Physical Security on a District Level

Who are you?

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Video Surveillance

Cameras & Encoders

Cameras

- Axis M3045-VE
  - Inexpensive corridor camera
- Axis M3007
  - 360 camera to use for hallway intersections
- Axis P1427-LE
  - Outdoor, waterproof, and IR based camera with high resolution

Axis M3045-VE

Axis M3007

Axis P1427-LE

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Encoders

- Axis M7014 - 4 port encoder used to replace analog door cameras
- Axis M7016 - 16 port encoder used to replace large volumes of analog cameras

Axis M7014

Axis M7016

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IP Camera Connectivity

- Uses one ethernet connection for data transfer and POE
- IP cameras do require a bit of power to operate. Having multiple high end cameras could require a POE budget

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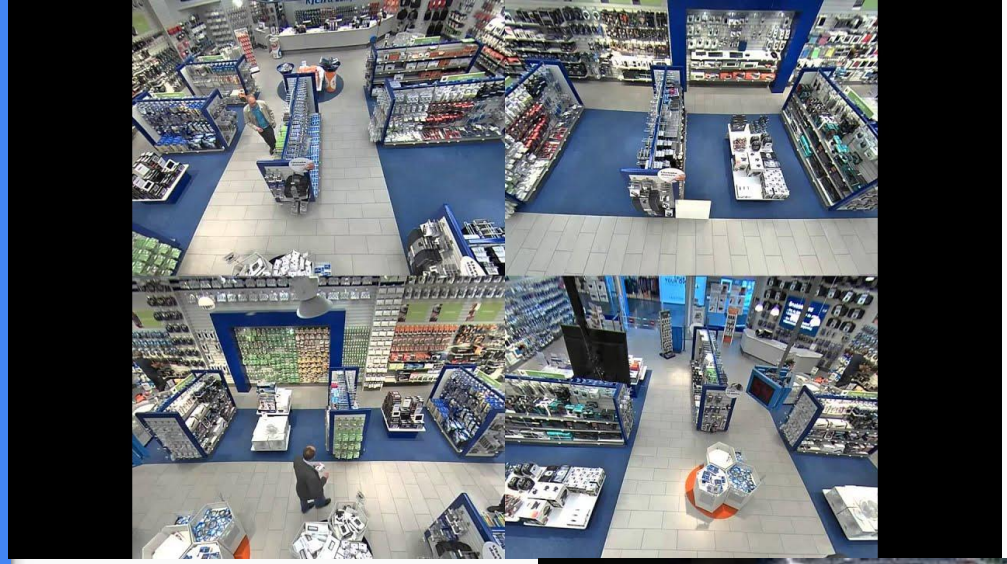
Placement

- Intersections - 360 camera at the center of an intersection
- Corridors - 2 cameras each looking the direction of one another
- Outdoor - Up high towards corners of buildings



Quad View

360 View

Outdoor Use

- Wide Angle Lense
- Higher up and towards the corners of the building leads to better coverage

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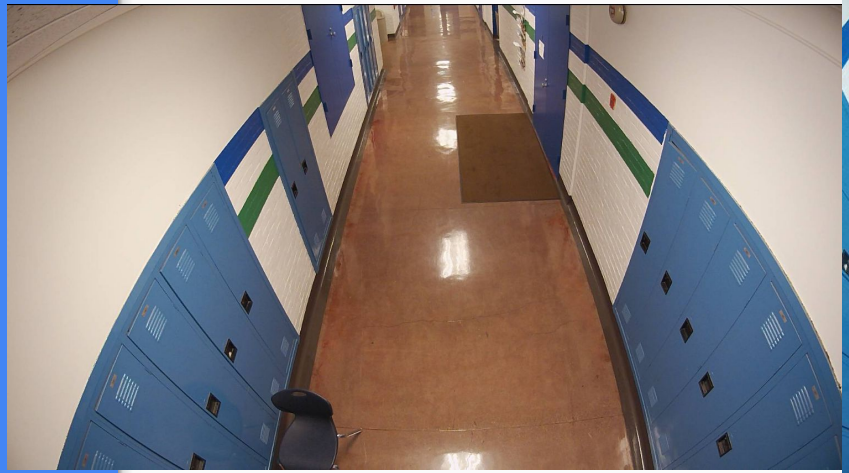
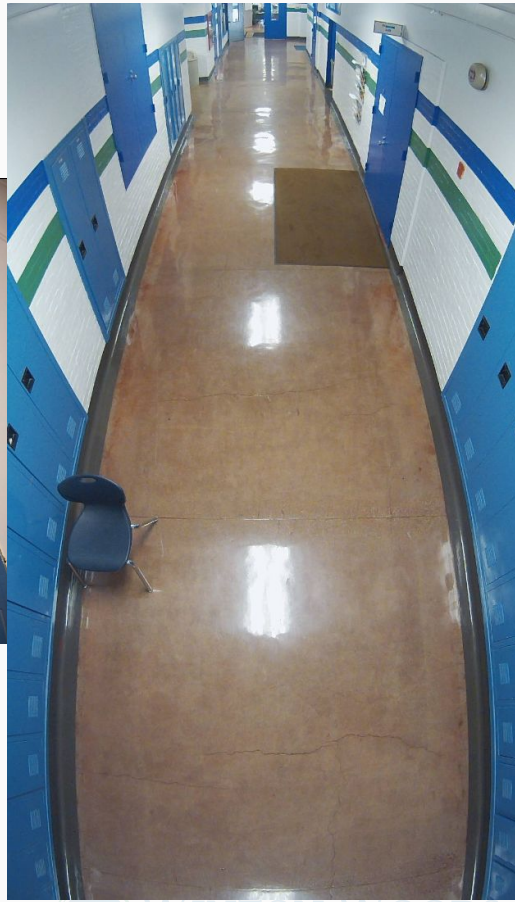
Corridor Mode

- Maximum image use
- Requires rotation of lense 90 degrees
- Requires change of camera view setting to 90 degrees

Corridor Mode Off



Corridor Mode On



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Wide Dynamic Range (WDR)

- WDR allows view of lower and higher light levels ranging within an image. This provides better image quality for cameras placed to view through windows, covered, or shade covered areas.

WDR OFF

WDR ON

Barrel Distortion Correction (BDC)

- This setting corrects issues with lens curve that causes curve distortion around what is known to be a straight line object.

BDC Off

BDC ON

Video Management System

Our Requirements

- Camera vendor agnostic
- No client or web plugin required
- Single sign on with identity provider
- Easily virtualized, portable, and lightweight
- Easy to use

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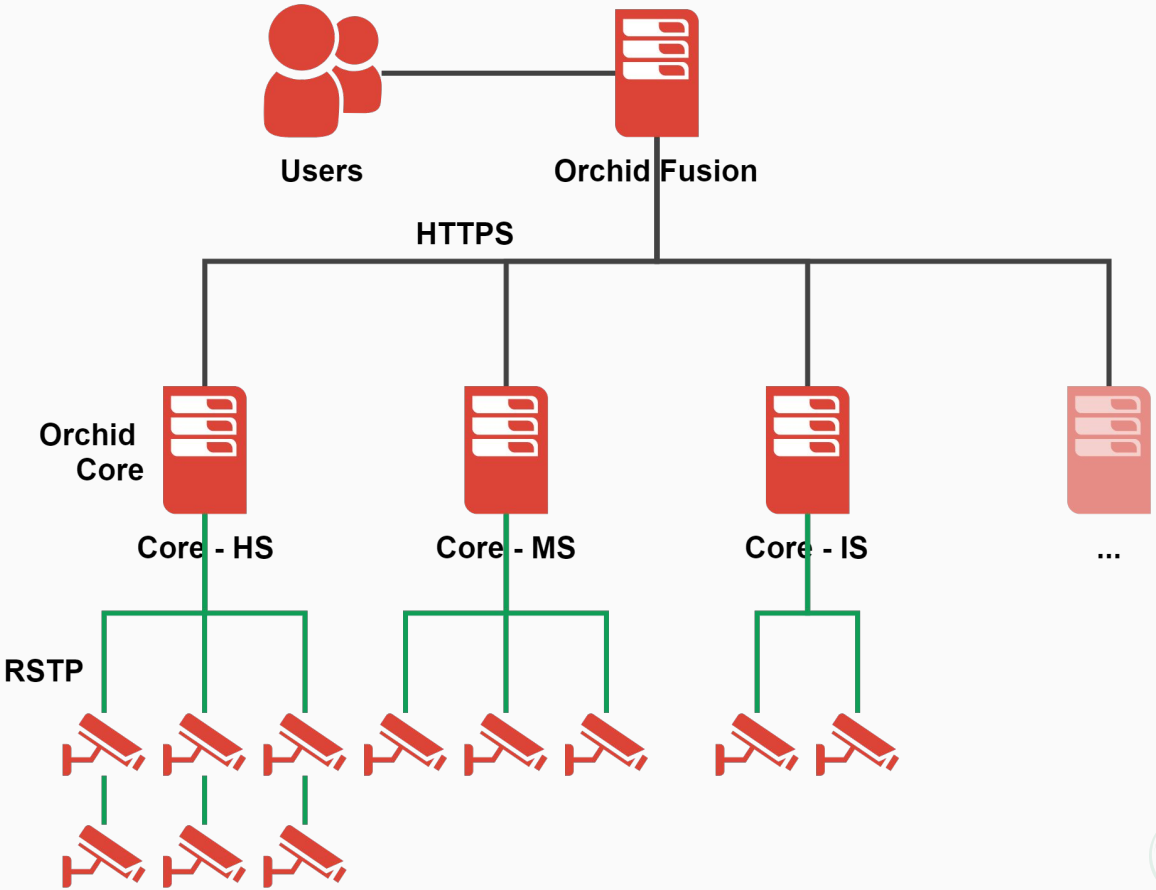
VMS Architecture



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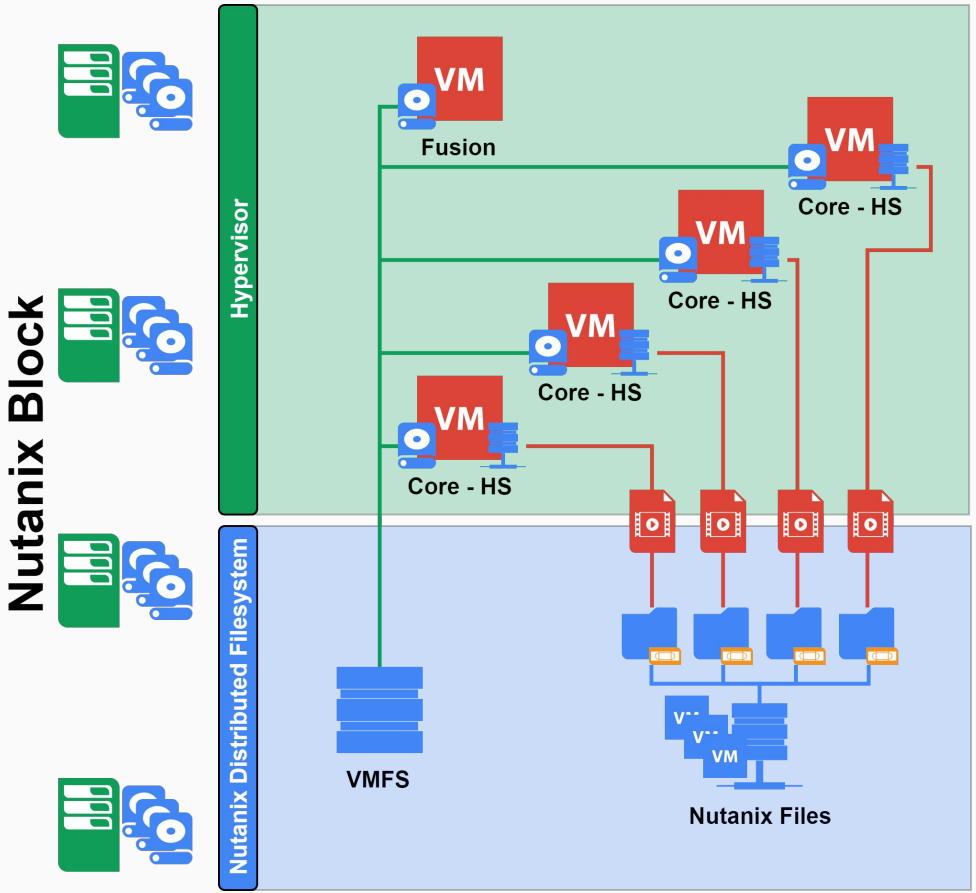
IT Infrastructure

Compute and Storage Infrastructure



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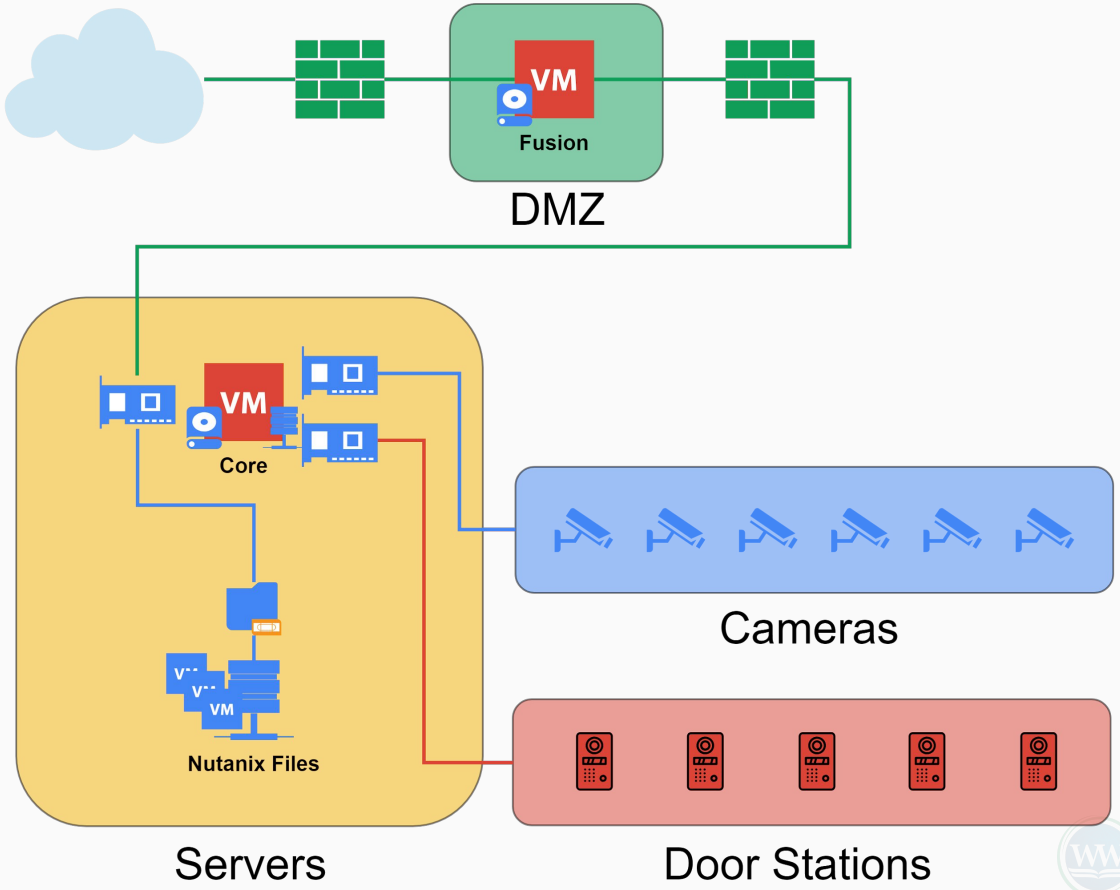
Network Segmentation



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Door Station (Intercom)

Video surveillance meets access control.

Door Station Workflow

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Door Station

AXIS A8004-VE & A8105-E

Notes:

- Video SIP client
- Wide angle lens
- Input/output header
- Same OS as cameras
- Event system

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Benefits

- Uses existing VoIP system (using SIP video)
  - Hunt pilot functionality to find available staff
- Simple install using only GbE with PoE
- Recorded by surveillance system 24/7

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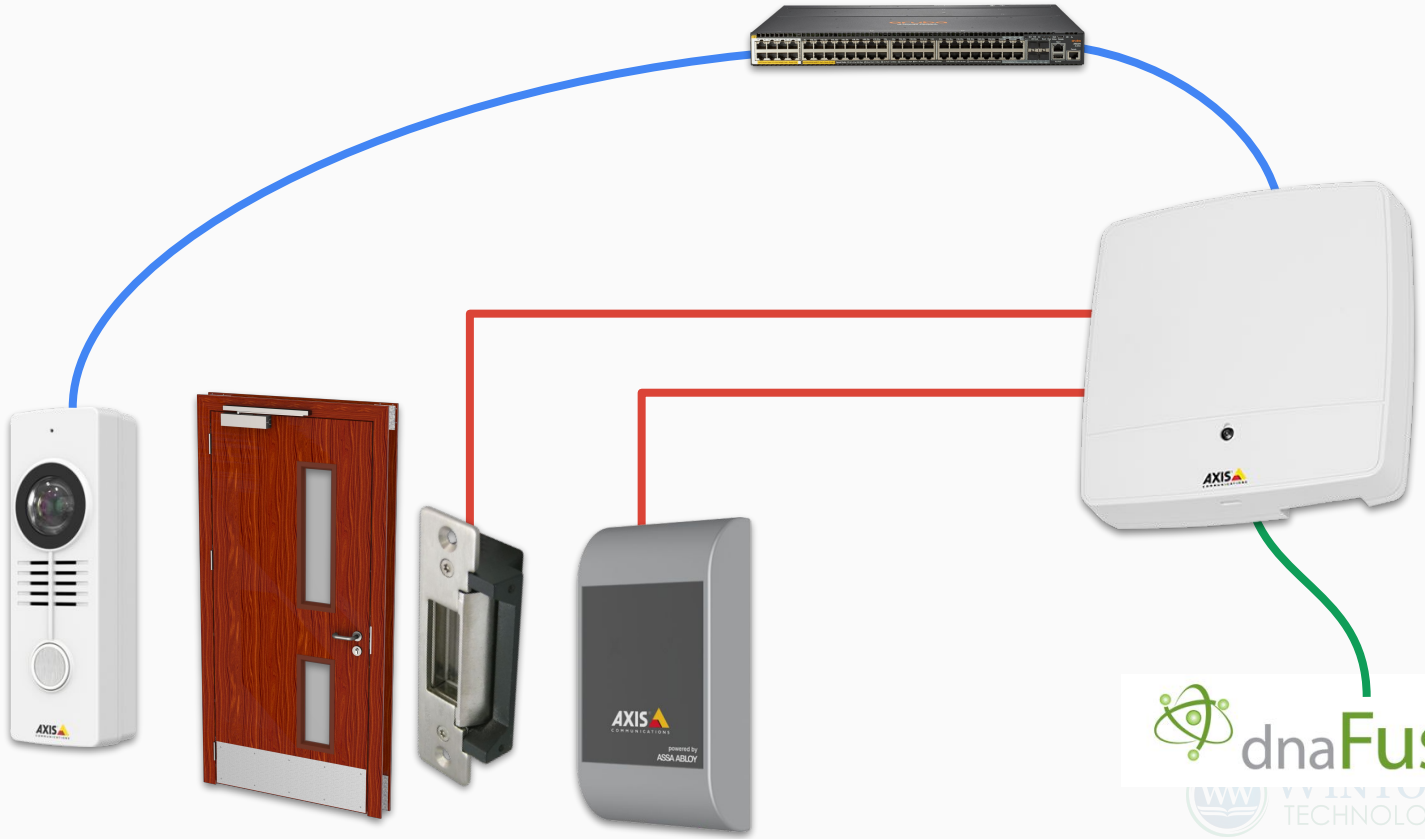
Access Control

Access Control Components

Diagram



Door Controller

AXIS A1001-VE

Notes:

- 2 Inputs &
  2 Outputs
- Ethernet-based
- Similar AXIS OS

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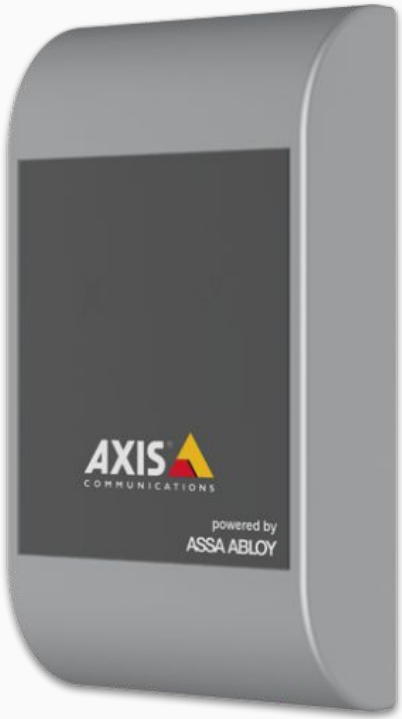
Card Reader

AXIS A4010-E

Notes: Testing reader compatibility with door controller and cards is important



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Door Release

Notes:

- We leave selection and installation to our vendor
- Selecting the right type is very important

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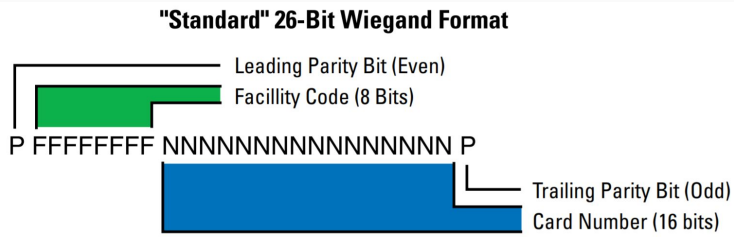
Card Types



Technology:

- “Prox” Cards
- HID iCLASS
- MIFARE (1k, 4k, DESfire)

Card Format:

- # of Bits
- Facility & ID, or CSN
- Parity Bits

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Access Control Software

Required Features

- Hardware vendor agnostic
- Import cardholder data from external data source

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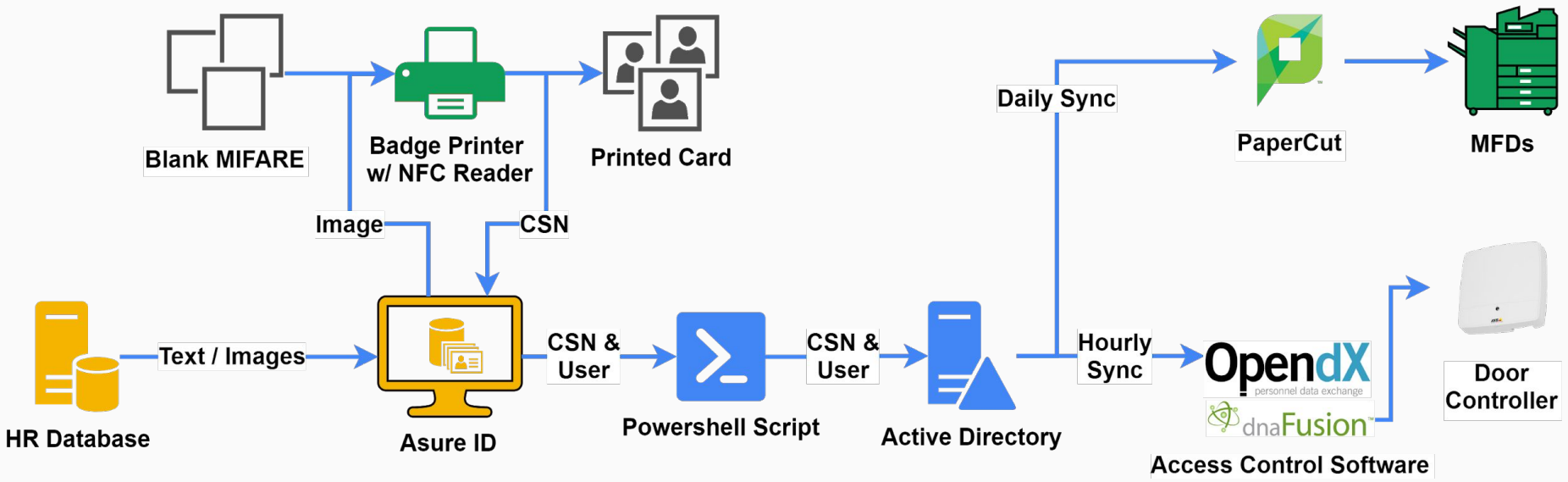
Open Options DNA Fusion

- **Supports multiple controller types:** Mercury-based, AXIS, wireless / PoE
- Syncs users
- Manages door controllers
- Maps users to door groups
- Door open conditions
- Web / mobile interfaces

Management & Automation

Identity Workflow



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Manufacturer Tools

AXIS Site Designer

- Visual quality
- Field of view
- Bandwidth / storage

AXIS Device Manager

- Setup & Configuration
- Firmware Upgrades
- Inventory
- Bulk Config Templates

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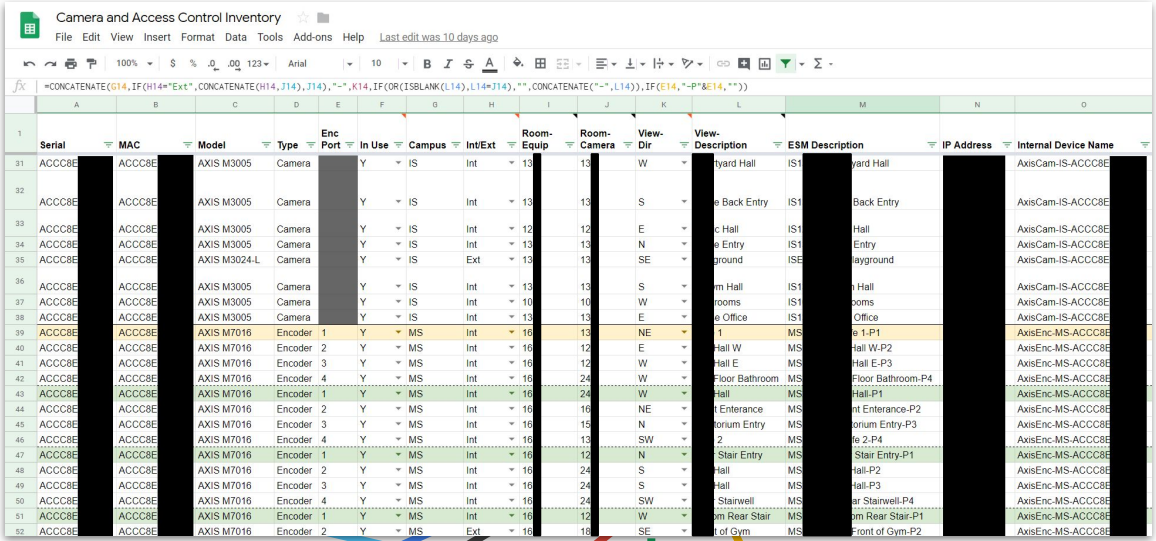
Hardware Inventory & Naming

Keeps track of serial, MAC, model, installation location, camera view stats.

Helps us with creating camera names and quick setup.

Name scheme keeps sorted cameras together by: buildings, external, room number, and view.



CB111-S-Enrollment Hall
CBExt109-NW-Parking Lot
HSExtPB-PTZ-Stadium
MS154-N-Auditorium Entry-P3

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Bulk Camera Setup Scripts

DHCP Reservations from CSV (PS)

1. Look for existing lease, exit if found
2. Create reservation
3. Replicate DHCP failover scopes

Add to Orchid from CSV (PS to REST)

1. Create ONVIF root admin
2. Create ONVIF Orchid user
3. Create camera in Orchid

(ONVIF Python library python-onvif-zeep & Orchid REST API)

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Thanks!