The Connect software (formerly known as ECB) allows users to request videos from vehicles to be transferred wirelessly (Wi-Fi or 4g) as well as review transferred videos without ever leaving the desktop playback software. In addition to managing file transfers, the software can provide live views from the cameras on compatible 4G connected systems. Users can view the current device health status of compatible systems in the fleet or view specific events on each vehicle with detailed troubleshooting steps.

With integrated email capabilities, users can stay informed of the operational status of their systems:

- Daily Transfer Summary: Shows files transferred from each vehicle in the past 24 hours. This can be sent to multiple preset email addresses. Daily sending time of email is configurable and only sent if new transfers occur.
- Daily Device Health Summary: Shows device events that occurred in the past 24hours. This can be sent to multiple preset email addresses. Daily sending time of email is configurable and only sent if new health events occur.
- Request confirmation emails to notify users that video requests have been completed.

The software requires an application to be installed on a server to handle the device authentication and file storage processes. The server running the software must be accessible to the DVR units and have either a large internal storage disk or access to a network storage device to store the video files that are transferred.

Once the software is setup and DVR units are configured, each time the DVR unit establishes network connectivity through Wi-Fi or 4G, it will connect to the server and uploaded files. The software utilizes a web based (HTTP/HTTPS) transfer protocol to handle the file transfer process and can be done over a local network or over an internet connection.

Each client PC that will be reviewing and requesting video will need the PV Player software installed and the server URL set within the settings. The client PC will also need permissions configured to the file storage location on the server.

Hardware Install Preparation

Prior to the installation of the hardware in the vehicles, this document should be provided to the IT professional that will handle the software installation and network configuration. Assistance from an IT professional or equivalent is required for the installation and configuration of the transfer software as advanced technical knowledge of the existing computer hardware, software, and network configuration is required. It is recommended to prepare and have the server software installed and network access confirmed prior to hardware installation, as this will allow the installer to register the devices to the server during the installation process.

Setup Process

The customer's IT professional will need to complete some steps in preparation for the product installer:

1. Customer contact will receive an email contain a License Key and instruction guides, this should be forwarded to the IT contact to read and understand the guide.
2. IT will follow the guide to install the PV Transfer server software on the computer/server per the instruction guide:
    a. Ensure the server has a fixed (Static or DHCP Reserved) IP address.
    b. Enter the License Key provided in the email.
    c. Configure the Server URL, typically the server's IP address unless a domain name is to be used.
    d. Configure the storage location and check permissions.
    e. Start the PV Transfer service.
3. IT will determine which Wi-Fi SSID the DVR units is to be connected to and ensure its location is adequate for performance and its configuration meets the DVR unit's Wi-Fi AP requirements (next page).
4. Connect to the Wi-Fi SSID and ensure that the server "Server URL" is reachable.
5. Document the SSID, security credentials, and Server URL information on the form provided by the installation coordinator (if using Pro-Vision Installation Services).
6. Installer will install the DVR unit(s), including the mounting of the Wi-Fi or 4G antenna(s) required for connectivity.

7. Installer will configure the DVR's Wi-Fi Client to connect to the customer's Wi-Fi Access Point
8. Installer will program the Server URL and register the device
9. IT can verify system operation after vehicles exit and return to network coverage by checking the status and connection history in the PV Transfer software.

Note: If the network/server is not configured before installation, the IT professional must complete steps 5 and 6.

System Operation

When the DVR establishes network connectivity (upon arrival to the yard or parking area for most Wi-Fi applications), it contacts the server, and begins transferring all event video files (oldest first). The server will automatically store the transferred files in the configured storage location in user friendly folder and file naming structure. If a user had requested non-event video to be transferred, these requests will also be sent to the DVR and queued for transfer along with the event video files.
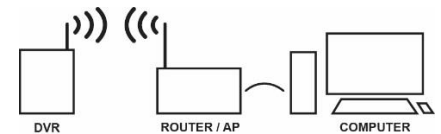
If file transfer is interrupted before completion (due to loss of network connection, or system power down), the transfer is paused, then will attempt to resume upon reconnection. If the file transfer cannot be resumed, it will be restarted automatically. To ensure data integrity and to prevent file loss, the file transfer is executed using a file copy process. The original file is always left intact until the duplicate file is uploaded completely and verified on the cloud server before the original file is removed from the device.

Computer/Server

The Connect software utilizes the PV Transfer 2 server application that runs as a service on a Microsoft Windows operating system. The services host a web interface on a port of the server, the port number is configurable and can be made accessible through the firewall for remote uploads over the internet. The service must be configured with user permissions to have read/write permissions to the desired storage location. The software must be installed on a computer running either Windows 10 or newer or a server running Server 2016 or newer with a minimum 2GB RAM, 3Ghz processor, 300MB disk space available for software and database, and a large storage device connected to the computer directly or through the network for video file storage (see below for storage requirements).

Client/User Computer

Client computers will review transferred video using the PV Player software, they can also make video requests for videos that were not marked as events. To access the transferred files, the client computers must have permissions to the storage destination for the transferred file used by the transfer server software. They must also have access to the same web service/port that is required for DVR connection. The PV Player software requires a computer running Windows 10 or 11 with a minimum of 4GB RAM. It is recommended that the client computer have a 1080p display and speakers.

Device Compatibility

The Connect software supports all current PRO-VISION recording products including the DR-200v2, DVR-906, DVR-908 Ranger, and BC4 body worn camera systems. The DR-200v1 and DVR-808 systems are partially supported. They are capable of all video upload functionality but are not capable of providing device health updates.

Wi-Fi Access Point (AP)

Wi-Fi is used most often as the primary method of connection for DVR systems. Wi-Fi can be used to connect a vehicle to an in-vehicle hotspot or gateway for internet access, or more commonly, to connect to an Access Point (AP) mounted in or around the parking area of the vehicle to get internet access. When connecting vehicles to a fixed AP on a building, having the best possible antenna positioning with line-of-sight to vehicles is critical in providing the best coverage and fastest transfer speeds. Whichever Wi-Fi connection is used, it must be compatible with the following DVR systems:

DR-200v1/DVR-808 Systems: These units contain a 2.4GHz 802.11n radio. It is recommended to use an AP with 802.11n 2x2 MIMO (Dual Antenna) to achieve the fastest transfer speed (up to 300 Mbps).

DR-200v2/DVR-906/DVR-908 Systems: This unit contains a 2.4GHz/5GHz 802.11ac radio. It is recommended to use an AP with 802.11ac 2x2 MIMO (Dual Antenna) to achieve the fastest transfer speed (up to 867Mbps).

IMPORTANT! WPA/WPA2 security using AES or TKIP encryption is supported on all devices. WPA2 Enterprise is supported on the DR-200v2, PD-1900 and PD-1902 only. Unsecured networks are not supported.

The Wi-Fi SSID name must contain only letters, numbers, underscores, or dashes. The password must contain only letters, numbers, and special characters, except for a semi-colon.

Unlike most typical client devices (laptops, tablets, smartphones) that use mostly download bandwidth on the Wi-Fi connection, the DVR systems use mostly upload bandwidth. Certain brands of Wi-Fi Access Points do not perform as well in uploading as others. Contact Pro-Vision support for recommendations and to understand hardware limitations.

Network Requirements

The DVR units connect to a Wi-Fi network using an IP auto assigned through DHCP; they can also use a static IP assignment, but it is not recommended as it adds complications to the setup process and requires additional attention during future maintenance. If having a fixed IP is desired, we recommend documenting the devices MAC address during setup and then using MAC address reservations for assigning IP addresses. It is also recommended to first connect a computer to the network and check access to the servers configured URL before connecting a DVR. The system uses HTTPS for encrypted file transfer by default, however, it can be configured to use HTTP transfer for a significant improvement in transfer speed on older devices (DR-200 & PD-1800), this is recommended for local network transfer only.

Firewall

The software uses port 80 for HTTP traffic and port 5004 for HTTPS traffic, the software installer will automatically open these ports on the server computer's firewall, but any network firewall will also need ports open.

Important URL's that need to be unrestricted to allow proper use of features:
- The license key is checked and refreshed from https://licenses.provisionusa.com.
- The devices reach out to https://firmware.provisionusa.com to check their firmware automatically, then download firmware files from https://files.provisionusa.com.
- Emails are sent from https://securamax.com/api/services/email.

Storage

The following factors are needed to calculate required storage space:
- Recording quality (Bitrate) in GB/hour/camera/vehicle
- Expected number of hours of video to be saved per day that will be transferred
- Number of cameras per vehicle
- Number of vehicles
- Number of days each week vehicle operates
- Number of weeks to retain transferred video.

All models of PRO-VISION DVR units record 1080p HD video at up to 30fps per camera. On average, the storage rate is approximately 0.32GB/hour/camera/vehicle recording at a low quality (bitrate) setting of 1Mbps. At a high quality (bitrate) setting of 4Mbps, video can use as much as 1.2GB/hour/camera/vehicle.

Example: 4 vehicles each with 2-camera systems, storing 2hrs of video per day, 5 days a week, for 52 weeks would equal about 1332GB (1.3TB) at a low setting of 1Mbps, or about 4992GB (4.9TB) for a high setting of 4Mbps.

Formula: **1.2GB/hr/cam/vehicle** x **2hrs** x **2cams** x **4vehicles** x **5days** x **52weeks** = **4992GB**

Maintenance and Updates

Software updates to the server application are done periodically. The server will not automatically update, but it will notify users when a new update is available for download. Client applications will update automatically when running the launch the updated version when completed.