



Access Control

Design Guide

Solution Overview

Netgenium's Access Control solution

has been designed from the ground up as a network solution. The solution consists of the ALK370x-IP lock controllers, Wiegand card readers and PolicyServer.

The network is used as the communication platform between end points (lock controllers) and PolicyServer, the central management platform.

Each controller is powered from PoE and can power most industry standard locks from the network. Readers connect directly to dedicated ports on the ALK3702-IP and the ALK3704-IP.

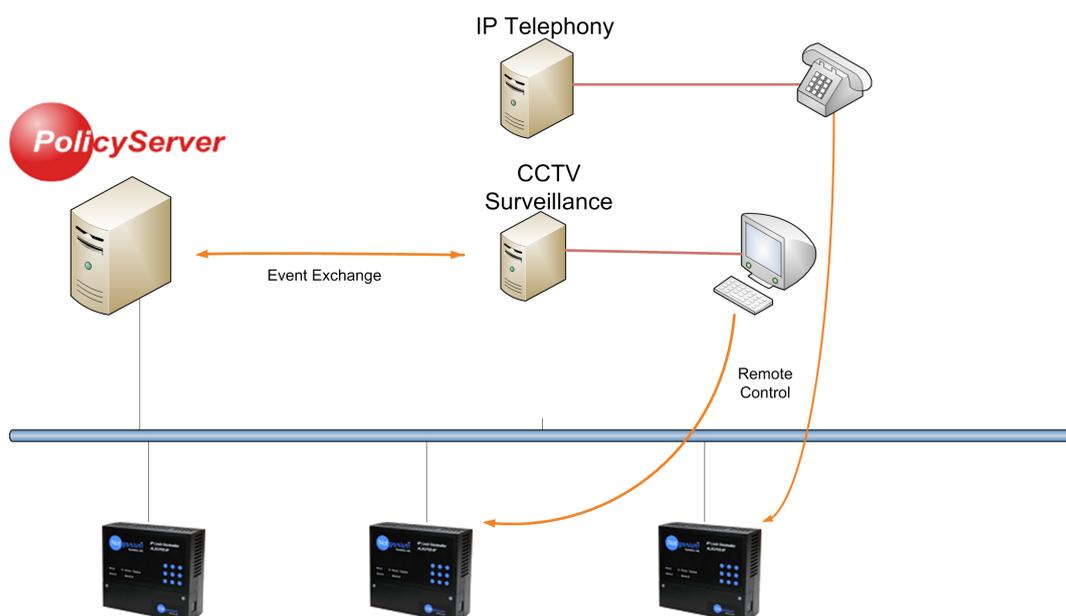
PolicyServer addresses each controller individually over the network. Logical grouping of devices in PolicyServer provides infinite granularity of control.

PolicyServer is generally the preferred method of authentication. However, should PolicyServer become un-reachable, each controller features a local database, which is updated as and when users are authenticated via PolicyServer.

Each lock controller has 4 flexible inputs supporting volt free inputs from a host of sources including Fire and Intruder systems

Individual locks or groups of locks can be opened or locked down in response to a successful authentication or any other incoming event.

PolicyServer provides server level integration into CCTV, IP telephony systems providing seamless door entry event based recording of footage and remote operation of doors from NVR consoles.



Access Control At The Door

Managing The Power Budget

Netgenium network devices are powered from PoE. The ALK3701-IP, ALK3702-IP and the ALK3704-IP lock controllers provide a 12Vdc supply for external hardware, including locking devices and Wiegand readers.

When designing a solution it is important to plan for the limitations of supply that the IEEE standards dictate.

IEEE802.3af PoE

Both the ALK3701-IP and the ALK3702-IP are designed to be used with IEEE802.3af .

This provides a maximum of 800mA@12Vdc of usable power at the door.

The exact power budget will vary depending upon lock type used, cable length and condition of the lock etc. However, a typical door installation using a magnetic lock and two readers would use:-

1 x Mag Lock (standard or mini)	500mA
2 x Wiegand Readers	220mA

Using High Power Locks with IEEE802.3af

Certain lock types require more power than the IEEE802.af supply can support. Shear locks, for example, require an in-rush current exceeding 1A. If the total power requirement at the door exceeds the budget available, clean contacts are provided to enable an external power supply to be used.

IEEE802.3at PoE

The ALK3704-IP is capable of using IEEE802.3af and the higher power IEEE802.3at PoE, providing 1.6A@12Vdc usable power at the door.

Locating The Controller

The lock controller is designed to be located at the door being protected, so a network outlet is all that is required for power and connectivity.

Door furniture (lock, request to exit, emergency break glass and readers) are connected to the controller according to the installation manual.

Double Leaf Doors

Where double leaf doors need to be secured, two locking mechanisms will be required.

If the power budget for the door is too high for IEEE802.3af the options available are:-

1. Install ALK3701-IP and ALK3702-IP wired in Master/Slave mode (two network outlets required)
2. Install ALK3704-IP with IEEE802.at power source to control both locks.
3. Use an external power supply and switch locally using clean contacts on the lock controller

Automatic Doors And Barriers

Use the clean, volts free, contacts of the lock controller to trigger automatic doors, gates and barriers.

Fitting The Emergency Break Glass

The emergency break glass is used to allow exit from a secure area in the event of an emergency

To comply with fire regulations there must be a mechanical method of removing power from an electronic lock mechanism.

If you have fitted a fail safe locking mechanism, for example a magnetic lock, to a door the emergency break glass provides the mechanical method of breaking the supply.

If an emergency break glass is not required, you must fit the hard wired loop as described in the installation manual.

Network Design

Managing The Power Budget

Power over Ethernet switches and mid-span hubs allocate power according to the end devices PoE classification.

You need to be aware of the total load each switch or mid-span is going to be expected to handle in your design and ensure this falls within the capabilities of the equipment.

Remember!! A 24 port PoE switch may not be able to supply full power to every switch port.

Every Netgenium lock controller is classified as a Class 3 device. Therefore the network switch will allocate 15.4W of power from its overall power budget regardless of the actual power drawn from the port.

Network Topology

There are no specific network design requirements necessary. The system will work perfectly well on a flat layer 2 network.

However, allocating a separate security VLAN for controllers is recommended. This provides the network administrator the ability to restrict access to the end devices at the network layer.

WAN Links

The Netgenium solution to physical access control is a real time application. When a user swipes to gain access to a door, the authentication event is processed by PolicyServer. This process relies upon the request to and response from PolicyServer being transported in a timely fashion. If a corporate WAN is being used a sub 100ms network response over the link is required. Links with latency exceeding 100ms will result in the controllers using their fail over configuration. Half Duplex links will result in packet loss and should be avoided

Due to their shared medium and inherent packet loss, ADSL links should be avoided.



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