

ClimateTalk™ Alliance Vision

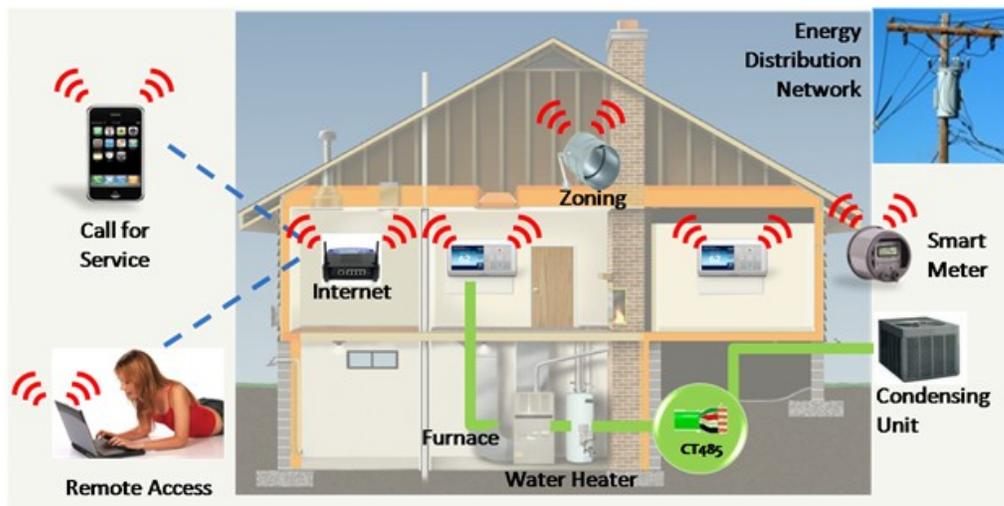
Better communications *for* better customer value.



The Home of the Future

Picture the home of the future. This home is energy efficient and connected to the Internet and the electric Smart Grid. When the home was built in 1987, there was no Smart Grid and while the home was energy efficient for its time, technology has progressed much since then. Twenty years later, an HVAC contractor installs high efficiency, variable speed air handlers with heat pumps that use variable speed compressors and a programmable thermostat.

What's more, the components of this new system talk to each other. They can configure themselves and communicate with the electric company's Smart Meter. The thermostat includes a display showing how much energy is being consumed by the HVAC system and how much it costs. It also shows how much money the homeowner saves by changing the temperature by a degree or two. In the summer when the demand for electricity is high, the electric company can raise the temperature by one or two degrees, lowering the demand. In one house, this isn't much of a change. In millions of houses, the effect is considerable. When the furnace has a problem in this house, the HVAC contractor is automatically notified via an internet connection. They diagnose the problem and have a good idea of what they'll need to do before they arrive at the home. Landlords and those with second homes are notified via their cell phones of problems with the heat before the pipes burst and flood the house.



This home is not the home of the far-off future. It is the home of the very near future. Some parts of this vision already exist with products available in the marketplace, while other parts will be available in the next few years. Demand for this technology is becoming more urgent as utilities struggle to keep up with demand for power from an ever-increasing population and as governments begin to mandate energy

efficiency in homes and businesses. Homeowners are interested in saving money and saving the environment. HVAC, because it consumes 40-45 percent of the energy used by a typical household, is a prime candidate for energy use improvement.

What does it take to create the home of the future? It takes a common language used by all energy appliances. ClimateTalk is that language.

Obstacles to the Vision

A significant obstacle to realizing this vision of the future is fragmentation within the HVAC marketplace. Each manufacturer uses their own proprietary communications system, preventing interoperability and interchangeability among devices and components. The communicating systems that exist require professional installation and configuration. It is not always easy to retrofit existing homes with new systems. Products currently available require costly microcontrollers and are not designed with power consumption in mind, a critical consideration for future wireless communications.

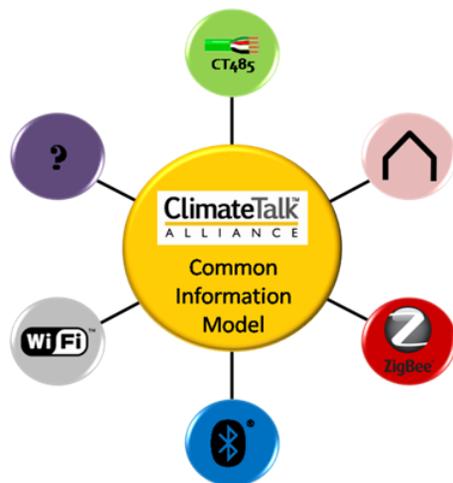
In order for HVAC to achieve the energy efficiency and functionality that the market is demanding, some type of serial communications among HVAC appliances is becoming a foregone conclusion. In order to enable easy, error-free installation and repair, standardized communication is required. In order to satisfy homeowners, systems must be priced competitively and provide reliable operation and energy savings.

Solutions

Solving the problem of fragmentation within the industry requires the development of a common language spoken by HVAC and energy management appliances. The language must specify rules for interoperability, interchangeability and compliance enforcement. The language must include features that make systems easy to install, repair and operate. The language must not place undue burdens on

devices in terms of memory or processing power in order to keep down both the costs of the hardware and the amount of energy it consumes.

Creating a language like this requires an organization to manage development, build an ecosystem to support it, and market it. The organization must include all stakeholders in the system including HVAC equipment manufacturers, utilities, network providers, microcontroller and component manufacturers, and HVAC technicians and resellers.



Why is a common language necessary? Consider fax machines. When you send a fax from your fax machine to your accountant across town, the accountant’s fax machine prints the page exactly as it was sent. Your fax machine does not know that the machine on the other end of the communication is another brand, nor does it care. It also doesn’t matter if the fax is sent to an 802.11 router that delivers the fax to the accountant’s e-mail inbox. Many companies made a lot of money from fax machines and faxing technology. This was made possible by the development of a protocol standard for facsimiles that was adopted by every stakeholder in the industry. The faxing standard was so successful that most people are not even aware there is a standard specification for it.

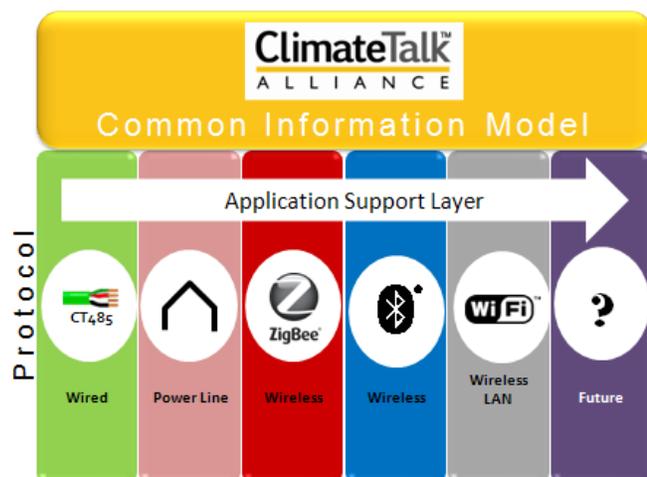
The HVAC industry requires a similar common standard in order to achieve the goals of energy efficiency and energy management. A common language will benefit everyone involved and enable an expansion of the market. The ClimateTalk Alliance proposes that ClimateTalk be the basis for that one, common language.

What is ClimateTalk?

ClimateTalk is an open communications model, designed to be simple to use and low cost while providing advanced control and diagnostic capabilities for residential applications. It defines a standard set of application level messages that makes communications among energy appliances possible. The model is designed to be simple and robust with low hardware costs. The application-based communication model is focused on the data, not the medium of delivery, to simplify implementation and provide flexibility in developing new applications across multiple protocols.

The Common Information Model

The concept behind ClimateTalk is a way for multiple types of devices to communicate using a common messaging structure over any type of physical medium. This is called the “Common Information Model” and the idea is to provide true interoperability independent of the means used to transport data from one device to another.





Messages conveying HVAC, Smart Energy, zoning or lighting control information are packaged into a common format and transported to their destinations. Much like you can send a package via the Postal Service, Federal Express or the United Parcel Service, you will be able to send a ClimateTalk packet via any one of several wired or wireless methods. The package is the same on either end, only the mode of transportation is different.

Integrate, Not Translate

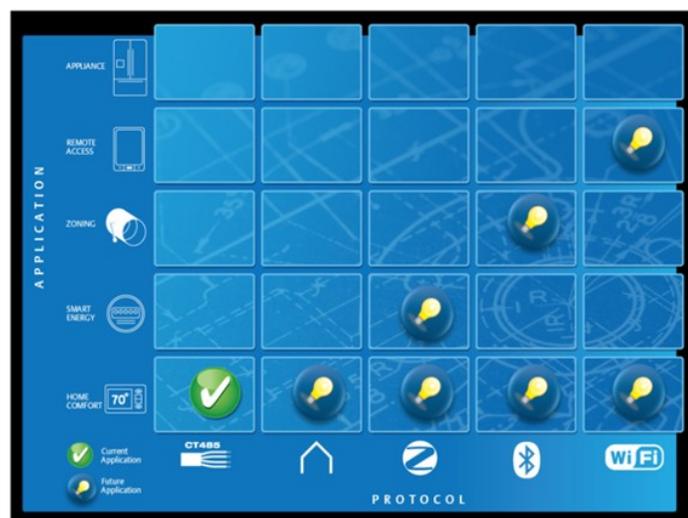
The vision of ClimateTalk is to expand communications to address the need for energy efficiency and user comfort. To do this, information must be carried between a wide variety of household devices: washer/dryer, electric smart meter, water heater, window blinds, lighting, pool pump, refrigerator, HVAC system. These devices all need to be integrated into one household network.

Today you need convertors and translators to send information from one class of device to another. Lighting systems are controlled by one set of rules, electric smart meters by another and HVAC by yet a third. The Common Information Model is extensible to all these devices, eliminating the need for protocol translators at the highest layers.

ClimateTalk currently supports HVAC system messages carried over CT485, a variant of EIA-485. Future product development includes:

- Home Energy Management
- Zone Control
- Home Automation Networks
- Retail Energy Management and Climate Control
- Remote Access
- Wireless Access

A blueprint has been laid out to integrate HVAC systems with Smart Energy meters and adding wireless communication capability over existing protocols.



What is the ClimateTalk Alliance?

The ClimateTalk Alliance is a non-profit organization whose purpose is to take ClimateTalk to the next level. Its mission is to build vendor neutral solutions around an open HVAC model designed for OEM differentiation, to set the direction for the future of ClimateTalk and to drive certification by an international standards board.

The alliance has three membership levels: Promoter, Contributor and Adopter. Each level includes solutions promotion, visibility, access to approved specifications and requirements documents and use of the ClimateTalk brand. Depending on your company's membership level, membership provides the opportunity to participate on the Board of Directors and in Work Groups, developing and approving specifications.

Become a Member

Are you interested in the possibilities ClimateTalk provides for your company? If so, we invite you to become a member of the ClimateTalk Alliance. For more information, visit our website at www.ClimateTalk.org.

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