兩臺電腦直接連接（Connector）網線交叉線序(一)
平時我們用聯接互聯網用的網線是 568A 或 568B 這兩類型的線中的任意一類;而兩臺電腦直接聯機用的,是一端做成 568A 的標準,而另一端是 568B 的標準.)
平時我們用的網線是屬於直連型,也就是說一一對應的,如一端是 568B 標準的線序
1、白橙
2、橙
3、白綠
4、藍
5、白藍
6、綠
7、白棕
8、棕
另一端也是 568B 標準的線序,這樣的話我們用水晶頭連接起來網線就用於 HUB,路由器等的連接而如果我們要兩臺電腦（Cable Assembly）互相用網線連接的話,則需要反線(交叉線).
即一端采用上述的 568B 做線標準不變
另一端在這個基礎上將這八根線中的 1,3 號線和 2,6 號線互換一下位置,這時網線的線序就變成了

1、白綠
2、綠
3、白橙
4、藍
5、白藍
6、橙
7、白棕
8、棕
這就是 100M 網線的 568A 標準,也就是我們平常所說的反線或交叉線.
一端 568B,一端 568A 的標準排列好線（Splices）序並夾好後,一根適用於兩臺電腦直接連接的網線就做好了.
總結:
[b]568A 標準[/b]:白綠,綠,白橙,藍,白藍,橙,白棕,棕
[b]568B 標準[/b]:白橙,橙,白綠,藍,白藍,綠,白棕,棕
雙機互連,是做交叉線:一頭采用 568A 標準,一頭采用 568B 標準(註意:兩臺電腦必須是同一網關);
做水晶頭時,使水晶頭的彈片朝外,入線口朝下,從左到右,遵循上面的線序,充分插入線(以在水晶頭的頂部看到雙絞線的銅心為標準),然後用網線鉗夾一下,就可以了!
相關介紹:
RJ-45 插頭是一種只能沿固定方向插入並自動防止脫落的塑料接頭,俗稱"水晶頭",專業術 語為 RJ-45 連接器(RJ-45 是一種網絡接口規範,類似的還有 RJ-11 接口,就是我們平常所用的"電話接口",用來連接（Terminals）電話線).之所以把它稱之為 "水晶頭",是因為它的外表晶瑩透亮的原因.雙膠線的兩端必須都安裝這種 RJ-45 插頭,以便插在網卡(NIC),集線器(HUB)或交換機 (SWITCH)的 RJ-45 接口上,進行網絡通訊.
局域網就是將單獨的微機或終端，利用網絡相互連接起來，遵循一定的協議，進行信息交換，實現資源共享。網線常用的 有：雙絞線、同軸電纜、光纖等。雙絞線可按其是否外加金屬網絲套的屏蔽層

而區分為屏蔽雙絞線（ＳＴＰ）和非屏蔽雙絞線（ＵＴＰ）。從性價比和可維護性出 發，大多數局域網使用非屏蔽雙絞線（ＵＴＰ-Unshielded Twisted pair） 作為布線的傳輸介質來組網。

ＵＴＰ網線由一定長度的雙絞線和ＲＪ４５水晶頭組成

雙絞線由８根不同顏色的線分成４對絞合在一起，成對扭絞的作用是盡可能減少電磁輻射與外部電磁幹擾的影響。在ＥＩＡ／ＴＩＡ－５６８標準中，將雙絞線按電氣特性區分為：

三類、四類、五類線。網絡中最常用的是三類線和五類線，目前已有六類以上的。

做好的網線要將ＲＪ４５水晶頭接入網卡或ＨＵＢ等網絡設備的ＲＪ４５插座內。相應地ＲＪ４５插頭座也區分為三類或五類電氣特性。ＲＪ４５水晶頭由金屬片和塑料構成，制作網線（Wire Harness）所需要的ＲＪ一４５水晶接頭前端有８個凹僧，簡稱“ＳＥ”（Position，位置）。

凹槽內的金屬觸點共有 ８個，簡稱“8Ｃ”（ Contact，觸點），因此業界對此有“8Ｐ8Ｃ”的別稱。

特別需要註意的是ＲＪ４５水晶頭引腳序號，當金屬片面對我們的時候從左至右引腳序號是１～８，序號對於網絡連線菲常重要，不能搞錯。

ＥＩＡ／ＴＩＡ的布線標準中規定了兩種雙絞線的線序５６８Ａ與５６８Ｂ。

５６８Ａ標準：

綠白——１，綠——２，橙白——３，藍——４，藍白——５，橙——６，棕白——７，棕——８

５６８Ｂ標準：

橙白——１，橙——２，綠白——３，藍——４，藍白——５， 綠——６，棕白——７，棕——８

（"橙白"是指淺橙色，或者白線上有橙色的色點或色條的線纜，綠白、棕白、藍白亦同）。

雙絞線的順序與ＲＪ４５頭的引腳序號要一一對應。

為了保持最佳的兼容性，普遍采用ＥＩＡ／ＴＩＡ ５６８Ｂ標準來制作網線。註意：在整個網絡布線中應該只采用一種網線標準。如果標準不統一，幾個人共同 工作時準會亂套；更嚴重的是施工過程中一旦出現線纜差錯，在成捆的線纜中是很難查找和剔除的。筆者強烈建議統一采用５６８Ｂ標準。

事實上１０Ｍ以太網的網線只使用 １、２、３、６編號的芯線傳遞數據，即 1、2 用於發送，3、6 用於接收，按顏色來說：橙白、橙兩條用於發送；綠白、綠兩條用於接收；4、5，7、8 是雙向線。１００Ｍ和 1000Ｍ網卡需要使用四對線，即 8 根芯線全部用於傳遞數據。由於１０Ｍ網卡能夠使用按 １００Ｍ方式制作的網線；而且雙絞線又提供有四對線，所以日常生活中不再區分，１０Ｍ網卡一般也按 １００Ｍ方式制作網線。

另外，根據網線兩端連接網絡設備的不同，網線又分為直通線（平行線）和交叉線兩種。直通線（平行線）就是按前面介紹的５６８Ａ標準或５６８Ｂ標準制作的 網線。而交叉線的線序在直通線的基礎上做了一點改變：就是在線纜的一端把 1 和 3 對調，2 和 6 對調。即交叉線的一端保持原樣（直通線序）不變，在另一端把 1 和 3 對調，2 和 6 對調。

交叉線兩端的線序如下：

一端(不變)		另一端(對調兩根)	
橙白	1	3	綠白
橙	2	6	綠
綠白	3	1	橙白
藍	4	4	藍
藍白	5	5	藍白
綠	6	2	橙
棕白	7	7	棕白
棕	8	8	棕

直通線用於連接:

1.主機和 switch/hub;

2.router 和 switch/hub

交叉線用於連接:

1.switch 和 switch;

2.主機和主機;

3.hub 和 hub;

4.hub 和 switch;

5.主機和 router 直連

在實踐中，一般可以這麼理解：

1、同種類型設備之間使用交叉線連接，不同類型設備之間使用直通線連接；

2、路由器和 PC 屬於 DTE 類型設備，交換機和 HUB 屬於 DCE 類型設備；

3、RJ45 網絡接頭做法一般有 568A 和 568B 兩種標準做法，按同一標準即直通線（Surge Arrester），不同標準即交叉線。

不管如何接線，最後完成後用 RJ-45 測線儀測試時，8 個指示燈都應依次閃爍。

TIA/EIA-568-B

From Wikipedia, the free encyclopedia http://en.wikipedia.org/wiki/568B#T568A_and_T568B_termination

(Redirected from 568B)

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TIA/EIA-568-B is a set of three telecommunications standards from the Telecommunications Industry Association, a 1988 offshoot of the EIA. The standards address commercial building cabling for telecom products and services. The three standards are formally titled ANSI/TIA/EIA-568-B.1-2001, -B.2-2001, and -B.3-2001.

The TIA/EIA-568-B standards were first published in 2001. They supersede the TIA/EIA-568-A standards set, which are now obsolete.

Perhaps the best known features of TIA/EIA-568-B.1-2001 are the pin/pair assignments for eight-conductor 100-ohm balanced twisted pair cabling. These assignments are named T568A and T568B, and are frequently referred to (erroneously) as TIA/EIA-568A and TIA/EIA-568B.

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[hide]

[edit] History

TIA/EIA-568-B was developed through the efforts of more than 60 contributing organizations including manufacturers, end-users, and consultants. Work on the standard began with the Electronic Industries Alliance (EIA), a standards organization, to define standards for telecommunications cabling systems. EIA agreed to develop a set of standards, and formed the TR-42 committee, with nine subcommittees to perform the work.

The first revision of the standard, TIA/EIA-568-A.1-1991 was released in 1991, and was updated in 1995. The demands placed upon commercial wiring systems increased dramatically over this period due to the adoption of personal computers and data communication networks and advances in those technologies. The development of high-performance twisted pair cabling and the popularization of fiber optic cables also drove significant change in the standards, which were eventually superseded by the current TIA/EIA-568-B set.

[edit] Goals

TIA/EIA-568-B attempts to define standards that will enable the design and implementation of structured cabling systems for commercial buildings, and between buildings in campus environments. The bulk of the standards define cabling types, distances, connectors, cable system architectures, cable termination standards and performance characteristics, cable installation requirements and methods of testing installed cable. The main standard, TIA/EIA-568-B.1 defines general requirements, while -568-B.2 focuses on components of balanced twisted-pair cable systems and -568-B.3 addresses components of fiber optic cable systems.

The intent of these standards is to provide recommended practices for the design and installation of cabling systems that will support a wide variety of existing and future services. Developers hope the standards will provide a lifespan for commercial cabling systems in excess of ten years. This effort has been largely successful, as evidenced by the definition of category 5 cabling in 1991, a cabling standard that (mostly) satisfied cabling requirements for 1000BASE-T, released in 1999. Thus, the standardization process can reasonably be said to have provided at least a nine-year lifespan for premises cabling, and arguably a longer one.

All these documents accompany related standards that define commercial pathways and spaces (569-A), residential cabling (570-A), administration standards (606), grounding and bonding (607) and outside plant cabling (758).

[edit] Structured cable system topologies

TIA/EIA-568-B defines a hierarchical cable system architecture, in which a main cross-connect (MCC) is connected via a star topology across backbone cabling to intermediate cross-connects (ICC) and horizontal cross-connects (HCC). Telecommunications design traditions utilized a similar topology, and many people refer to cross-connects by their older, nonstandard names: "distribution frames" (with the various hierarchies called MDFs, IDFs and wiring closets). Backbone cabling is also used to interconnect entrance facilities (such as telco demarcation points) to the main cross-connect. Maximum allowable backbone cable distances vary between 300 m and 3000 m, depending upon the cable type and use.

Horizontal cross-connects provide a point for the consolidation of all horizontal cabling, which extends in a star topology to individual work areas such as cubicles and offices. Under TIA/EIA-568-B, maximum allowable horizontal cable distance varies between 70 m and 90 m for twisted-pair cable types, depending upon patch cord length and gauge. Fiber optic horizontal cabling is limited to 90 m. Optional consolidation points or transition points are allowable in horizontal cables, although many industry experts discourage their use.

At the work area, equipment is connected to horizontal cabling by patch cords.

TIA/EIA-568-B also defines characteristics and cabling requirements for entrance facilities, equipment rooms and telecommunications room.

[edit] T568A and T568B termination

Perhaps the widest known and most discussed feature of TIA/EIA-568-B.1-2001 is the definition of pin/pair assignments for eight-conductor 100-ohm balanced twisted-pair cabling, such as Category 3, Category 5 and Category 6 unshielded twisted-pair (UTP) cables. These assignments are named T568A and T568B and they define the pinout, or order of connections, for wires in 8P8C (often incorrectly referred to as RJ45) eight-pin modular connector plugs and sockets. Although these definitions consume only one of the 468 pages in the standards documents, a disproportionate amount of attention is paid to them. This is because cables that are terminated with differing standards on each end will not function normally.

TIA/EIA-568-B specifies that horizontal cables should be terminated using the T568A pin/pair assignments, "or, optionally, per [T568B] if necessary to accommodate certain 8-pin cabling systems." Despite this instruction, many organizations continue to implement T568B for various reasons, chiefly associated with tradition (T568B is equivalent to AT&T 258A). The United States National Communication Systems Federal Telecommunications Recommendations do not recognize T568B.

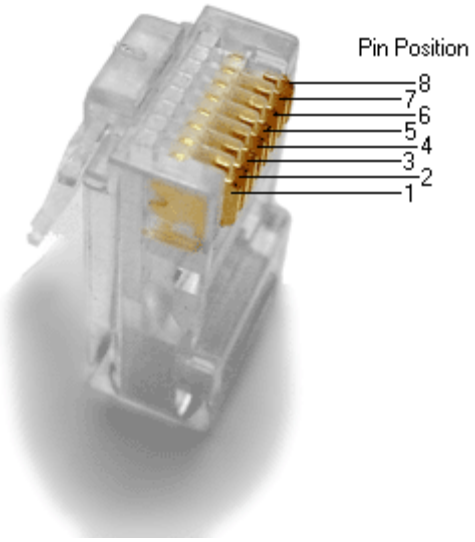
The primary color of pair one is blue, pair two is orange, pair three is green and pair four is brown. Each pair consists of one conductor of solid color, and a second conductor which is white with a stripe of the same color. The specific assignments of pairs to connector pins varies between the T568A and T568B standards.

[edit] Wiring

See modular connector for numbering of the pins

Pin	T568A Pair	T568B Pair	Wire	T568A Color	T568B Color
1	3	2	tip	white/green stripe	white/orange stripe
2	3	2	ring	green solid	orange solid
3	2	3	tip	white/orange stripe	white/green stripe
4	1	1	ring	blue solid	blue solid
5	1	1	tip	white/blue stripe	white/blue stripe
6	2	3	ring	orange solid	green solid
7	4	4	tip	white/brown stripe	white/brown stripe
8	4	4	ring	brown solid	brown solid

Pins on plug face (socket is reversed)



Note that the only difference between T568A and T568B is that pairs 2 and 3 (orange and green) are swapped. Both configurations wire the pins "straight through", i.e., pins 1 through 8 on one end are connected to pins 1 through 8 on the other end. Also, the same sets of pins are paired in both configurations: pins 1 and 2 form a pair, as do 3 and 6, 4 and 5, and 7 and 8. One can use cables wired according to either configuration in the same installation without significant problem; problems involving crosstalk can occur (which is normally minimized by correctly twisting a pair together), but are usually insignificant in all but the most stringent specifications such as Category 6 cable. The primary thing one has to be careful of is not to accidentally wire the ends of the **same cable** according to **different configurations** (unless one intends to create an Ethernet crossover cable).

[edit] Use for T1 connectivity

In T1 service, the pairs 1 and 3 (T568A) are used, and the USOC-8 jack is wired as per spec RJ-48C. The Telco termination jack is often wired to spec RJ-48X, which provides for a Transmit-to-Receive loopback when the plug is withdrawn.

Vendor cables are often wired with Tip and Ring reversed—i.e. pins 1 and 2 reversed, or pins 4 and 5 reversed. This has no effect on the signal quality of the T1 signal, which is fully differential, and uses the Alternate Mark Inversion (AMI) signaling scheme.

[edit] Backwards compatibility

Because pair 1 connects to the center pins (4 and 5) of the 8P8C connector in both T568A and T568B, both standards are compatible with the first line of RJ11, RJ14, RJ25, and RJ61 connectors that all have the first pair in the center pins of these connectors.

If the second line of an RJ14, RJ25 or RJ61 plug is used, it connects to pair 2 (orange/white) of jacks wired to T568A but to pair 3 (green/white) in jacks wired to T568B. This makes T568B potentially confusing in telephone applications.

Because of different pin pairings, the RJ25 and RJ61 plugs cannot pick up lines 3 or 4 from either T568A or T568B without splitting pairs. This would most likely result in unacceptable levels of hum, crosstalk and noise.

[edit] Theory

The original idea in wiring modular connectors, which you see exemplified in the registered jacks, was that the first pair would go in the center positions, the next pair on the next outermost ones, and so on. Also, signal shielding would be optimized by alternating the "live" and "earthy" pins of each pair. As you can see, the TIA/EIA-568-B terminations vary a little bit from this concept. That's because on the 8 position connector, this results in a pinout in which the outermost pair are too far apart to meet the electrical requirements of high-speed LAN protocols.