



This white paper describes how a new AT&T network device called an "iNID" (short for "intelligent network interface device") can be used with a monitored home alarm system.

TOPICS

(To jump to a topic, hold CTRL and click on the topic title)

-
- Introduction

 - Monitored Alarm Support

 - Introducing the iNID

 - iNID Home Alarm Wiring

INTRODUCTION

AT&T U-verse Voice is a next-generation digital phone service delivered over the U-verse IP network. It is part of AT&T's residential triple-play that also includes IPTV and high-speed internet service. AT&T has been rolling out U-verse Voice to customers across the country since early 2008. The service is provided over AT&T's world-class managed IP network instead of the public Internet. AT&T U-verse Voice delivers up to two voice lines, and includes professional installation for customers with monitored alarm systems.

Until now, when AT&T installed U-verse services at a residence, a technician always installed a broadband residential gateway to provide high-speed connectivity to the AT&T network. AT&T is now beginning to install a different type of equipment at some homes – an intelligent network interface device, or "iNID." This equipment places most of the electronics necessary for U-verse connectivity outside on the side of the house, in a weatherproof enclosure that replaces the traditional network interface device. This paper details how monitored home alarm systems will be supported when an iNID is used to connect a customer to AT&T's U-verse network.

MONITORED ALARM SUPPORT

AT&T has been and remains committed to ensuring alarm system compatibility. This commitment began with network and service design, lab testing, and operating procedures. The ordering process includes additional procedures for customers with monitored alarm systems, such as instructing the customer to inform their monitoring company that their phone service will be changed to AT&T U-verse Voice.

It is important to note that AT&T does not use voice compression to deliver our AT&T U-verse Voice service. VoIP providers who utilize the public Internet commonly use some form of voice compression to reduce the amount of bandwidth needed to transport the VoIP traffic so that customers can surf the web and use the phone simultaneously. The problem with voice compression techniques is that they can cause home alarm signal distortion, potentially disabling a monitored home alarm. AT&T's U-verse network can support the bandwidth required to provide high quality Voice, TV and Internet service simultaneously and therefore does not use voice compression.

AT&T has conducted extensive testing and expects that AT&T U-verse Voice will work with many types and brands of home alarms, and most alarm signaling formats including DTMF, FSK/Modem, and Serial-Pulse. However, Pulse-Dialing is not supported by AT&T U-verse Voice. Only monitored alarm panels that support Touch-Tone dialing should be used. This includes panels that have been

configured to switch from Touch-Tone to Pulse-Dialing on successive dialing attempts.

AT&T U-verse Voice includes a feature called "Service Outage Detection". If telephone service is interrupted, the residential gateway automatically drops the loop voltage to 0 Volts. This is intended to support monitored alarm panels that use Line Cut Monitoring. When telephone service is restored, the loop voltage returns to its normal state.

When AT&T U-verse Voice is installed, the professional AT&T technician will configure the wiring between the U-verse service and the alarm panel in the same manner that it was configured with traditional local exchange telephone service. When an alarm is triggered, the home alarm system will continue to automatically seize the telephone line, even when the phone is in use, and notify the central monitoring station of the alarm. Non-monitored home alarm systems are not connected to a telephone line; therefore, there are no impacts for installation of AT&T U-verse Voice.

INTRODUCING THE INID

AT&T is introducing a new type of network element to be used at some customers' premises. An iNID is composed of three different parts. The main part is the outside unit, which is a weatherproof enclosure that replaces the traditional network interface device ("NID") on the side of a customer's residence and also contains an electronics board that performs most broadband residential gateway functions. The customer will also be provided with one or more inside units that each function as a combined Wi-Fi access point and Ethernet switch. The inside units communicate with the outside unit using the Home Phone Network Alliance version 3 (HPNA v3) home networking protocol over the home's telephone wiring. The iNID outside unit can also communicate with devices such as IPTV set-top-boxes inside the home using HPNA v3 over the home's coaxial TV cabling. The iNID outside unit also has an Ethernet port that can be used if the home is wired for Ethernet.

iNIDs are used in AT&T's fiber-to-the-node architecture, where Very high-speed Digital Subscriber Line (VDSL) technology is used on the final link between the customer's home and AT&T's network. The VDSL signal can be carried on telephone wires along with plain old telephone service ("POTS"). The iNID outside unit contains circuitry to split the VDSL signal from the POTS signal so that the VDSL data can be processed by the outside unit while the POTS signal continues into the home. Up to two lines can be supported. The outside unit also contains a Voice-over-IP analog telephone adapter to provide U-verse Voice service. Electronically-controlled switches in the iNID outside unit allow AT&T to

control whether the home receives POTS or U-verse Voice on either of the two lines.

INID HOME ALARM WIRING

Because both POTS and U-verse Voice are sourced from the iNID, no special wiring is needed to connect a monitored home alarm system and enable it to seize the line. The iNID uses a special telephone line module that connects to the home alarm's "Telco" and "Phone" interfaces. The module blocks the HPNA signal from reaching the alarm system, but provides a path around the alarm system to devices in the home so that broadband services are not interrupted during a line seizure. The module is similar in function to commercially available DSL filters that are designed for home alarm systems.

Figure 1 below is a photo of an iNID outside unit with the front cover open. The electronics board is under the stainless steel shield occupying the top part of the enclosure. The bottom of the enclosure houses components found in any NID, including surge protectors on the left (under a telco access cover) where the telco drop wires are connected and customer bridge modules (also called "line modules" and other terms) on the center-right, where customer wiring is attached.



Figure 1. iNID Outside Unit with Cover Open

Figure 2 is a close-up of the bottom of the iNID outside unit. This photo shows the customer bridge modules in the center of the photo. The bridge module for line 1 is on top, with the grey and green cables connecting it to the electronics module. The line 2 module is connected by yellow and black cables.

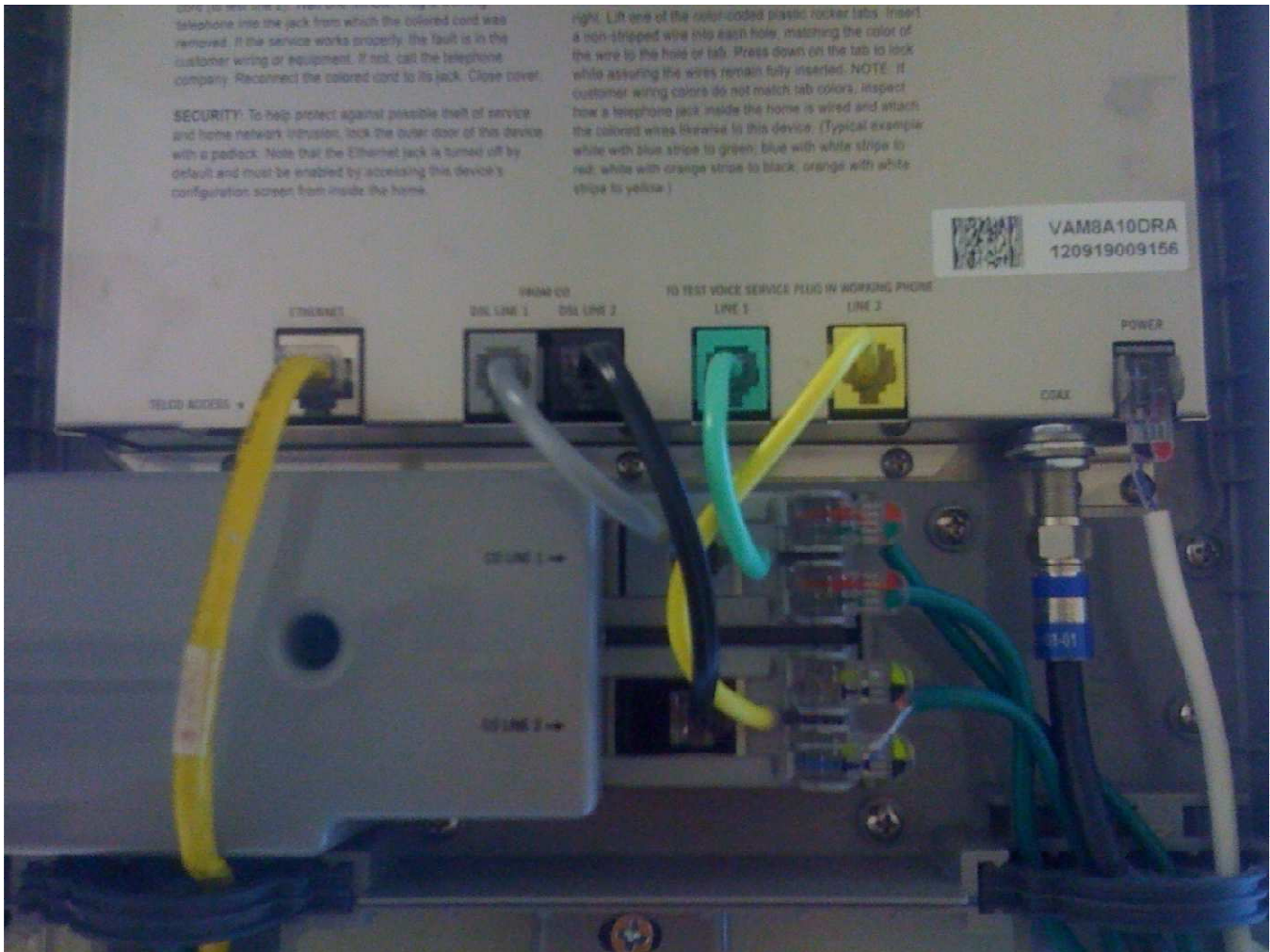


Figure 2. Close-up of iNID Bottom Section

Figure 3 is a drawing of the iNID home alarm system module. An AT&T technician will replace the standard customer bridge module for line 1 in an iNID outside unit with a module like this when the iNID is installed at a home with a monitored alarm system. Notice the two orange-colored rocker-tabs at the bottom - these are wired to the home alarm system. Normally, they are wired to a standard RJ-31X jack to which the alarm system would then be connected. If there is no connection between those two tabs then no telephones in the house will be able to receive either POTS or U-verse Voice. The other two rocker-tabs are for normal home phone wiring connections. The base of this module contains passive (non-powered) circuitry that blocks the HPNA signal from reaching the home alarm system and instead routes it around the alarm system to HPNA devices on the home's twisted pair wiring to maintain broadband connectivity when the alarm system seizes the line. The orange tabs are labeled with "To

Sec(urity)" and "From Sec(urity)" to designate how the module should be connected to the RJ-31X jack. The "To Security" tab is connected to the CO and takes dial tone to the security system, while the "From Security" tab receives dial tone back from the security system and sends it to the home.



Figure 3. iNID Home Alarm Bypass Customer Bridge Module

AT&T remains committed to compatibility with monitored home alarm systems when an iNID is installed to serve a U-verse customer. An AT&T technician simply has to replace one of the customer bridge modules in the bottom part of the iNID outside unit to provide the proper connections and signal-routing capabilities to enable a home alarm system to function normally with either POTS or U-verse VoIP.