HCA Tech Note 132

How does HCA know if your home is occupied or unoccupied?

If HCA can know if anyone is home or of everyone is away, then it can take actions on your behalf when you leave, return home, and during the unoccupied times. The key is the method HCA uses to know if anyone is at home or not. In this technical note seven different methods are described and the advantages and disadvantages of each are given. Look them over and see if one method might work well for your situation.

All these methods ultimately are used to start a program that performs actions when you leave home or return. One of those actions, besides what is appropriate to your specific installation, should be to use the HCA "home Mode" feature. With home modes you can easily designate what happens to devices when you leave, return, and also what happens to them when you are in one mode or another.

Home modes are described in detail in User Guide chapter 6.

Method 1: Manual action

The simplest method to have HCA know if you are at home or away is to have a keypad by the door that you tap when leaving and returning. This can also be accomplished by telling a voice assistant to "Turn on my home" or "Turn off my home", or words that you would prefer.

The keypad button press can be used as a trigger for a program to perform whatever you want on exit or return. To know which is which, you can use two buttons or one button that toggles, in which case the program would look at the home mode and change to the opposite.

For a program started by a voice assistant, you can add a generic ON and a generic OFF trigger. At the start of the program test for the starting trigger in the program, and perform different actions depending if the program is being started by ON when you leave, and OFF when you return.

Advantages: Easy to implement and, if used consistently, unlikely to fail

Disadvantages: You can forget to tell the voice assistant or push a button when you leave and/or return. And while anyone can press the "I'm home" button, the "I'm away" button should only be used by the last person leaving.

TechSup@HCATech.com

www.homecontrolassistant.com

Method 2: Geofence

A Geofence is a property of the iOS mobile application and can be configured on an iPhone or iPad. What you do is to "draw a circle" at a distance from your home to define the "fence". Since location services are generally always enabled on mobile devices, it knows where you are, when you cross the fence, and in which direction. When a fence crossing happens, the app connects to the HCA Server and starts a program of your choosing. That program receives information about what fence is crossed, if you are leaving or entering the fences area, and what user did the crossing. This way you can have different fences for different occupants and the system can react differently depending upon the user.

The program needs to keep track of how many users are inside the fence. If that count goes from zero to one, then it can start the arriving home procedure. If the count goes to zero, then it can start the everyone has left procedure.

Tech note #118 describes Geofences in more detail.

Advantages. Very reliable.

Disadvantages: Everyone who is in the home must have an iPhone or iPad. No Android support currently. It is also complex to configure, and the fence crossing program must keep state as described above.

Method 3: Schedule

If you have a very regular schedule, for example: leaving home at 8 and returning at 6:30 Monday to Friday, then this can be used to schedule programs that put the home in "Away mode" at 8 and back in "At Home Mode" at 6:30.

Advantages: Reliable. Easy to configure

Disadvantages: You must have a very regular schedule. You would need some method to account for extra days off. In that case you could use the HCA Calendar to mark those extra days and, in the program that is scheduled, test for the calendar day category and then don't change the home mode on those special days.

TechSup@HCATech.com

www.homecontrolassistant.com

Method 4: Motion sensor activity

If you have motion sensors in your home, and you have a somewhat regular schedule, you can use a duration of "no motion" to assume that everyone is gone and change to "Away mode". Any motion seen while the house is in "Away mode" would change the home mode to "At Home".

Implementing this is a bit complex. Here is one way to do it using a set of three programs - let's call them "Program A", "Program B", and "Program C" - and a global variable called [Last motion time].

Program A would have a state change trigger for each of your motion sensors for both "on to off" and "off to on" state changes.

When Program A is started by <u>any</u> of the off-to-on triggers, and the home is in "away" mode, then the home mode would be changed to "At Home". Any trigger of the program, off-to-on or on-to-off, would set [Last motion time] to the current time.

Program B would be scheduled to start when you are always gone based upon your regular schedule, say 9:30 if you leave by 9. It also uses this option on the "Advanced Options" tab:

☑ Once started automatically run again in: 0 ⬍ days 0 ⬍ hours 15 ⬍ minutes

The idea is that HCA starts the program at the scheduled time and then it reruns every 15 minutes after that.

What the program does is to look at the global variable [Last motion time] and if it was, for example, older than 15 minutes ago, it would change the home into "Away" mode.

The last part of this is "Program C". It would be scheduled for a bit before you normally come home, say 6:15. This program would contain only a single element, and that is the "Stop Program" element naming "Program B". That stops the program from continuing to start every 15 minutes.

In summary, Program A keep the [last motion time] variable up to date. Program B, started by the schedule and runs every 15 minutes after that, sees if no motion has happened in a while, and then switches to "away" mode. Program C stops program B so that it no longer is monitoring for periods when you are home according to your own schedule.

One final point I waited to point out until all three programs were described: program A should also perform a "stop program" element on program B when it switches the home mode to "At home" since it no longer needs to rerun every 15 minutes.

Advantages. Reliable if your schedule is reliable

Disadvantages: If your schedule isn't regular this isn't a good system.

Method 5: Network devices

This is a tool that can be configured from the "Tools" ribbon category, "Network Devices" button. What it does is allow you to configure one or more IP address that it periodically sends a network "ping" (a command that says, in effect, if you hear this please reply) and to configure what happens if that ping is returned or missed.

Setup can be complex because you do not want a single missed ping to make a change to "Away mode". Pings are notoriously unreliable.

With this method, each home occupant would need to have a "pingable device" on them when they leave home – a mobile phone is what is usually used.

The network tool lets you specify what program is started if any device gets a returned ping and what program is started on all devices not responding to a ping.

Advantages. If it works, it works well.

Disadvantages. Not all mobile devices return pings when they go into a stand-by mode. If the device powers off, then the pings are not answered. It requires that all the mobile devices and the HCA server are connected on the same network. You must remember to take your mobile device with you when you leave or return.

Chapter 19 of the User Guide describes Network Devices in more detail.

Method 6: Presence Sensor

If you are using Hubitat Elevation or SmartThings, there is a small widget called a Presence sensor. This is designed to be kept on a keyring or attached to a bag or backpack. The hub periodically asks it to reply to a short message – like a network ping. When the hub loses contact with it then changes its state to off. When contact is reestablished, the state returns to ON.

The state change of a presence sensor device can be used as a trigger for a program. The program must maintain a count of the number of presence sensors within the home. If that goes to zero, then the program

TechSup@HCATech.com

www.homecontrolassistant.com

can shift to "Away" mode. When the count becomes non-zero it can go into "At Home" mode. Instead of a count, the program could respond to any off-to-on trigger by setting the home mode to "At Home". Any on-to-off triggers could cause a check of the state of all other presence sensor devices and decide if the home mode should be changed.

Advantages: Works reliably, much more than the network devices method.

Disadvantages: Requires you to use Hubitat or SmartThings and to purchase presence sensors.

Method 7: Security System Tie-In

The final method to know if you are at home or away is having a security system tell HCA when it is armed and disarmed. Many security systems have a method to send a signal, close a contact, or something similar when these actions happen. That can then be received by HCA and used as a trigger to a program. All security systems are different. If a communication method exists, and how it works, is completely up to your research.

Advantages: will work reliably

Disadvantages: Depends upon the security system

##end##

TechSup@HCATech.com

www.homecontrolassistant.com