

Figure 2.116 The tape compartment of a production truck often becomes an early hotbed of activity as tape packages for the show are assembled.



Figure 2.117 Graphics are an important part of today's productions. Here is a telestrator, used by the "color" announcer, the most notable being John Madden, to graphically diagram action. Here a technician has indicated that the telestrator is ready for use.

Engineering Setup

Serving the Client

While the cables are run, cameras built or assembled, announcers' facilities assembled, and microphones placed — setup in the truck is also taking place. Just as cameras and mics are placed throughout the venue to accomplish what the client wants, the infrastructure in the truck is also configured to meet the client's needs. As we have stressed, a good remote truck is flexible — for two reasons. First, the truck must be resilient. Things made by humans can fail. Even in the best maintained trucks unexpected failures occur. A truck must be able to recover, or at least work around such failures. A truck's reputation is generally as good as its worst outing. Clients remember trucks that don't work around problems easily. Second, the truck must be flexible. A client wants the video switcher and its associated effects — along with the audio, graphics, tallies — to work in a way that allows the client (or more exactly, the client's producer and director) to capture their vision for the production.

Although everyone working on the truck is essentially working for the client, usually only a few of the crew is drawing their paycheck from the client. Who is the client? The big ones go by the names of ABC, CBS, ESPN, FOX, NBC and TBS. Some go by call letters from KABC to WXYZ. There are clients that sell the production to others, such as Dick Clark Productions. Some are hired by the rights grantors, such as the host broadcaster at the Olympics or the NFL, in the case of international feeds. Besides the producer and director, often one or more of the graphics people will work for the client, especially now, considering how important the graphics effort has become. If the event is large or important enough, the client might send a technical and/or production manager, or hire freelancers to fill these positions.

The technical manager oversees the technical aspects of the shoot to be sure that the show is produced according to the client's wishes. The technical manager works with the truck's EIC and engineers so that the truck vendor's equipment is configured as needed. Sometimes this requires a little subtle negotiation and tact on the part of the EIC, as the client's needs are not always in sync with what's best for the truck. Since most technical managers were, and usually still are, part of the truck fraternity, viewpoints usually come into reasonable alignment during setup. If the show has a large production component; multiple producers, assistant producers and editors; and other preproduction aspects, the client might provide a production manager. Here another accommodation dance often occurs as the preproduction needs often interfere with technical setup and vice versa. Technical and



Figure 2.118 This is an edit bay in a utility trailer that is intended to allow for more complex editing to produce slick-looking tape packages. The editing bay also takes some of the pressure off the production unit's tape compartment. An edit bay typically includes a couple of VTRs. Often today that would be a VTR and a video server that also acts as an editor. When only VTRs were involved, one VTR would playback the raw material, and the second would be used to assemble a finished package. A separate editing controller controlled both VTRs. Today most video servers used in editing environments take over the role of the editing controller and control the playback VTR and other equipment in the bay.



Figure 2.119 The truck's EIC and TD confer on router setup.

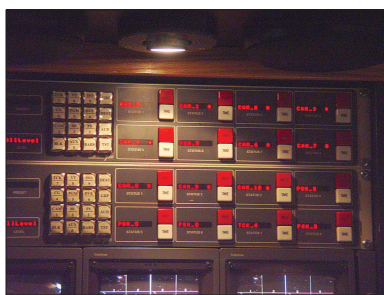


Figure 2.120 A typical router panel. Panels of various layouts must be programmed to know what matrix outputs they can control, and what inputs they can select from. A couple dozen panels throughout the truck would not be unusual.

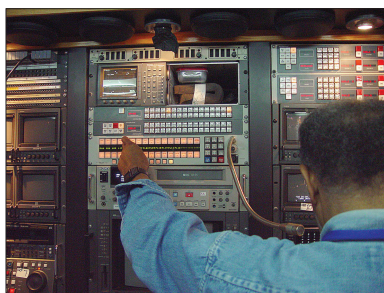


Figure 2.121 Intercom panels, like this one, need to be programmed as to what parts of the intercom matrix the panel can access – in other words, to whom they can listen and talk.

production managers work together to balance the needs of each.

Configuring the Truck

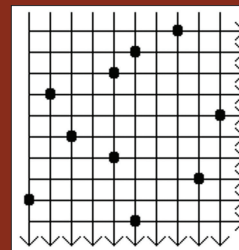
During setup, the truck's engineers program a number of bedrock systems that tie racks of equipment and scattered gear into a cohesive production system. So what truck infrastructure needs to be set up, programmed or otherwise shaped to mold the facilities around the clients' needs? Most outsiders' first impression upon stepping onto a truck is "Look at all the TVs." Some see the monitor wall and think "Houston, we've got a problem." Many passing by a truck compound with an uplink truck wonder what a "space station" is doing at the ballpark. Let's start with all the TVs. The client wants to see sources on the monitor wall whenever they see fit, often more than once. They expect tallies that indicate when a source is going to air, to work in conjunction with display placement. This used to be done with lots of patching to get video to the monitor desired. Often additional patching would have to be made into and out of video DAs if a source was to be displayed in more locations than the truck was normally set up to handle. Tallies were often mated with the monitor by an XY matrix slider switch. Thus, on a large shoot, much time could be spent making the necessary patching. At one time patch panel technology used to make patching unreliable for many people. Most truck vendors used to pull all the patches when the truck was to hit the road, even if the next venue was going to have the same or a similar patching setup. Today patch panel vendors claim patches inserted into



Figure 2.123 The monitor wall in the production compartment must not only have sources assigned to monitors, but many walls also have under-monitor tally displays. The monitor below the program monitor, labeled "Cam-2," is on-air, as indicated by the red display.

The Matrix

Figure 2.122 Improved patch panel technology aside, the computer and the use of electronic switching matrices has made the truck engineer's job much easier. As the simple diagram indicates, inputs arrive along one axis, the vertical axis in this case, and are connected to outputs, (horizontal axis) via connections graphically shown as dots. Each intersection of lines represents a crosspoint. This matrix is a square, but they can be rectangular, with more inputs than outputs, or vice versa. So what, you might ask. They have been around for a while. In the case of tallies, picture the dots as sliders that could be moved along the horizontal axis to connect any source to any tally circuit, such as a monitor in the monitor wall or the input of a camera's tally input. Notice that more than one output can be connected to the same input. Make this manual mechanical system electronic and what do you get? Today's television routing and intercom systems. The truck, and most television facilities on wheels or permanent foundations, are built around this geometry.



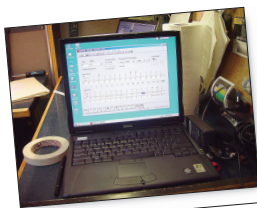


Figure 2.124 A GUI used for setting up intercom panels. Router and intercom suppliers provide software that allows controllers to configure each device.

moving patch panels cause no grief down the road, no pun intended.

The intercom and routing matrices are controlled by control panels at various operating positions, both inside and often outside the truck. These control panels need to be programmed as to what sources they can select for use. Television routers, as a general rule of thumb, have every output loosely tied to a control panel, although some control panels will control multiple outputs. Conversely, some outputs are programmed to be controlled by more than one control panel. One control panel, usually in a Quality Assurance (QA) or transmission area of the truck, is usually empowered to switch any of the outputs, potentially a very dicey proposition if the person using the panel isn't careful.

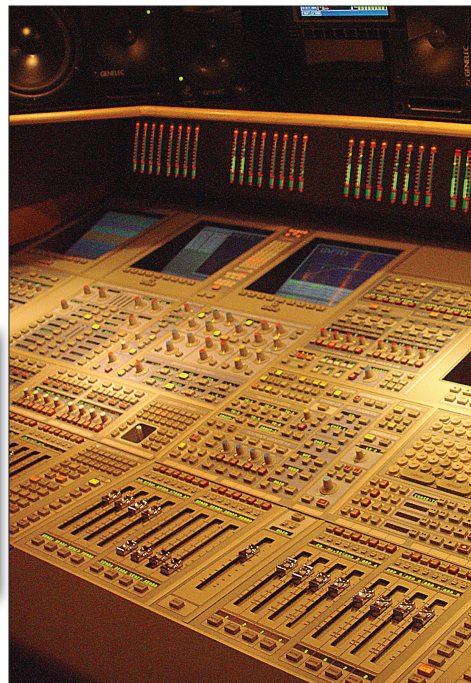
Other programming must be done also. The technical director (TD) must program the video switcher to perform the required effects and transitions. Programming a switcher is usually done in con-

Routers

Television routing systems are often comprised of multiple matrices — one for analog video; one for digital video; multiple ones for all the channels of audio; even one for routing control signals, such as control of a particular VTR from a certain panel. These multiple matrices can often be visualized as a stack. Often different layers in the stack must be programmed to work together. Trucks with digital video running throughout usually have analog sources and destinations. The routing system must be set up so that the analog matrix can hand off to the digital matrix, and vice versa. A similar programming procedure is enacted on the intercom matrix. The computer systems embedded in today's routing systems allow changes in configuration to be made in short order, which is good as setup requirements often evolve as setup continues. But, what's even better, setups can be stored and easily recalled. So a truck doing the CBS NFL game each week could simply recall the setup from the previous week.



Figure 2.125 The monitor wall in the production compartment has required support on the part of the engineering staff for the last 20 years. Clients had to select which source would go to which monitor. Then truck engineers had to implement the decision and ensure that the monitor had tally when its source was selected for air. That used to be done via patching; now a lot of trucks use routers for at least a few monitors. This photo is of the latest wave of monitor walls. Instead of individual monitors, it is actually six rear projection monitors. Up to 16 sources can be displayed at once on each display, or just one if desired. The infrastructure that generates the displays also tallies the source, no matter where it is located on the display. This setup adds an additional layer to monitor wall setup, but makes for an extremely flexible wall for the client.



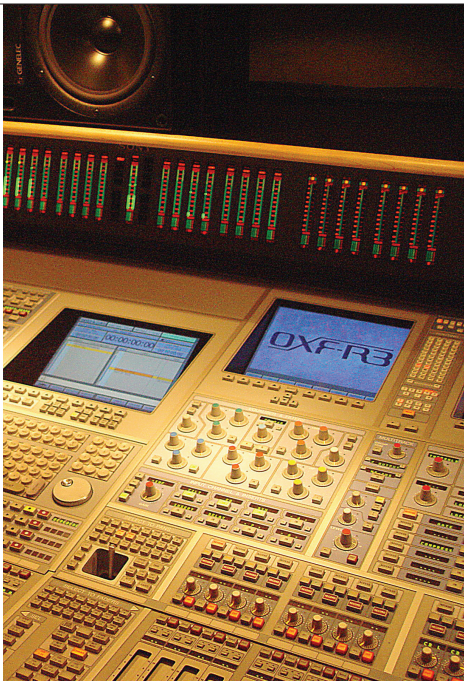


Figure 2.126 It is increasingly necessary for the A1, the person who actually mixes the audio portion of the show, to program their board, or mixer. New digital audio mixers often have fairly involved setup procedures of their own.

junction with the digital video effects (DVE) system, as these often work together. The switcher is usually programmed to work in harmony with the DVE to produce an effect. The switcher, to add additional graphical splendor to the effect, often manipulates a video server at the same time. Often the client will have many of effects stored on disk, which are then loaded into the various pieces of the system. These pieces must work in concert and in real time, as the director calls the transitions into and out of replays, and the actual show itself.

The A1, who used to create sub-mixes (known to the film people as stems) and provide processing of those sub-mixes via patching, now programs them via an internal matrix utilizing a user interface that is part of the mixer control system. Many modern audio mixers have their own internal matrix. The audio people are also busily involved with setting up the communications for the show. Often separate director, producers, IFB and engineering circuits must be set up and programmed into the intercom matrix, often in cooperation with the truck's engineers. Audio is also concerned with providing main and backup audio feeds for transmission.

The Fax

After the completion of the technical setup, the system fax occurs. Fax is short for facilities check — it is the television version of a takeoff checklist. During the fax, all the sources are checked to confirm that they will work as part of the overall system, that accepted technical parameters are met for each, and that the source can be seen at every operator's position and be received by every piece of equipment that needs to. The fax also determines that the tallies that accompany each source, and control of sources such as TD control of a video server, are exactly where the client desires them to be.

Once the technical fax is complete, the director's fax will occur. Here all operators and production people will take their operational positions and recheck all facilities, particularly checking all aspects of communications, IFB, audio levels and confirming they can perform the desired transition effects. Once both faxes are complete, then rehearsal can commence. For shows this often involves talent and crew. For sports, rehearsal often just involves the director going over shot assignments with the camera folks, and some practice with opens, closes or other production items that will occur during the game.

A transmission fax must be done also. Here the main and backup feeds must be checked back to the broadcast operations center (BOC). CBS' NFL BOC is in New York, FOX has its in Los Angeles, and for the Olympics, it is the International Broadcast Center (IBC). In those cases, the truck's EIC must work with the television network staff back at the BOC,



Figure 2.127 Director and TD (referring to equipment setup manual) start fax process with engineering and operators.



Figure 2.128 The A1 will confirm that they can hear all the audio sources, and that the sub and overall mixes are what the clients want.



Figure 2.129 During the fax, camera operators will confirm that they have communications with the director and whomever else they need to talk with. They will also confirm that the tallies on their cameras are operating, and that they see return video from the truck. Return video is a program or some other video feed that they can select on their viewfinder. This return feed helps them frame their shot correctly when they are part of an effect.

and with the company providing the backhaul. The backhaul is the path from the venue to the BOC. Many events are over land fiber networks such as Vyvx, which maintains a nationwide presence at most large venues, and many television stations and uplink facilities. Many backhauls are a combination of fiber and satellite paths. If the backhaul is via satellite, at least to start with, the EIC must coordinate their transmission fax with the BOC and the satellite truck uplink operator.

At this point we have turned the assembled equipment on location into a fully functioning system ready to handle the assigned task for this outing. Next we will look at other "sub-remotes" that often are set up to work in conjunction with the main remote. ■



Figure 2.130 The tape compartment will confirm that any VTRs or servers expected to record can do so, and that all required playback devices work, and operate properly in slow motion. (Source: Core Digital Technologies/SWTV)



Figure 2.131 The large dish is the main C-band uplink. The smaller dish behind, mounted atop the truck, is the Ku-band backup feed.