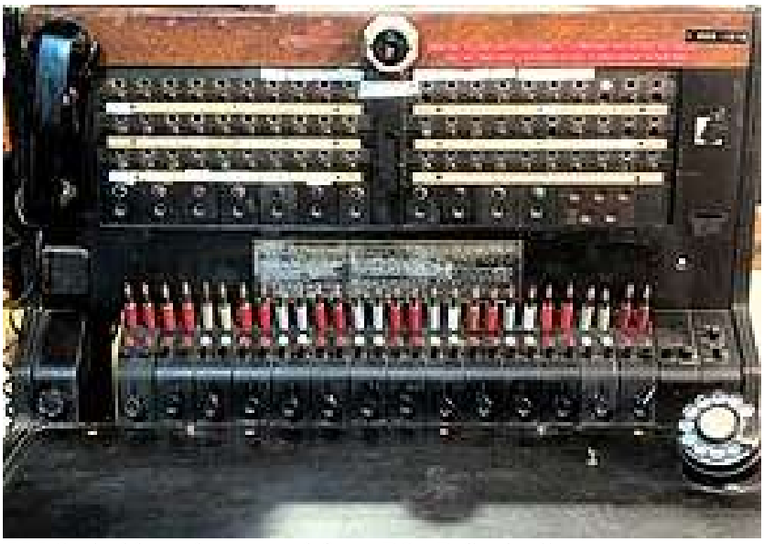
Western Electric 555 PBX Switchboard Description, History, and Summary

Western Electric 555 PBX switchboard was a manual private branch exchange (PBX) system manufactured by Western Electric in the 1950s and 1960s. This switchboard was designed for small to moderately sized businesses and institutions. The 555 represented a mature stage in the development of cord-based manual telephone switching prior to the widespread adoption of automated and dial PBX systems.[1]



555 Switchboard, restored from PSAP fire/police Alarm Center in Leominster, Mass USA 1960s-1980s.
photo: Will Sherwood

Description

The 555 PBX (Private Branch Exchange) is a single-position **manually-operated plug and jack switchboard** that was manufactured by the Western Electric Company, starting around April 1949, and continued through the 1960s. These switchboards were very popular due to the modular flexibility of this model (see more information about this below), making it easy to add cord pairs, trunk and station lines. Many of these switchboards were still in use in businesses until the early 1990s, when automated and digital technology took their place. This switchboard was most commonly used as a single-position switchboard, operated by trained attendants who answered and completed calls by inserting plugs into jacks associated with internal extensions and/or external trunk lines. Unlike all prior manual cord switchboards (including PBXs), in the 555 PBX, the two cords of a pair were positioned side-by-side, rather than one behind the other.

Western Electric also provided the option for a second (adjacent) switchboard for larger businesses. For dual switchboard installations, cords in the cord circuit design were lengthened by using a dual-pulley cord arrangement to allow each attendant the flexibility to reach over to the other switchboard to make connections. The 2-position switchboard arrangement doubled the board's capacity from 60/120 to 120/240 stations and from 12/14 to 24/28 trunk lines. The total number of station lines, truck line, and cord circuits depended on the specific needs of each business. The dual switchboard installations were a non-multiple arrangement, as each station and trunk would only have one appearance and would not be duplicated on the adjacent switchboard.[2]

All incoming calls (whether internal extensions, off-premises extensions, or outside central office trunk circuits) were indicated by visual and audible signals to the operators, which were automatically extinguished when the operator inserted a cord into a jack associated with the corresponding lamp that was lit. The operator would then establish desired connections by using the second plug within a cord pair to complete this connection. Operators would press the “ring” buttons associated with these cords to establish ringing to internal extension phones or to manual ringdown lines. This method of manually connecting calls was consistent with Bell System manual switching practices used in both private branch exchanges and manual central offices in operation during the period. A single 555 measures 30" wide, by 48" high, and 30" deep from the front of keyshelf to the back of the cabinet. It weighs about 300-400 pounds, and fully equipped would have12-14 trunk circuits, 15-17 cord circuits, and 60 station positions).[2]


Western Electric 555 PBX Switchboard - Telephone Museum - Waltham, Massachusetts

Technical design

The Western Electric 555 employed a **modular design**, allowing installations to be tailored to each business's needs, according to the number of subscriber lines and trunks required. The business would only be billed for the equipment that was installed in the switchboard, making it more affordable for smaller and growing businesses. Line circuits, trunk circuits, cord circuits, and supervisory signaling equipment were arranged in standardized panels or frames, typically mounted within the cabinet of the switchboard. Supervisory lamps provided visual indications of line seizure, call completion, and disconnect, enabling operators to manage multiple simultaneous calls efficiently. [4][3]

There were a range of similar common-battery switchboard models in the 55X family such as the 551-A&B models and earlier 550 models. The Western Electric 556 PBX cord switchboard, which looked similar to the Western Electric 555 PBX, was a Dial PBX switchboard that required a Dial-PBX for operation. The Western Electric 557A&B models were answering-service switchboards, and were used for answering business lines and placing outside calls. Other non Western Electric switchboards such as the Leich L55, GTE 555, and other manufacturers, copied the popular design of the Western Electric 555 PBX cord switchboard with mostly interchangeable components. [5][6]

Applications

The Western Electric 555 PBX was widely deployed in **hotels, hospitals, factories, universities, municipal emergency (PSAP) Public safety answering point call centers, and office buildings**, where centralized operator services and extensive internal calling services were required. Many installations supported operator-handled features such as conference calls, night service, private tie lines, foreign exchange lines, and manual ringdown circuits connecting adjacent buildings or remote facilities. These features made manual PBXs such as the 555 well suited for organizations with complex communications needs in businesses that did not have an automated dial system.[3][7]

Operation

Operation of the Western Electric 555 PBX cord switchboard depended entirely on human operators, whose responsibilities extended beyond call completion to include directory assistance, message taking, emergency call handling, call announcing, and call prioritization. In many business and institutional settings, switchboard operators also functioned as receptionists with secretarial duties, or points of contact for security and emergency services. As a result, the quality of service provided by a 555 installation was closely tied to operator training and staffing levels.[4][2] [8] [9]

Decline and legacy

Beginning in the 1950s, manual PBX systems such as the 555 were gradually replaced by **dial-based**, including step-by-step and later crossbar systems, which reduced labor costs and improved scalability. Although many 555 installations were removed during modernization programs in the 1950s and 1960s, many remained in service for decades due to their mechanical robustness and adaptability.[10] [11]

Today, the Western Electric 555 PBX cord switchboard is primarily of interest to **telecommunications historians, collectors, and museums**, where surviving examples illustrate the engineering standards and operational practices of the Bell System manual switching era. The system is regarded as a representative example of late manual PBX technology and a transitional form between early operator-based telephony and fully automated private exchange systems.[12][13] [14] [15]

Western Electric 55x Series Comparison

Model	Type	Approx. Era	Application / Primary Use	Trunks/ Stations(Ext)	Key Characteristics
550	Manual PBX	1920s–1950s	Large businesses, hotels.	10-20/ 30–40	A "non-multiple" cord board. Large wooden cabinet. Preceded the more compact 551.
551	Manual PBX	1927–1950s	Standard small-to-mid business PBX.	551A - 40 sta 551B - 320	Very common. Available in "A" (30-line) and "B" (40-line) versions. Wooden cabinet with "pigeon hole" design.
552	Attendant Console	1920s–1940s	For early Dial PBXs (e.g., 701, 740).		Attendant's console for Dial-PBX. Looked like a 551 but had no station lamps; stations dialed "0" to reach the attendant.
555	Manual PBX	1952–1970s	Modern replacement for the 551.	**Trunks**:12-14 to 24–28 **Stations**: 60/120 to 120/240 **Cords**:15-30	Non-multiple, modular, metal frame, wood cabinet, compact footprint, easy to expand by installing additional trunk & cord modules.
556	Attendant Console	1950s–1970s	For modern Dial PBXs (e.g., 701, 740).		Attendant position for a DIal-PBX. Identical modular footprint as 555 but lacks station lamps and supervisory signals for internal calls.

References

- [1]A History of Engineering & Science in the Bell System 1984
- [2]The 555 PBX - Bell Labs Record Vol. XXVII No 4 Apr 1949
- [3]General Description of the 555 PBX - Bell System Practices 1952
- [4]555 PBX General Description - AT&T Practice Standard 1952
- [5,7]Switchboards for Telephone Answering Services - Bell Labs Record Vol 35, 1957
- [6]555 PBX Switchboard Circuit Description - GTE 1959
- [8]Non-Multiple Manual Cord Switchboards
- [9]Telephone Communication Systems Vol 1, Rev 1970 Western Electric Co
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- [11]The Rise and Fall of Telephone Operators
- [12]Smithsonian National Museum of American History. *Telephone Switching Equipment Collections and Catalog Descriptions.*
- [13]Manual Telephone Exchanges - Evolution of Telephone Exchanges
- [14]History and evolution of the telephone switchboard Megacall 2021
- [15] Telephone Operators: The Elimination of a Job *Conversable Economist* 2024

See also

- Private branch exchange
- Telephone switchboard
- Telephone exchange
- Western Electric
- Bell System
- Switchboard operator
- [16]groups.io 555PBX resource repository
- The Story of Western Electric