**What Is a DX HVAC Unit?**

A direct expansion air conditioning unit, also called a DX unit, cools indoor air using a condensed refrigerant liquid. It is the type of air conditioning unit most commonly used in homes in the United States.

Direct Expansion Cooling

The unit cools air by passing the condensed refrigerant through a heat exchanger inside the building to be cooled. In this part of the unit, called the evaporator, the refrigerant expands as it absorbs heat, eventually converting to a gas.

The unit then pumps the refrigerant to a compressor, which compresses the gas and passes it through another heat exchanger, the condenser, outside the building. The heat that has been absorbed by the refrigerant is released to the outdoor air, and the cooled, compressed refrigerant is once again in liquid form. The unit pumps the cooled refrigerant liquid back to the evaporator and the cycle begins again.

Window and Packaged Systems

A [window air conditioning unit](http://www.consumerreports.org/cro/2012/05/air-conditioners-that-keep-you-and-your-wallet-cool/index.htm) includes the evaporator, compressor and condenser, along with fans to distribute cool air inside the building, in a single unit. They are easy to install either in an existing window, or in the case of a through-the-wall unit, in a specially made opening in an exterior wall. They are generally less efficient than other types of units, however, and they're suitable for cooling only small areas.

A packaged DX system also contains all components of the system in a single unit, but in some packaged systems, the evaporator, compressor and condenser are located outside the building, and the unit pumps cooled air into the building through ducts.

Split Systems

A split air conditioning system puts the compressor and condenser outside the building and the evaporator and fans inside the building. In a central air conditioning system, fans push cooled air from a centrally located evaporator through ducts to the entire building. In a ductless split system, fans in a wall-mounted unit move the air from the evaporator into the room in much the same way that a window unit does. Because the split unit's noisy compressor is outside, however, a split ductless system is much quieter than a window unit.

Split units are efficient, but because they require the installation of equipment outside the building, they might not be suitable for high-density residential areas, such as apartments in urban areas.

Chilled Water Cooling

A chilled water air conditioning unit uses liquid water, rather than condensed refrigerant, as a cooling medium. A chiller unit outside the building cools the water, then the unit pumps the water to heat exchangers inside the building. These units are well suited to cooling large buildings, but they are generally [less efficient](http://www.brighthubengineering.com/hvac/50414-comparison-of-dx-and-chilled-water-central-air-conditioning-plants/) than DX systems and are not commonly used in homes.

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