

MORE STUDENTS WILL LEARN

Store and recharge up to 36 Tangent wireless notebook computers, house a networking station with wireless access point(s), and connect each student to your school's network and the Internet. Most important, the same mobile lab can provide these services from classroom to classroom.



24-Notebook Capacity Mobile Cart

Features

One wireless lab can become ten or more classrooms, for as many teachers. Budgeted funds and grants go farther, enabling administrators to bring the benefits of technology to more students.

Wireless classrooms can also reduce infrastructure and maintenance costs associated with hard-wiring a school network for communications and the Internet, in some cases virtually eliminating class to class cabling.

Proven Intel®-powered Tangent Shuttle notebooks with power-saving battery management features offer a solid choice for the mobile lab. There are more lessons to be learned with a Tangent wireless classroom.

Specifications

36-Notebook Capacity Mobile Cart

Dimensions

- 37.5" W x 30.75" D x 38" H
- Weight: 301 lbs.

Construction/Finish

- Wood grain finish laminate, particle board with metal base
- Two 20-outlet power strips (15 amps/outlet)
- Four doors with four matched locks (2 keys)
- 36 slots: 18/side, 9/level (3.7" W x 14" D x 12.5" H)
- 350 lb. capacity

24-Notebook Capacity Mobile Cart

Dimensions

- 42.5" W x 20.5" D x 37.25" H
- Weight: 228 lbs.

Construction/Finish

- Grey powder finish on 20- and 18-gauge steel
- Two 14-outlet electric units
- Two doors with latching mechanism with reprogrammable combination lock
- 24 slots: three rows (12" W x 3" H)
- 250 lb. capacity

16-Notebook Capacity Mobile Cart

Dimensions

- 35.5" W x 21.5" D x 38.125" H
- Weight: 137 lbs.

Construction/Finish

- Painted grey, mist powder steel
- 15-outlet power strip
- Two doors with one lock (2 keys)
- 16 slots: 8/level (4.2" W x 13.5" H) with removable dividers to create a larger storage space
- 200 lb. capacity

Wireless Access Point(s)

Dual NIC configuration recommended for labs using more than 16 notebooks

Features

- Two PCMCIA slots
- Wireless-to-wired bridging
- IEEE 802.11 compliant
- Spanning tree algorithm
- Multicast delay
- Selective protocol filtering
- DHCP and BOOTP
- Remote point-to-point
- Multi-channel support
- Roaming support
- Power and activity LEDs

Management

- Wireless network management software

Interface

- Ethernet 802.3
- 10BASE-T with RJ45 connector or 10BASE2 with BNC connector
- Wireless-to-wireless

11Mbps PCMCIA NICs

For access point(s) or notebook computers

Interface

- Type II Extended

Dimensions

- 4.6" x 2.1" x 0.3"

Data Rate

- 1, 2, 5.5, 11Mbps

Compatibility

- Novell 3.x/4.x, Windows® 9x, Windows NT®, Windows® 2000, Windows® Me, Windows® XP

Standards

- IEEE 802.11

Regulations

- US FCC (47 CFR Part 15C, Section 15.247)

see reverse for options ▶▶▶



36-Notebook Capacity Mobile Cart



Tangent **Shuttle 6500** Wireless Notebooks Complete Your Mobile Lab

Featuring ▼



16-Notebook Capacity Mobile Cart



Tangent Computer Recommends Microsoft® Windows® XP As The Most Reliable Windows Operating System

Call Today **1.888.TANGENT**

www.tangent.com

Optional Network Accessories

Indoor Antenna Range Extender

Features

- Omni-directional
- 59" (1.5m) cable
- Table stand and wall-mounted bracket

ISA Adapter for PC (Access Point)

Features

- 16-bit ISA bus/interface type
- 2Mbps, 1Mbps, 11Mbps, 5.5Mbps native transit speeds
- Drivers/NOS support: ODI Client, Apple Mac OS 8.x, NDIS, NetWare 3.x/4.x, Windows 95/98/NT/CE/2000
- IEEE 802.11b
- Compliances/Certifications: CE Mark, FCC (47 CFR) Part 15C, ETS 300, ETS 328, ISC RSS 139, MPT Radio Regulations
- 2.4 to 2.485GHz radio frequency, requires PC card

PCI Adapter for PC (Access Point)

Features

- Same as above with 32-bit PCI bus/interface type

Network Hub

Includes 5-port dual speed hub 10/100 unmanaged

Features

- Plug and Play technology
- 10/100Mbps network NWay auto-negotiation
- IEEE 802.3 10BASE-T Ethernet
- IEEE 802.3u 100BASE-T Fast Ethernet
- CAT 3 cables or better
- Power, status LEDs
- Uplink jack
- Extra long Uplink function supported 100Mbps distance to 100 meters (110 yards)
- External AC power adapter
- Star topology
- CSMA/CD

Certifications

- IEEE 802.3 10BASE-T Ethernet
- IEEE 802.3u 100BASE-T Fast Ethernet repeater (Class II)
- ANSI X3T9.5
- FCC Class B
- CE Mark Class B
- VCCI II

Optional Printer Accessories

10/100 Print Server with One Parallel & One RJ45 Port

Features

- RJ45 female, DB25 female
- One UTP 10/100Mbps port with one parallel port
- Dip switch settings - UTP port configurable to auto-negotiation (default), 100Mbps, 10Mbps, full-duplex, or half-duplex
- Diagnostic/status LEDs
- IPX/SPX, TCP/IP, SMB, AppleTalk, NetBEUI
- SNMP support
- Printing capability through e-mail
- EMI - FCC Class A, CE CISPR A, C-Tick
- EMC - EN55022, IEC801-2, IEC801-3, IEC801-4
- Low Voltage Directive - EN60950

Cable Types

- 100BASE-TX/ UTP 26 to 22 AWG (CAT 5 or better)
- 10BASE-T/ UTP 26 to 22 AWG (CAT 3, 4, 5 or better)
- Printer/parallel cable DB25 male to centronics 36 male

Network Operating System

- Supports: NetWare, Unix, Apple Open Transport (Mac), Windows 3.x, WFV 3.x, Windows 9x, Windows NT 3.51/4.0, Windows 2000
- #### Compliance
- IEEE802.3u 100BASE-TX standard
 - IEEE802.3i 10BASE-TX standard
 - IEEE802.3 CSMA/CD standard

10/100 Print Server with Three Parallel & One RJ45 Ports

Features

- Same as above with 3 parallel ports

There are more lessons to be learned with a Tangent mobile wireless classroom.

FAQs

Who owns the technology for the access point that we use? Are we tied into one source?

The technology used in our wireless solution is based on the industry standard IEEE 802.11B. A consortium named WECA (Wireless Ethernet Compatibility Alliance) proposed a standard for inter-operability of wireless devices called WiFi (Wireless Fidelity). Most manufacturers of wireless products are members of WECA and their products are WiFi compatible. These manufacturers and their products include: Aironet, 3Com AirConnect, Cabletron RoamAbout, Apple Airport, Lucent Technology Orinoco, Zoom Telephonics, Compaq, and Intermec. We currently use either Lucent Orinoco or ZoomAir.

Who installs it?

Generally, the client.

How close does a notebook have to be to send/receive?

Depends on the speed and the environment. At 11Mbps speeds, the maximum distance is about 100 ft. indoors, and about 300 ft. outdoors.

Is it line of sight?

This technology uses radio waves so it is not line of sight.

Can the signal go through walls/buildings?

Yes, it can go through walls and buildings, but it also depends on what the wall is made of or what is in the wall. Walls with sheet metal covering may reflect the signals and the radio waves will not penetrate it. Also walls with lots of wiring and poor wiring insulation may cause interference and a degradation of signal, hence poor performance.

Do radio signals/intercoms interfere with the signal?

Generally, no. The wireless LAN operates in the 2.4 - 2.5GHz range, which was set aside by the FCC for wireless communication purposes. However, newer technologies (such as those based on Bluetooth) will operate in this frequency range, which may create problems in the future. There is a debate currently going on between the proponents of Bluetooth and those of IEEE802.11 regarding this possible problem and its effects.

Is special wiring or know-how needed to install?

The only physical wiring will be attaching the access point to the existing network. This requires some knowledge of the existing network, but it doesn't really involve stringing wires across a room or building.

Who will set up the wireless network?

There are two parts to setting up the network. One, you need to set up the notebooks to communicate with the access point and two, you must set up the access point to communicate with the existing network. We can do the first at the factory, but the second needs to be done at the site. That part is generally done by the client.

Can legacy notebooks be used?

The basic requirement is a notebook that has a PCMCIA slot and is capable of running Windows 95 or better. There is always the possibility that incompatibilities will arise, but we have tested the cards with all our current notebook offerings and they function fine.

Can you mix and match notebooks?

Yes, as long as the basic requirements are met.

Who do you contact if the "wireless network" crashes? If the wireless NIC doesn't work?

Tech support will be able to handle these calls. Contact Tangent Tech Support.

Are there performance benefits to wireless? Is it faster? Cheaper? Last longer?

In and of themselves, the wireless cards cost more than their wired card counterparts, but they can certainly save a lot of money in wiring. To wire a classroom for 30 drops can cost anywhere from \$2000 to \$5000. As for performance, while the notebooks can communicate to each other at 11Mbps (peer to peer) when they use the wired LAN (such as when they connect to the Internet or attach to a server), the access point becomes a bottleneck. The more users that connect through an access point, the slower the connection becomes for everybody. Maximum bandwidth of the access point is 11Mbps: one user will get the full connection, 2 users will get half each, 4 users one quarter, and so on. In reality about 15 users connected to one access point will see speeds similar to a DSL connection. That is why we recommend that for installations of more than 15 - 18 notebooks a second access point be considered so that the load can be distributed evenly.



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