.

The type of connecting cable is determined by the distance between the Client computers and the end-point Display Devices. It can be VGA-cable, HDMI-cable, ethernet cable, coaxial cable, fiber cable etc.

A variety of devices are used to ensure signal transmission and synchronization of video signal protocols: video signal converters, extenders, repeaters, splitters etc. The type of device is selected based on the type of cable required to transmit the video signal and the capabilities of the organizers.

Figure 1. The IT structure



Requirements for the equipment provided by the organizers of the competition

The minimal standard IT structure is shown in Figure 2 and Figure 3. If the wrapping and warm-up areas are separated by a significant distance, extra equipment should be provided to display information in the warm-up area. In this case, the IT-structure looks like Figure 4 and Figure 5. Also, on the Figures provide additional equipment for the commentator of the online video streaming. *It is necessary to provide equipment for the commentator only if his presence at the competition is determined by the terms of the contract with IPF/EPF.*

Starting from 2020, in order to standardize and unify the working environment and software for all official IPF/EPF competitions, the computers and equipment for networking are provided by IPF/EPF. This equipment includes: personal computers, a network switch and network cables for connecting computers to a network, Power-Hub for connecting client computers and a network switch to power supply.

I. Computers

I.1. All client computers (PCs) and the network switch (NS) are placed together in a special place – at *one separate table* (indicated by T1 in the figures).

I.2. Access of competitors and non-technical specialists to the table with placed computer equipment (T1) *must be limited*. It is appropriate that this table is located near the Computer Secretary's desk.

I.3. It is necessary to provide an ethernet cable to connect the network switch (NS1) and the Referees Lights – cable L1 is indicated on the diagram. The cable must be category 5e or

higher. The length of the cable is determined by the location of the Network Switch and the main unit of the Referees Lights.

I.4. Organizers should be providing one Category 5e or higher Ethernet cable to connect the Server PC (Computer Secretary PC - S1) and the Network Switch (NS1) on the T1 table.

I.5. If the competition has a live video streaming, Organizers should provide one ethernet cable of category 5e or higher to connect the Streaming PC (Computer Secretary desk) and the network switch on the T1 table.

I.6. To connect computers and network equipment to the power supply near the T1 table, organizers should provide a Power-hub – at least 4 EU-Plug connectors.

I.7. To connect equipment near the Computer Secretary desk, the Organizers provide the Power-Hub with at least 5 EU-Plug sockets.

I.8. For a communication with a remote server and data transfer for the Online Scoreboard, Organizers should provide a wired Internet connection with a speed of at least 5Mbit (both Up and Down Stream). The Internet connection cable should be routed to the Computer Secretary's desk.

I.9. If online video streaming is performed with equipment provided by IPF/EPF, the Internet connection should be providing a stream of at least 20Mbit. In view of the previous point, it is necessary to provide one channel of at least 25Mbit (Up and Down Stream) through one wired connection. The Internet connection cable should be routed to the Computer Secretary's desk.

I.10. If video streaming is performed with the participation of a special IPF/EPF TV-Team, it is necessary to provide separate channels for the TV-Team and the Computer Secretary. In this case, to transfer data for The Online Scoreboard, Organizers need to provide a wired Internet connection with a speed of at least

5Mbit (Up and Down Stream). The Internet connection cable should be routed to the Computer Secretary's desk. Connection specifications for video streaming are determined by the requirements of the TV-Team.

II. Video Signal Transfer

II.1. The organizers provide all the equipment that is necessary to transmit the video signal from Client PCs to the end-points of information display (Display Devices).

II.2. All Clients computers have HDMI and DisplayPort connectors. The main connector is HDMI Type A.

II.3. If the computer and Display Device are not connected directly, but through a video signal conversion / splitting / amplification device, Organizers should provide a connection cable between the computer connector and this device (HDMI cable as well).

II.4. The type of cable and devices is determined by the distance from the Client computers to the endpoint Display Devices and the capabilities of the organizers.

Examples

A. If you need to transmit one screen for a short distance up to 10m, you can use an HDMI cable. In this case, the HDMI cable directly connects the HDMI connector of the computer and the HDMI connector of the Display Device. If the distance is up to 20m, you need to use an HDMI cable with active booster.

B. If you need to transmit the signal up to 30m via VGA cable. In this case, use an HDMI to VGA signal converter.

C. If it is necessary to transmit a video signal at a distance of up to 100m. You can use devices for converting and transmitting HDMI

over Ethernet signals. In this case, you will need: An HDMI cable is connected to the PC connector and the transmitter device (HDMI over Ethernet); transmitter device (HDMI to Ethernet, TX); ethernet cable Category 5e (or much better Category 6); receiver device (Ethernet to HDMI, RX); HDMI cable to connect the HDMI to receiver and Display Device.

D. If it is necessary to transmit a video signal over a distance of more than 100m. You can use devices for converting and transmitting HDMI over SDI (SDI - Serial Digital Interface) signals. In this case, you will need: An HDMI cable is connected to the PC connector and the transmitter device (HDMI to SDI); transmitter device (HDMI to SDI, TX); coaxial SDI-cable; receiver device (SDI to HDMI, RX); HDMI cable to connect the receiver and the Display Device.

II.5. The Video Splitter is required to split video signal for multiple Display Devices. Two or three splitters are required depending on the hardware configuration (See Figures 3 & 5). These splitters are also provided by the organizers. Attention! If Display Devices have different screen resolutions, should provide splitters that support automatic determination of the best resolution for different devices. It is EDID Splitters.

III. Display Devices

III.1. The video signal is transmitted in Full HD standard. The default graphics resolution is 1920×1080 (FHD – FULL HD).

III.2. The Display Devices requirements are defined in Table 1.

Table 1. The Display Devices Layer Specifications

| Sign | Title | Specification | When to Provide? |
|-------------|---------------------------|---|-------------------------|
| D1 | Referees Lights | TV 32" & more | Anyway |
| D2 | Scores | Big Screen – Projector or Wall-Screen, min. size 4x3m | Anyway |
| D3 | Scores | TV 32" & more | Anyway |
| D3' | Scores | TV 32" & more | Extra for Warm-Up |
| D4 | Order List | TV 32" & more | Anyway |
| D4' | Order List | TV 32" & more | Extra for Warm-Up |
| D5 | Lifter on Platform | TV 32" & more or Projector & Screen | Anyway |
| D6 | Loaders | TV or Monitor 24" & more | Anyway |
| D7 | Speaker | Monitor 24" & more | Anyway |
| D8 | Jury | Monitor 24" & more | Anyway |
| D9 | Commentator (Live Stream) | Monitor 24" & more | Extra for TV-Team |
| D10 | Video Feed | TV 32" & more | Anyway |

Table 2. The List of IT Equipment

| # | Equipment | on Diagrams | Number | Remarks | When to Provide? |
|----|---|----------------|--------|--|------------------|
| 1 | Mini PC's | PC1 – PC5 | 5 | Provide by IPF/EPF | |
| 2 | Computer Secretary Laptop | S1 | 1 | Provide by IPF/EPF | |
| 3 | Network Switch | NS1 | 1 | Provide by IPF/EPF | |
| 4 | Network Cables PC to Network Switch | | 5 | Provide by IPF/EPF | |
| 5 | Video Signal Splitters | VS1, VS2 | 2 | | Anyway |
| 6 | Network Cable Cat.5e | L1 | 1 | For Referees Lights unit | Anyway |
| 7 | Network Cables Cat.5e | Items I.4, I.5 | 2 | Network Switch – Computer Secretary desk | Anyway |
| 8 | Video Cables for connecting PC and Video Transfer Devices Layer (HDMI Cables) | | 2 ÷ 5 | | Anyway |
| 9 | Devices for Video Signal Transfer | L2 – L8 | 7 Sets | | Anyway |
| 10 | Cables for Video Signal Transfer | L2 – L8 | 7 | | Anyway |
| 11 | Display Devices | D1 – D8 | 8 | | Anyway |
| 12 | Display Devices | D10 | 1 | For Video Feed in Wrapping Area | Anyway |
| 13 | Cable for Video Signal Transfer | | 1 | For Video Feed in Wrapping Area | Anyway |
| 14 | Devices for Video Signal Transfer | | 1 Set | For Video Feed in Wrapping Area | Anyway |
| 15 | Video Splitter | VS3 | 1 | For separated Warm-Up Area | Extra |
| 16 | Devices for Video Signal Transfer | L3', L4' | 2 Sets | For separated Warm-Up Area | Extra |
| 17 | Cables for Video Signal Transfer | L3', L4' | 2 | For separated Warm-Up Area | Extra |
| 18 | Display Devices | D3', D4' | 2 | For separated Warm-Up Area | Extra |
| 19 | Devices for Video Signal Transfer | L9 | 1 Set | Just for Commentator – TV Team | Extra |
| 20 | Cable for Video Signal Transfer | L9 | 1 | Just for Commentator – TV Team | Extra |

Figure 2. The logical layers of IT structure

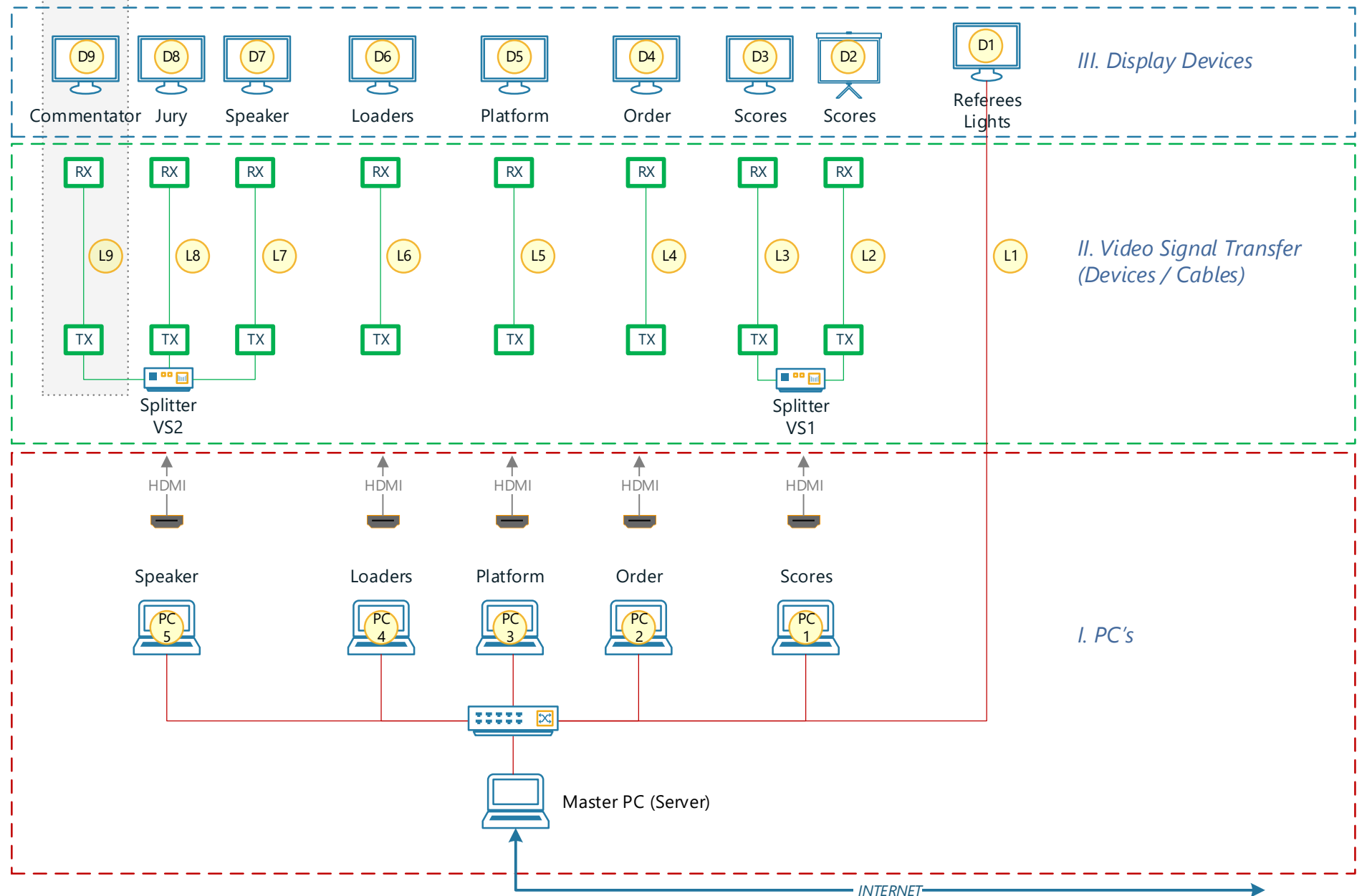
Just with Live Streaming

Figure 3. The physical setup of IT devices

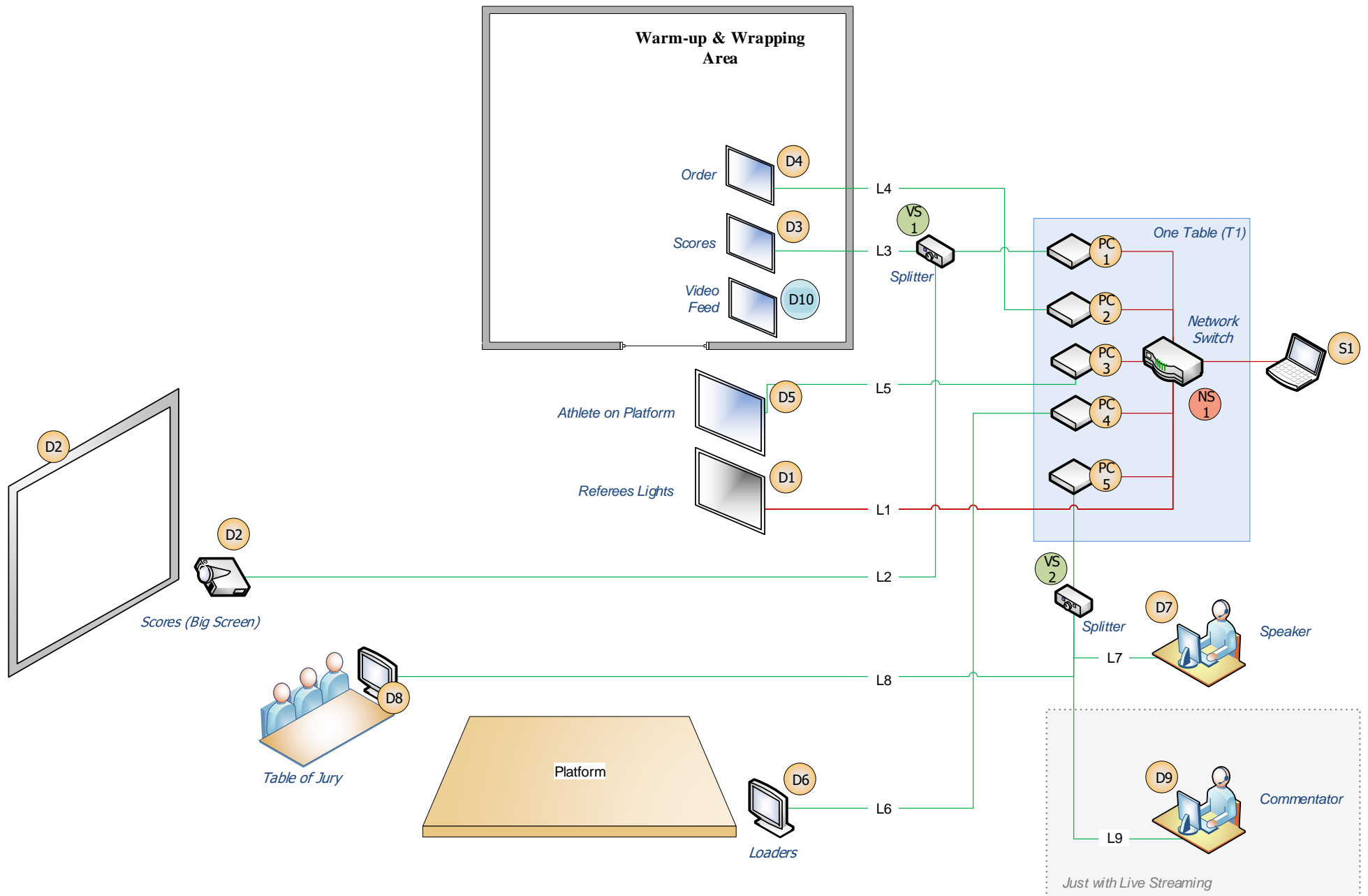


Figure 4. The logical layers of IT structure (with separate warm-up area)

Just with Live Streaming

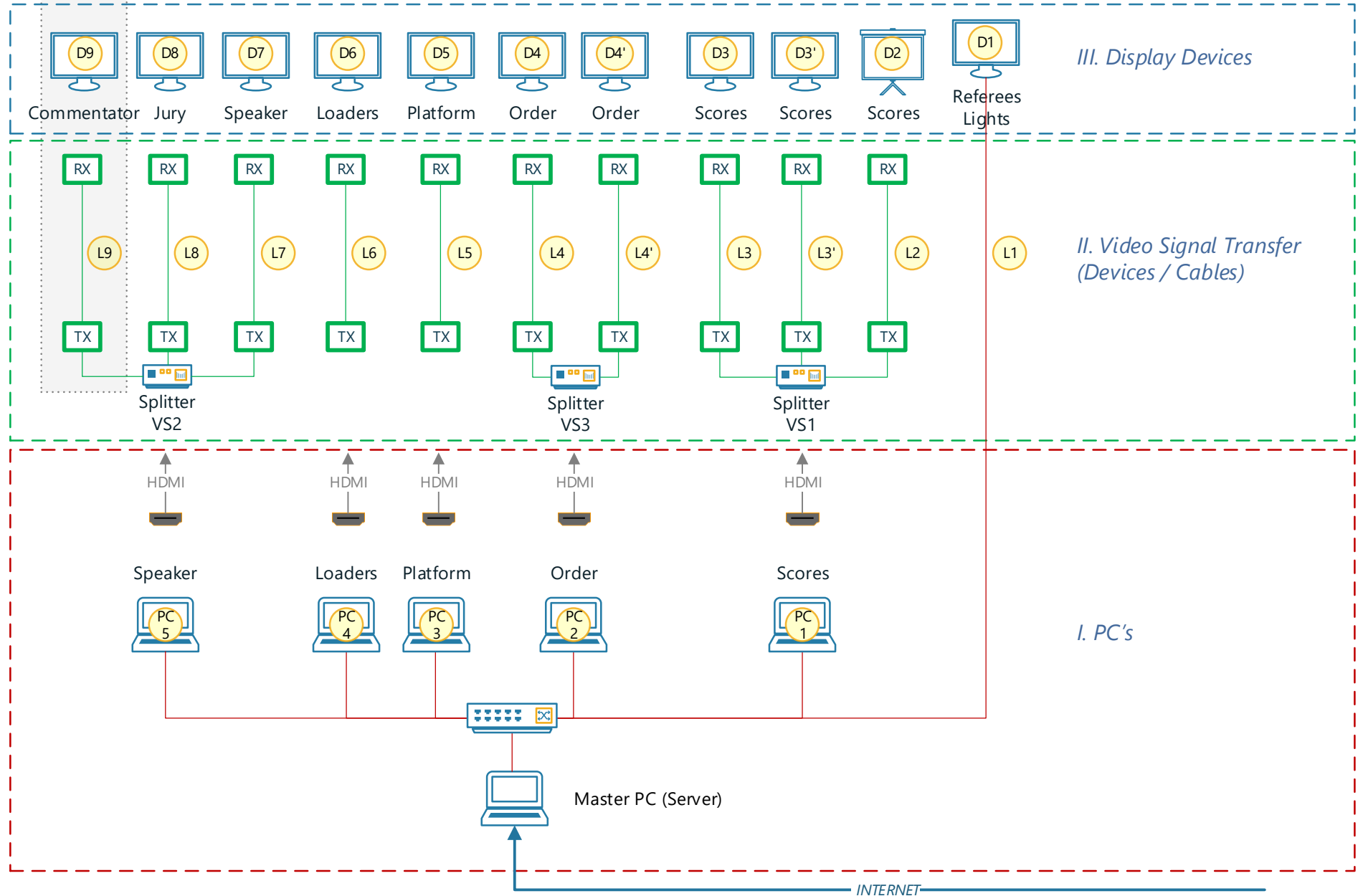


Figure 5. The physical setup of IT devices (with separate Warm-up Area)

