Cornell Access Control Program Team:

- Peggy Matta
  - Program Director
- Curtis Baker
  - Project Manager/Programmer/DBA
- Eric Bourdon
  - Systems Administrator
- Mark Conrad
  - CUPD Records and Communication Center Manager

Facilities Services Lock Shop

Support:

- Facilities Services Network and Systems Administration
- Cornell Information Technology
- CUPD Crime Prevention
- Facilities Services Shops

Primary Vendor:

- Stanley Convergent Security Solutions
Access Control Program:
• Card Access
• Video Surveillance
• Key Management
• Alarm Systems

Fun Statistics:
• 58 Segments
• 134 ISC Panels
• ~1700 Wired Readers
• ~13 Wireless Readers
• 45 Servers (30 NVR)
• 210 Cameras
• 234 Users
• 177,000 Cardholders (275,000 Badges)
• 60,000,000 Events/year
Initial Interest:

- Campus Life
  - 2007/8
  - Alternative to expensive rekeying process
  - Teetered off due to economic down turn
- Access Control Program / Life Sciences
  - 2009/10
  - Cheaper alternative to expand access control systems
- Engineering
  - 2010
  - Online & modern alternative/replacement to aging offline BASIS V
- Administration
  - 2012
  - Added security and accountability on high risk/value units of upper administration
Initial Problems

Product Issues
• Untested
• Unreliable
• Not secure

Software Issues
• Integration Issues
  – What do you mean…you want it to work with your existing card access system?

• User Interface
  – So, how do I set up and configure this lock?
Early 2011

- Began identifying vendors with solutions that ‘may’ work with OnGuard
  - Stanley Wi-Q
  - Onity ILS
  - Schlage AD
  - Sargent S2

- Gathered references
- Requested Demo Units
Stanley Wi-Q

OnGuard

Stanley IIS Based Interface

IP

Typical Door Hardware

Wi-Q Portal Gateway
Pros:

- Conversion kit to upgrade BASIS V offline locks
- Large capacity
  - 144 time zones
  - 65k badges
  - 10k Events
- Redundant data storage
- Decisions made at the lock
- Can be integrated with most door hardware via Wireless Access Controller
- Good configuration and spectrum analysis tools
Drawbacks:

- Multiple proprietary systems between lock and OnGuard system
- 2.4 Ghz, same frequency range as many wireless communication devices (headsets, etc.)
- Unfavorable customer reviews for initial release
Other Thoughts:

• Was excluded from pilot due to reviews
• New update is now available that may address some of the concerns
• Will be discussing the possibility of a Fall 2012 pilot of these devices
Onity ILS

Intelligent Lock Chassis
Cylindrical Mortise

ANSI Standard
Meets or exceeds A156.13, Grade 1 strength and operational requirements
Meets or exceeds A156.25, Grade 1 operational and security

Door Thickness
1-3/4" standard, 1-3/8" to 2-3/4" optional (available in 1/8" increments

Back set
2-3/4" standard, 2-3/8", 3-3/4" and 5" optional

Latch Bolt
1/2" throw security latch standard
3/4" throw optional
1" throw dead bolt on Mortise optional

Levers
Pressure cast zinc, plated to match finish
Steel, plated to match finish

Strike
ANSI curved lip strike 1-1/4" x 4-7/8" x 1-3/16" lip to center standard, optional strikes, lip lengths and ANSI strike box available

Key Override
Key override not standard. Available upon request

ILS Mechanical Specifications

Reader Specifications
Magnetic Stripe
Smart Card
Proximity

Frequency or Track
Triple track reader
13.56 MHz
125 KHz

Standards
ABA, ISO 76
ISO 15593, ISO 14443

Maximum Read Range
Not applicable
Up to .75"

Compatibility (secure sector)
High coercivity magnetic stripe cards
Lenel iCLASS (programmable format), HID iCLASS

Compatibility (serial number only)
Not applicable
ISO 15693, ISO 14443A, HID iCLASS, HID Prox, HID Corporate 1000, AWID/Lenel Prox, others

Certiﬁcations
FCC, Canadian FCC, UL294 pending

ILS System Conﬁgurations
(ofﬁne and wireless illustrated)

Secure and Reliable. Communication for all wireless Lenel ILS locks is accomplished via the Lenel Wireless Gateway. AES 128 bit encryption over 900 MHz band offers secure transmission of system parameters and cardholder data.

Portable Communications. Whichever lock you choose utilizes a Mobile Conﬁguration device with Lenel ILS application for initial lock setup. The Mobile Conﬁgurator is used to port data from the OnGuard system to the lock. Once conﬁgured, Lenel ILS wireless locks receive and send all subsequent updates through the associated Lenel ILS Wireless Gateway.

One lock, ﬂexible modes. Lenel ILS support a number of operation modes, based on the use and preference of the user

Card Only. Lock is set to be opened with card only

Unlocked. The lock is unlocked

First Card Unlock. First valid card presented unlocks the lock for a set duration

Blocked. A lock remains locked until presented with a badge with overriding privileges

Secured. Lock remains locked until it transitions to new mode or presented with emergency lock card

Unsecured. Lock remains unlocked until it transitions to new mode or presented with emergency unlock card

Facility Code Only. Lock is opened by a card with a valid facility code, authorization level, and card

Lenel ILS Wireless Gateway
Intelligent Dual Reader Controller
Reader
I/O Module

Local Power

Wireless Lenel ILS Lock

LOCAL AREA NETWORK
Onity ILS

Pros:

• Built specifically for OnGuard
• No additional software
  – Wireless Access Point connects directly to Lenel Communication Servers via IP
• Does not count towards traditional reader licenses
• Good battery life
  – 3AA every 2 years
Drawbacks:

- No support for badge offset
- Firmware non-expandable
  - “Feature lock at release”
- No exit device trim
- Requires a proprietary access point
- Limited onboard capacity
  - 5000 Badges
  - 1000 Events
Other Thoughts:

- This lock was pulled from the live pilot due to missing card format features
- Only configured on our testing server
- Since there is no expandability with current hardware, a fix will not be available until 2014
Pros:

- Direct hardware interface with OnGuard ISC’s
- No additional software
- Good battery life
  - 4AA every 2 years
- Can be connected to spare reader points on installed LNL1320’s via PIM TD2
- Compatible with most trims (mortise, exit, etc.)
- Long Range Receiver (200-1000ft)
- Lock down capable with ‘Wake up on radio’
Drawbacks:

- Requires existing system + 500W board
- Contributes to ISC reader limit
- Limited status reporting
- Requires a proprietary 900Mhz wireless access point
- Highest Installation Cost
Other Thoughts:

• Overall this lock appears to be the most reliable based on our live testing to date.

• The infrastructure is the most expensive to prepare because it must utilize either a RS485 connection from the ISC or be wired directly to the contacts on a RIM.

• Due to the limit of 16 readers per PIM, this solution may not be the best option for high density deployment.
Pros:

- Can be configured on campus WiFi
  - Support most authentication methods (WPA2, WEP, etc.)
- Great Status Reporting
- Compatible with most trims (mortise, exit, etc.)
- Synchronize on command with keypad
- Decisions made at lock
- Real time alarms
Drawbacks:

• Poor battery life
  – 6AA every year
• Long sync delay
  – Only twice a day
• Beta interface with Lenel OnGuard (Spring 2011)
• Additional interface server required
Other Thoughts:

• Very promising once interface issues are addressed
  – 2500 cardholders per virtual panel
    • Issues with segments that have more than 2500 cardholders
      • Should be fixed in an update coming in next few weeks
    – Unpolished toolset for configuration

• Battery life may be problematic with widespread deployment

• Though there have been issues with the interface, Assa Abloy has been very responsive and eager to fix bugs as they are found
• Proposal for vendors
  – 5-6 Locations per vendor
  – Hardware
  – Installation
    • Infrastructure provided by Cornell (IP, RS485, Power)

• Locations selection:
  – External
  – High Traffic
  – Low Traffic
  – High Change over
Users were asked to perform various tasks, tests, and analysis throughout the pilot:

- Time zone & holiday
- Web Access Manager
- Limit Testing
- Durability Tests - “The drunk football player test”
- Aesthetic
- Proximity Range
Schlage

- **Time zone & holiday**
  - Full functionality support
- **Web Access Manager**
  - Fully compatible
- **Limit Testing**
  - FIFO (first in first out)
- **Durability Tests - “The drunk football player test”**
  - Grade 1 hardware, feels very solid
- **Aesthetic**
  - Modern looking with a good selection of handles and finishes
- **Proximity Range**
  - Short but acceptable, can read through most wallets
Sargent

- **Time zone & holiday**
  - Full functionality support but limited capacity
  - Limits on time zones per cardholder

- **Web Access Manager**
  - Fully compatible

- **Limit Testing**
  - Random on sync

- **Durability Tests - “The drunk football player test”**
  - Grade 1 hardware, feels very solid

- **Aesthetic**
  - Modern looking with a good selection of handles and finishes

- **Proximity Range**
  - Very short, no thick wallets
• Both Schlage and Sargent appear to have very promising solutions  
  – Selection will vary depending on installation circumstances

• Cornell has decided that wireless will not be used for the following installations  
  – Perimeter
  – High Risk/Value Spaces

• Though Schlage is theoretically capable, we will not utilize wireless locks at any locations that must be capable of a lock down
Lessons Learned

• Consider existing infrastructure when choosing a solution
  – ISC present with space
  – Distance from ISC to location
  – Network or wireless available nearby

• Consider your project specifics
  – Small additions
  – Large scale or dense deployment

• Consider the lock limitations
  – Software
  – Capacity

• Check references

• Test and verify system compatibility prior to any ‘live’ install
Future Wireless Plans

- Expansion of online access control
- Succession planning of offline BASIS V locks
- Exploration and planning of future Campus Life
  - Expanded integration with StarRez to accommodate extensive card access use
- Continued testing of new solutions as they become available and viable
  - Likely to be running a second pilot fall 2012
Questions?
Please feel free to contact us with any additional questions

Curtis Baker
cab365@cornell.edu
607-255-7874

Peggy Matta
mem25@cornell.edu
607-255-4393

Thank you!