Tone dialing telephones are introduced, November 18, 1963

Jessica MacNeil - November 18, 2018

On this day in tech history, the Bell System introduced the first electronic push-button telephone system with touch-tone dialing to customers in Pennsylvania.

Using dual-tone multi-frequency (DTMF) technology provided "touch-tone" service that would become the worldwide standard for telecommunication signaling. The system uses audible tones for each of the digits on the push-button keypad, with specific frequencies assigned to each row and column. When a button is pressed, the dial generates a combination signal of the two frequencies, hence the name dual-tone multi-frequency signaling. The tones are decoded by a switching center to determine which key was pressed.

Rotary dial telephones used pulse dialing, in which a direct current local loop circuit was rapidly connected and disconnected according to a defined coding system for each digit. Operators were required to make long distance calls. With touch-tone dialing, customers could dial a destination telephone number directly without having to talk to a telephone operator.

The first touch-tone telephone was the Western Electric model 1500 (see photo), which had 10 buttons. Engineers tested 15 different keypad layouts before settling on the modern configuration with 1 at the top left and 0 in the bottom row. The # and * keys were added to possibly be used to access computers through telephone lines.

Mechanical switches were used in the keypad to select different taps on tuned coils and the microphone was disconnected when a key was pressed so noise wouldn't interfere with the DTMF tones being transmitted.

The idea for push-button telephones actually predated the invention of the rotary dial, but even after the successful introduction of the touch-tone system it took a while for it to catch on. It wasn't until the 1980s that push-button telephones were in a majority of US homes.

Related articles:
- Bell, Gray both apply for telephone patents, February 14, 1876
- 1st transcontinental phone call made, January 25, 1915
- 1st transatlantic telephone service is established, January 7, 1927
- Meucci acknowledged as telephone inventor, June 11, 2002
For more moments in tech history, see this blog. EDN strives to be historically accurate with these postings. Should you see an error, please notify us.

Editor's note: This article was originally posted on November 18, 2013 and edited on November 18, 2018.