

Source: <http://www.iao.com/howthing/atm.htm>

An ATM is simply a data terminal with two input and four output devices. Like any other data terminal, the ATM has to connect to, and communicate through, a host processor. The host processor is connected to an Internet Service Provider in that it is the gateway through which all the various ATM networks become available to the cardholder (the person wanting the cash).



Most host processors can support either leased line or dial-up machines. Leased line machines connect directly to the host processor through a four-wire, point-to-point, dedicated telephone line. Dial-up ATMs connect to the host processor through a normal phone line using a modem and a toll free number, or through an Internet Service Provider using a local access number via a modem.

Leased line ATMs are preferred for very high volume locations because of their thru-put capability, and dial-up ATMs are preferred for retail merchant locations where cost is a greater factor than the thru-put capability. The initial cost for a dial-up machine is less than half that for a leased line machine. The monthly operating costs for dial-up is only a fraction of the cost for leased line.

The host processor may be owned by a bank or financial institution, or it may be owned by an independent service provider. Bank owned processors normally support only bank owned machines, whereas the independent processors support merchant-owned machines.

An ATM has **two input devices**. One is a card reader to capture the account information stored on the magnetic stripe on the back of an ATM/debit or credit card. The host processor uses this information to route the transaction to the cardholders bank. The other input device is a key pad so that the cardholder can tell the bank what kind of transaction is required (cash withdrawal, balance inquiry, etc.) and for what amount. Also the bank requires the cardholder's personal identification number (PIN) for verification. Federal law requires that the PIN block be sent to the host processor in encrypted form.

An ATM has **four output devices**. One of these devices is a speaker to provide the cardholder with tactile feedback when a key is pressed. Another output device is the display screen that prompts the cardholder through each step of the transaction process. In addition to the speaker and the display screen, an ATM has a receipt printer to provide the cardholder with a receipt of the transaction, and the fourth output device which is actually the heart of an ATM, the safe and cash dispensing mechanism. The entire bottom portion of most small ATMs is a safe that contains the cash.

The cash dispensing mechanism has an electric eye that counts each bill as it exits the dispenser mechanism. The bill count and all the information pertaining to a particular transaction is recorded in a journal. The journal information is printed out periodically and a hard copy is maintained by the machine owner for two years. Whenever a cardholder has a dispute about a transaction, he or she should ask for a journal printout showing the transaction, and then contact the host processor. If no one is available to provide the journal printout, the cardholder needs to notify the bank or institution that issued the card and fill out a form that will be faxed to the host processor. It is the host

processor's responsibility to resolve the dispute.

Besides the electric eye that counts each bill, the cash dispensing mechanism also has a sensor that evaluates the thickness of each bill. If two bills were stuck together, instead of being dispensed to the cardholder, they would be diverted to a reject bin. The same thing would be true for a bill that was excessively worn, or torn, or folded. The suspect bill would be diverted to the reject bin.

The number of reject bills is also recorded so that the machine owner can be aware of the quality of bills that are being loaded into the machine. A high reject rate would indicate a problem with the bills or with the dispenser mechanism.

When a cardholder wants to do an ATM transaction, he or she will provide the necessary information to effect the transaction. This is done by means of the card reader and key pad. The ATM forwards this information to the **host processor** who routes the transaction request to the cardholder's bank or institution that issued the card. If the cardholder is requesting cash, the host processor causes an electronic funds transfer (**EFT**) to take place from the customer's checking account to the host processor's account. Once the funds are transferred to the host processor's bank account, the processor will then send an approval code to the ATM authorizing the machine to dispense the cash. The processor then transfers the cardholder's funds into the merchant's bank account, usually directly at the same time. So the merchant is reimbursed for all funds dispensed by the ATM.

