Locking/Unlocking a Wyreless Access Point Module (WAPM) Upon Demand

Summary

This application note describes how to configure a **Wyreless Access Point Module (WAPM)** so that its lock state (i.e. locked or unlocked) follows the state of the **Access Control Panel's (ACP)** strike relay.

Acronyms	Description
ACP	Access Control Panel
AP	Access Point
CDT	Configuration Demonstration Tool
IRL	Integrated Reader Lock, a WAPM
PIM	Panel Interface Module
MIRL	Modular Integrated Reader Lock, a WAPM
WAPM	Wyreless Access Point Module
WISI	Wyreless Integrated Strike Interface, a WAPM
WPR	Wyreless Portable Reader, a WAPM
WRI	Wyreless Reader Interface, a WAPM
WUSI	Wyreless Universal Strike Interface, a WAPM

Introduction: Some access control applications require that Access Points (AP) can lock and unlock upon demand from the Access Control Panel (ACP) rather than from a card swipe or request to exit event at the AP. In a wired system, the AP's lock state instantaneously follows the state of the ACP's strike relay. In a wireless system, other performance constraints must be considered to achieve the desired system performance.

Locking or unlocking an AP upon demand may be a system requirement to provide: timed locks/unlocks (i.e. unlock from 8 AM to 5 PM) or to provide the capability to lock/unlock upon demand (i.e. "buzz" someone in, a security threat condition, or a life safety event).

WAPM Theory of Operation: WAPM's that are battery powered, have been designed to maximize battery life by minimizing power consumption. Minimal WAPM power consumption is achieved by placing the WAPM in a sleep mode until an event occurs at the AP.

There are five external events at the AP that bring the WAPM out of the sleep mode and cause the WAPM to send a RF message to the Panel Interface Module (PIM):

- a card swipe or card presentation,
- a change in state of the door position switch,
- a change in state of the request to exit switch,
- a change in state of the request to enter switch,
- or a tamper condition.

There is one internal event that will bring the WAPM out of the sleep mode: a Heartbeat. Each WAPM has an internal timer that determines how long the WAPM has been asleep (i.e. how long it has been since the last external event at the AP). When this timer reaches a configurable time the WAPM wakes up and sends a RF message to its Panel Interface Module (PIM). This RF Message is the Heartbeat. The Heartbeat let's the PIM know that it is still operating and can still communicate.

Regardless of what caused the WAPM to wake up (an external or internal event), the subsequent RF message accomplishes five things:

- the PIM knows that the WAPM is operating and can still communicate,

- the WAPM sends to the PIM the current state of all the AP conditions,
- the PIM sends to the WAPM notification of any configuration changes,
- the PIM sends to the WAPM notification of any statistics requests,
- and the PIM sends to the WAPM the current state of the ACP strike relay.

WAPM Configuration: Two WAPM items must be properly configured in order for a WAPM's lock state to follow the ACP's strike relay state:

Use the Schlage Configuration Demonstration Tool (CDT) (available for downloading from www.recognition-source.com):

1. Make certain that the Extended Unlock option is enabled (the Extended Unlock option is enabled as the default when shipped from the factory).
2. Set the Heartbeat time achieve the desired lock/unlock latency time versus battery life (see below).
3. **In order to test the Extended Unlock feature, the CDT must be disconnected and the PIM door/cover must be installed to disable the PIM tamper condition.**

Selecting the Proper Heartbeat Time: There are two things to be consider when selecting a WAPM Heartbeat time where extended unlocks and/or locking/unlocking upon demand is required.

First consider the latency time. Latency time is how long it takes the WAPM lock state to respond to a change in the ACP strike relay state. If an external event occurs at a WAPM, the WAPM lock state is updated immediately. But if the WAPM is asleep, then the Heartbeat setting is critical to keep the lock/unlock latency time to an acceptable minimum.

Latency time example: Assume there are no external events at an AP so that the only event that wakes up the WAPM is a Heartbeat, assume that the heartbeat has been set to 10 minutes, and assume that the ACP has the strike relay open (i.e. AP locked). Now the ACP wants the AP to unlock and closes the strike relay. The PIM senses this closure immediately but has to wait for the next time the WAPM sends a Heartbeat message in order for the AP to unlock. This wait can be anywhere from 0 to 10 minutes and on the average it will be half the Heartbeat time or in this example 5 minutes.

So what is an acceptable latency time? That depends on the application. If only timed extended unlocks/locks will be used at an AP, then a longer latency time might be acceptable. If the applications requires locking/unlocking upon demand for life safety, emergency, or "buzzing in" situations, then shorter latency time is recommended.

Secondarily consider battery life. If the WAPM is battery powered, more frequent Heartbeats will result in a smaller latency time but will also reduce battery life.

Battery life example: Assume there are 20,000 card swipes a year (80 swipes a day) at an AP, a 10 minutes Heartbeat results in about a 2.5 year battery life, a 1 minute Heartbeat results in about a 1.5 year battery life, and a 15 second Heartbeat results in about a 0.5 year battery life.

Rules of Thumb for Locking/Unlocking Upon Demand:

1. If the WAPM is not battery powered, set the Heartbeat time to the minimum value for the smallest latency time.
2. If the WAPM is battery powered, choose a Heartbeat time that will result in acceptable latency time as well as acceptable battery life.

WAPM	Minimum Heartbeat
MIRL/IRL/WISI/WPR	15 Seconds
WRI/WUSI	1 Second

575 Birch St
Forestville, Ct 06010
(866) 322-1237
(866) 322-1233 Fax

World Wide Web
http://www.irsupport.net