



Simple, Stable and Secure VPN Transmission over a WAN

ThruLink™

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As ISPs provide more bandwidth, an increasing number of end users are looking to the internet as their communications infrastructure. But how do you ensure that the link is secure and remains stable?



Introduction

As ISPs provide more bandwidth, an increasing number of end users are looking to the internet as their communications infrastructure. With a security system that uses a public network such as the internet as its transmission medium, users are able to dramatically reduce operational costs and can now benefit from being able to view real-time images from just about anywhere in the world.

Currently, the most accepted method to view live video streams, or indeed, to send *any* type of IP traffic securely over a WAN, is via a VPN (Virtual Private Network).

Why a VPN?

Despite the fact that almost all IP cameras available today are web-enabled, the majority of IP CCTV cameras were designed to operate over a LAN. As a result, many of a camera's standard features can be lost once the traffic has to traverse a WAN: multiple IP cameras at the same location may not be resolved because of port forwarding rules; security can be compromised due to the number of ports on a firewall that need to be opened, or, conversely, camera functionality can be lost because not enough ports are opened. The approach that a VPN takes is, regardless of location, to convince the camera that it's on the same LAN as the equipment at the control room. This ensures that the camera operates as it should, despite the network it must communicate across.

Safeguarding Data

When a security and surveillance system uses the internet, the owner of that system should ensure that the data is 100% secure from source to destination. A VPN will provide encryption and encapsulation, securing the data from the start to the end point.

IP Cameras - Is a Password Enough?

Some may argue that an IP camera's security settings are good enough to protect it when connected to the internet. Unfortunately the data stream from the camera is neither encrypted nor encapsulated, so anyone with the ability can break into the stream to access data and then target the cameras or the control room.

But I Can Create a VPN on a Router...

The clever deception that a VPN creates of making a WAN appear like a LAN can be achieved by many standard routers. With some configuration (often complicated) a router will provide an encrypted tunnel of up to 128bit. However, in general, adding a VPN function to a router is a bad idea. It may work initially, but this type of setup is inherently unstable.

As the name implies, the primary function of a router is to *route* traffic between locations. If a VPN function is added to the mix, this becomes a burden on the processor. This overhead dilutes the processing power of the device and routing begins to choke and slow down. Eventually, the routing simply crashes. When this happens, the VPN will also fail, forcing a reboot.

Generally, a reboot will get everything up and running, but only until the VPN gets greedy again and the cycle takes place once more. This can happen multiple times a day. If a user has the luxury of someone on-site ready for a reset each time the system fails, it may not be an issue, but in reality it's a costly waste of time. Moreover, routers are often in remote locations and someone has to go to site to fix the problem.

The ThruLink™ Solution

Simple Configuration

Unlike a router, ThruLink has been designed to be simple to configure and needs no specialist IT expertise to set up. Configuration is as simple as telling the client the server address, and providing authentication information.

Stable Operation

The KBC ThruLink is a license-free, dedicated hardware VPN with a range of interfaces for direct connection to the public network. Unlike the router-only arrangement, ThruLink creates the VPN and then uses minimal overhead to control the interface. This provides a much more stable solution that is simple to deploy and gives far greater flexibility. In addition, even if the internet connection is lost, ThruLink will automatically re-establish the link as soon as the internet connection is restored.

Secure Communications

ThruLink provides Blowfish, AES, Camellia and other encryption cyphers up to 256 bit. This offers a greater level of security than a standard router-based VPN, creating a very secure, VPN-based network. Once the network is established the only way to get into the network is via a ThruLink with the correct password and encryption information.

Scalable Systems

The ThruLink network simply expands as the end users' requirements dictate. Systems are built from multiple client units communicating back to common servers.



ThruLink Case Studies

Hague Police: Multicast Traffic over a Broadband Connection / VPN

To reduce operational costs, the police force wanted to replace their leased lines with public network connections. After deployment it was discovered that the ISP blocked the video streams due to them being multicast. A ThruLink solution was deployed to resolve the issue. ThruLink encapsulates the traffic masking it from the ISP. This allows multicast traffic to be sent over the internet.

Port Mobile Surveillance System

To improve site security, a European port authority has employed a secure, mobile monitoring system from a vehicle-based camera system. ThruLink provides the transmission to stream live, encrypted video from a 3G connection in the patrol vehicle, back to the port office, via the internet using a minimal 250kbps bandwidth.

Singapore Traffic Monitoring System

Singapore's intelligent transport system was initially implemented over leased lines which proved to be incredibly expensive. To reduce the operational cost, the leased lines have been replaced with an internet-based system which utilises ThruLink to establish secure VPNs across the public network. The system currently comprises in excess of 1 500 secure, ThruLink connections. Thanks to significantly lowered operating costs, the system continues to expand.



ThruLink Features & Benefits

Superior Functionality

Feature	Benefit
Multicasting is possible irrespective of ISP regulations, the video is encrypted and encapsulated	Any type of IP traffic can be passed over a public network
The entire network only requires 2 open ports, regardless of the settings on remotely connected equipment	Firewall remains as secure as possible
ThruLink is a VPN, implementing a simple routing strategy between devices which optimises traffic flow between end points	Optimal throughput across any connection type
ThruLink constantly monitors the available bandwidth within the link, dynamically adjusting the packet size to ensure the best throughput.	Optimal throughput
A heartbeat signal keeps 3G/4G connections established providing constant availability	'Always on' functionality for 3G/4G interface at minimal cost
ThruLink accommodates the ISP changing IP addresses by supporting Dynamic DNS	Constant operation regardless of ISP policies
No limit to the number of clients or network type (DSL, Cable, 3G, 4G, satellite)	Incredibly flexible system for minimal capital expenditure
Industrially hardened standard capacity unit with an operating temp of -40°C to +74°C	Units can be deployed in non-conditioned environments such as within vehicles, road & trackside

Lower Install & Operational Costs

Feature	Benefit
Allows leased lines to be replaced by connectivity over a public network	Significant operational cost savings
Takes minimal time to configure a unit and have it linked to the server (typically under 5 mins)	Lower install costs
If the internet connection fails and later comes back online, no reboot is required. ThruLink will automatically re-establish the link	No user intervention needed – lower maintenance & less down time
No forced air cooling required on standard capacity units	Minimal maintenance
Redundant server function. Ability to designate multiple client units to act as failover server	Clients will continue to perform if the server is offline (accommodates location failure)
Supports IPV4 and IPV6 which future-proofs the changing of IP within a LAN/WAN	Lowers ongoing upgrade costs