What are the internet service and bandwidth requirements for Alarm.com video devices?

Alarm.com video devices have network requirements and recommendations that, when met, provide an optimal experience to the user. The requirements and recommendations include recommended types of internet connections, router compatibility, bandwidth, and Wi-Fi signal strength requirements.

Internet service and bandwidth requirements vary by video device model, video device audio integration, and whether or not a Stream Video Recorder (SVR) is in use.

Internet connection type compatibility

Alarm.com video devices need an indefinite, always-on internet connection to function reliably. Some internet connections are incompatible due to restrictions they impose on bandwidth usage.

Internet type	Compatibility
Fiber	Recommended
Cable/broadband	Recommended
DSL/ADSL	Supported
Fixed Cellular Broadband	Supported*
Fixed Satellite (via Low-Earth Orbit satellites)	Supported*
Other fixed wireless	Not supported
Traditional Satellite (via High-Earth Orbit satellites)	Not supported
Mobile Cellular Hotspot or Aircard	Not supported
Dial-up	Not supported
Point-to-Point	Not supported
Point-to-Multipoint	Not supported

***Note**: While fixed cellular and satellite internet services are supported, they may experience intermittent outages at a higher rate than broadband alternatives. Performance depends on service coverage and varies by location. Always verify that the connection meets minimum bandwidth requirements for video services with an internet speed test at the

time of install. While services in these categories may provide connections that meet minimum requirements at the time of install, service prioritization and quality can change over time. As a result, these connection types are not recommended.

If a customer wants to proceed with using video services on a fixed cellular or satellite connection type, be advised:

- Always follow the cellular or satellite internet service provider best practices to ensure proper setup.
- Unlimited data plans are recommended to avoid data overage charges.
- Performance can be limited by the equipment provided by the internet service provider. Equipment provided may not support networking features such as multicast or bridge mode that enable certain video camera features and reliability.
- Onboard Recording is recommended on compatible cameras for uninterrupted local recording during network outages.

Router compatibility

Alarm.com wireless cameras are compatible with most wireless routers. The quality of a router can affect the performance of the video devices as well as the rest of the network. Some routers may also need firmware upgrades to perform reliably.

A router broadcasting a secured Wi-Fi network with a unique SSID and strong password is recommended. Open networks or networks with a third-party portal to log in are not recommended.

For dual-band routers, verify that the 2.4 GHz and 5 GHz bands have separate SSIDs if utilizing devices that only use the 2.4 GHz band. For more information about which wireless bands a video device uses, see Which wireless protocols do Alarm.com video devices support?.

Note: The instructions for separating wireless bands differ based on the router model. Please refer to the manufacturer's guide for more information.

Bandwidth requirements

Alarm.com video devices only use bandwidth when the user is streaming live video or SVR recorded footage, or when the device is uploading recorded video clips.

Alarm.com video devices primarily use upload speed, as opposed to download speed. Typically, Alarm.com requires an indefinite broadband connection of at least 0.5 Mbps of dedicated upload speed per video device. Keep in mind that 1080p streaming, doorbell cameras, Two-Way Audio, and SVR integration all require additional bandwidth.

Note: Dedicated upload speed refers to bandwidth only used by the video devices, so other connected devices (e.g., computers, smartphones, gaming consoles, etc.) require additional bandwidth on the internet connection.

Commercial and large residential systems

Some businesses and larger homes require more bandwidth based on how the video devices are used. For more details

about commercial and large residential bandwidth recommendations (i.e., locations with SVRs and PoE video cameras), see Commercial video internet bandwidth guidelines.

Minimum bandwidth for residential video devices

The requirements listed on this page are based on a single user viewing one video device at a time.

The following limits describe where the audio and video streams start to become choppy under ideal environmental conditions (i.e., the Wi-Fi signal strength is strong and not blocked by walls or other objects).

Video device	Required bandwidth	When using Two-Way Audio
ADC-V515	2.5 Mbps — High Resolution & Quality 2 Mbps — Standard Resolution & Quality 1.5 Mbps — Reduced Resolution & Quality	2 Mbps — Standard Resolution & Quality 1.5 Mbps — Reduced Resolution & Quality
'16 series	2.5 Mbps — High Resolution & Quality 2 Mbps — Standard Resolution & Quality 1.5 Mbps — Reduced Resolution & Quality	2.5 Mbps — High Resolution & Quality 2 Mbps — Standard Resolution & Quality 1.5 Mbps — Reduced Resolution & Quality
'20/'21 series	0.25 Mbps — Standard Resolution & Quality	ADC-V521IR only: • 1.5 Mbps — Highest Setting • 0.75 Mbps — Reduced Setting
'22 series	1.5 Mbps — Standard Resolution & Quality 0.5 Mbps — Reduced Resolution & Quality	ADC-V522IR and ADC-V622 only: • 2 Mbps — Highest Setting • 1 Mbps — Reduced Setting
ADC-V523/523X	2 Mbps — Any Resolution & Quality	2 Mbps — Any Resolution & Quality
ADC-V530	4 Mbps — High Resolution & Quality 2 Mbps — Standard Resolution & Quality	4 Mbps — High Resolution & Quality 2 Mbps — Standard Resolution & Quality
ADC-V723/723X	2 Mbps — High Resolution & Quality 1.5 Mbps — Standard and Reduced Resolution & Quality	2 Mbps — High Resolution & Quality 1.5 Mbps — Standard and Reduced Resolution & Quality
ADC-V724/724X	2 Mbps — Any Resolution & Quality	2 Mbps — Any Resolution & Quality
ADC-V729/V729AC/VC729P	4 Mbps - Any Resolution & Quality	4 Mbps - Any Resolution & Quality
ADC-V730/VC730P	4 Mbps — Any Resolution & Quality	4 Mbps — Any Resolution & Quality
ADC-V731B	4 Mbps — Any Resolution & Quality	4 Mbps — Any Resolution & Quality

SkyBell Doorbell Camera (ADC-VDB101/102/105/106/105x/106x)	2 Mbps — Standard Resolution & Quality	2 Mbps — Standard Resolution & Quality
ADC-VDB750	2.5 Mbps — Standard Resolution & Quality	2.5 Mbps — Standard Resolution & Quality
ADC-VDB770	2.5 Mbps — Standard Resolution & Quality	2.5 Mbps — Standard Resolution & Quality
ADC-VDB775	4 Mbps — High Resolution & Quality 2.5 Mbps — Standard Resolution & Quality	4 Mbps — High Resolution & Quality 2.5 Mbps — Standard Resolution & Quality
ADC-VDB780B	2.5 Mbps — Standard Resolution & Quality	2.5 Mbps — Standard Resolution & Quality
ADC-VDB781B	4 Mbps — Any Resolution & Quality	4 Mbps — Any Resolution & Quality
ADC-VS123	Up to 2 Mbps depending on the connected camera	-

For commercial video device bandwidth requirements, see Commercial video internet bandwidth guidelines.

Recommended bandwidth for an SVR

When using a Stream Video Recorder (SVR), it is recommended to meet the same minimum bandwidth requirements as the video camera live stream it is recording.

For playback speeds higher than normal speed, the bandwidth requirements increase with the playback speed. For more information about the bandwidth requirements of SVRs to stream remote playback, see Commercial video internet bandwidth guidelines.

Example: To play back four ADC-VC726s remotely at normal speed, the user's upload speed should be at least 6 Mbps. If the playback speed is 2X, the user's upload speed should be at least 12 Mbps.

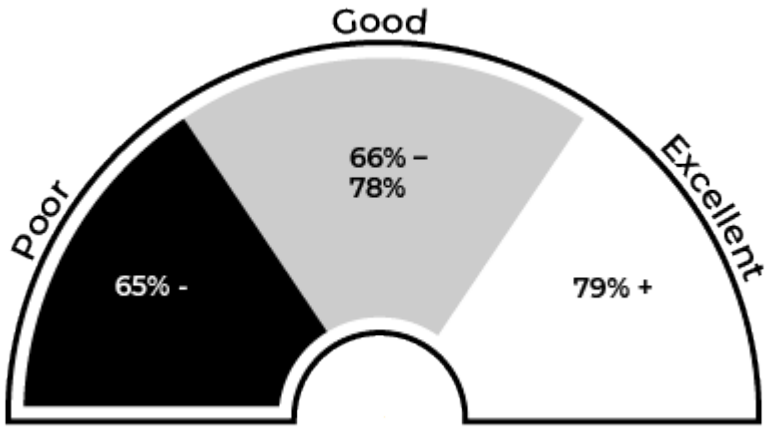
Troubleshoot bandwidth

If the customer’s upload bandwidth is lower than recommended, the cameras may still work but the live view may look jumpy since the frame rate is reduced as a result of the upload bandwidth limitation. To determine how many video devices an internet connection can support, perform a web-based speed test. For more information about performing an Internet speed test, see Perform an Internet speed test.

If the internet bandwidth is too low, the customer can contact their internet service provider to find out how to increase their upload bandwidth.

Required signal strength for video devices

A minimum of 66% Normalized Wireless Signal Strength (NWSS) is recommended for video devices. For more information about how to request the NWSS from the video device, see Request the wireless signal strength of a video device.



Signal rating	Normalized signal strength	Description
Excellent - green	79% and higher	Recommended range
Good - yellow	66% through 78%	Acceptable in some situations, but the connection might be intermittent
Poor - red	65% and lower	Not recommended

To learn more about how NWSS is determined and how it compares to other signal strength metrics, see View a video device's Wi-Fi history (signal level and transmission rate).

Additional signal strength information

The materials the signal passes through and the physical location of the video device affect the signal strength. If there are walls or any obstructions, the wireless range is decreased. Verify the signal strength meets the minimum recommendation to help video devices operate properly.
Note: Building materials like brick, plaster, concrete, stucco, and metal construction materials have the potential to cause signal interference, and could affect the signal strength and quality.

While a camera can still function below the recommended signal strength rating, having a signal strength below the recommended minimum can reduce the overall performance of live video. The affected video devices may also experience unexpected behavior with the camera's functionality. Wi-Fi extenders can help improve wireless signal strength.

Where is Wireless Quality and Wireless Link Quality?

Wireless quality and wireless link quality have been removed in order to simplify troubleshooting by focusing on a few key metrics: Normalized Wireless Signal Strength, Signal Level, Transmission Rate, and Signal to Noise ratio.

Required ports and protocols

Some video device features and functionalities, such as WebRTC Direct Connection streaming (i.e., continuous live streaming), may be affected if the network does not have the correct ports and protocols open for communication. This is more common in professionally-secured networks, but may apply to standard residential networks as well. If you have any questions regarding how to verify the correct ports and protocols are open, contact your IT Team or Internet Service Provider.

For more information on which ports and protocols need to be open to allow full device functionality, see Alarm.com video ports and protocols requirements.