

Desk and Desking System

The present invention relates generally to desks and desking systems for supporting computers and other electronic devices.

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Desks and desking systems for supporting computers are well known. A typical computer desk comprises a main desktop and, often, various drawers and cupboards, possibly with one or more of the drawers and/or stands for use in carrying a computer keyboard and/or viewing screen (VDU). They may even include a drawer, rack or stand for the central processing unit chassis to

10 hide it away at the back or beside a desk leg rather than positioning it on the desktop or on the floor adjacent or under the desk. Where a series of desks are used, for example in an office of networked computers each desk is generally separate from the others and the power and electronics cabling is supplied to each desk individually from power and cable connection points on the floor and/or wall.

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In many situations rooms are set up with one or more rows of desks, each desk carrying one or more respective computers. These set ups are common in for example educational establishment classrooms and offices. Many of these desks will often be placed side-by-side or otherwise adjacent one another.

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Existing Desk systems require (i) power cabling to the computer processors and various computer peripheral devices, for example VDU, keyboard, mouse, printers, scanner, (ii) cabling between the processor and peripheral devices, and between various peripheral devices, (iii) telephone connections for Internet access, and (iv) in some cases network cabling connecting the

25 computers to each other and to other devices. Various attempts have been made to overcome this problem. Commonly used systems for dealing with these cables include tying them together with plastic cable ties, string, or plastic "Cable Zip" tubes. Where the cables cross the floor from desk to desk or from cable and power outlets they are taped to the floor, placed under rubber cable protectors that form ridges on top of the floor, or are placed in trunking under the floor.

30 Loose cabling and the currently used systems are unsightly and dangerous. The cabling is subject

to damage through being bent, things being dropped on it, people tripping over it or walking on it. It also allows easy access to vandals. People can become caught up in loose cables and injure themselves or damage the equipment. Taping cables to the floor with or without the use of rubber protectors create a ridge on which people can trip and it can become displaced over time causing damage. Trunking is expensive and must be carefully laid out with the relevant connection points being located precisely for each desk. Each connection point is expensive to purchase and install. It also creates inflexibility in an office because if the arrangement of the desks is to be changed this requires the connection points to be moved, which is expensive.

With computer processors and peripheral devices used with existing desking being located on or under the desk, typically on the floor or a small stand, the equipment is easily damaged, either deliberately or accidentally. It is also easy for some or all of the equipment to be vandalized or stolen

A further major difficulty with desktop systems that sit on the desktop is that they take up valuable desktop space that is required for other uses, for example paper based ones. With the computer chassis and VDU both on the desktop, a person working at the desktop effectively has their line of sight cut-off in front of them. This is particularly a problem in educational environments where both teacher and pupil can work more effectively if they have visual contact.

It is also a problem in office environments as it makes communication more difficult. This problem is made worse where a person uses more than one computer on a desk, as for example do market traders. A problem with placing the processors underneath the desk so that they do not occupy valuable desk space is that it is awkward to access the Floppy disk, Zip disk or other drive ports to insert and remove storage media and software. It is also difficult to connect/disconnect additional cables, for example headphones/headsets.

Another difficulty with current computer desking systems is the clutter that occurs on the desktop caused by computer peripherals, such as keyboard mouse and VDU. This clutter is detrimental to the use of such desks for non-computing activities such as paperwork.

Further, the cost of separate computer and desk solutions inevitably produces diseconomies resulting from the employment of products from industries that have traditionally remained separate. A computer desk usually starts from the premise that there is a table to which a
5 computer and cabling is added. This is an uneconomic method of providing a holistic solution to the use of electronic devices in offices and desking.

Existing computer desking systems also suffer from over-complexity when setting them up and during their use. Setting-up typically requires, the planning of the desk layout and installation of
10 the trunking and connection points, the planning of the cabling, then cabling for power and networking, the initial installation of the desk, the installation of the computer system and connection to the cabling, and finally testing. In use, any faults with the computer will often then require a certain degree of cable disconnection and component dismantling in order to take the computer chassis away for servicing or repair. This is time-consuming, expensive and
15 disruptive. All of this makes desk layouts inflexible to quick change. In modern business flexibility is important to adapt to new management techniques and market conditions. Existing desks are not made to connect together. Currently they are simply placed side by side and can therefore move about or they are tied together using a crude system such as cable ties, which still allow some movement. Existing desking systems are not designed to provide a flexible
20 arrangement of placement when connected together.

Many attempts have been made to overcome these problems. There are many thousands of desk designs for offices specifically trying to optimize desking systems with computers. However, these suffer from many disadvantages, including:

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- (i) as noted above, cabling is exposed, unsightly and dangerous. It is easily damaged, either accidentally or deliberately. Trunking systems are inflexible and expensive. The cabling of computers for a group of desks is complicated, time consuming, expensive and cumbersome to install and change, usually requiring a qualified
30 technician.

- (ii) a table is designed either in the conventional table form or as a table dedicated to use with a computer, with various things protruding from the desktop. The former type is cluttered and a lot of the working space is taken up with computer equipment that is usually not located in the best position for efficient and ergonomic working or has various attachments/stands that are at best a compromise attempt at a solution and also reduce working surface. The second reduces the flexibility of the desk for use for various different activities, an important requirement in school and office environments.
- (iii) physical access to the Floppy disk, Zip disk or other drive ports to insert and remove storage media and software is difficult. It is also difficult to connect/disconnect additional cables, for example headphones/headsets.
- (iv) storage of peripheral devices, for example a keyboards and mouse is at best a compromise and any cabling is not properly protected.
- (v) the desks are not anchored to each other and move around, thus providing a substantially less stable platform than would be the case if they were anchored together. As a result objects will fall off the desk in between them. Further, the movement can damage cables.
- (vi) the amount of equipment on the desk interferes with communication with others in the room.

The present invention aims to provide an improved desk and desking system that addresses the current difficulties by efficiently, effectively, and economically, bringing desking and computer systems and other electronic devices together in networked situations. The desks can be connected together and at the same time the computers are networked.

According to one aspect of the present invention there is provided a desk suitable for connection to another desk as part of a network of desks, each desk comprising:

a desktop comprising sides, a bottom-face, and a work surface on the top side of the desktop; desktop support means; a chassis comprising one or more cassettes containing one or more electronics systems; a power distribution system and an electronics connections system, both

mounted beneath the desktop and within the chassis and extending from one side of the desktop to another, connectable to at least one cassette and connectable to similar adjacent desks at one or more sides.

5 According to a further aspect of the present invention there is provided a desking system comprising two or more of the above desks that may be connected together. The system enables a desk according to the invention to be connected to a similar desk according to the present invention that may be the same or of a different plan shape to the first desk. The system may also comprise a bridge unit.

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According to another aspect of the invention at least one face of a cassette is located adjacent to the desktop side at which a person works at the desk such that the cassette or one or more ports in the cassette are accessible to that person. Preferably the cassette forms part of the chassis. Preferably the cassette is located entirely under the desktop. The cassette may be removably
15 mounted to the desktop. In one form the cassette may be releasably mounted to the desktop by any suitable means, for example slidably mounted. In one embodiment, the underside of the desktop may be recessed to accommodate part or all of the cassette and components contained therein. Preferably the work surface extends over the top of at least most of the cassette and components contained therein so that the inside of the cassette cannot be accessed from above the
20 desk and preferably the majority of the cassette is not visible from above the desktop. The cassette may be a self-contained unit that encloses the electronics components or at least one face may be open to allow easy access when it is removed from the desk. In one embodiment the cassette contains computer components, communications components and/or other electronics equipment. In another embodiment the cassette comprises a docking station to which a Laptop,
25 Notebook or other portable computer or electronics device may be temporarily connected. In certain situations, for example hot-desking or transfer from office to home use, it may be preferred to provide cassettes that can be removed by the users for transport and insertion into another desk or reinsertion into the same desk at a later time. Suitable electronics components that may be included in the cassette comprise a central processing unit, modem, a disc drive unit,
30 a floppy disc drive, a Zip drive and a CD disk drive. It may comprise other computer

components, subject of course to space limitations within the cassette. Without the presence of any disc drives, the cassette conveniently provides the basis for a thin client system where the primary processing and media storage is carried out on a central server which is networked to the cassettes. The cassette may be made of any suitable material. Preferably it is made of metal
 5 sheet or plastic.

The chassis may be any suitable chassis and may be integral with or attach to the support means.

The chassis comprises the cassette/s. In one form the chassis comprises a frame. The chassis also preferably comprises cable conduits through which cables pass and which protect cables.

10 The cable conduits may be tubes, trays or other suitable means and are located under the desktop.

Preferably one or both of the cable conduits create an air channel that assists in ventilating and cooling at least some of the electronic components. Preferably the cable conduits induce airflow that helps to cool at least one cassette. The chassis is also capable of accommodating

technologies other than personal computing, particularly where such technologies need to be

15 networked. The chassis may be made of any suitable material or combination of materials.

Preferably it includes metal tubing or U shaped sections.

The support means may be any suitable support means and may be additional to or an integral part of the chassis. The support means preferably comprises one or more legs. The legs may be,

20 integral with, permanently attached, or detachable from the chassis. The legs may attach by any suitable means, for example they may screw into sockets located within the chassis. Alternately,

the support means may comprise one or more brackets affixed to one or more walls or other features of a building in which the desk is to be used. A wall-mounted desk may be foldable against the wall to enable use of the floor space. When two or more desks or a desk and bridging

25 unit are connected, then only one of them may require at least one leg at opposing sides, the

remaining linked desks/bridging units may have at least one leg on one side only, with the side without legs being supported on the side of the desk/bridging unit against which it abuts. The

support means may be made of any suitable material or combination of materials. Preferably the legs are made of metal tube. The support means may include transport means that enable the

30 desk to be moved from place to place. Preferably the desk connections and transport means

permit the desk to be easily disconnected from a desk, transported to a new location and connected to another desk.

The desktop work surface, and/or one or more sides of the desktop and/or chassis preferably
5 include one or more recesses for receiving a keyboard, a mouse, and/or a VDU or VDU mount.

The desktop work surface may also include one or more holes to permit access to items under the desktop. Preferably one or more holes in the desktop are provided to permit access to connection ports of the cassette located underneath, for example USB, Ethernet, power telephone and other ports. The desktop may include one or more cover means used to cover the recess/es when the
10 keyboard, a mouse, a VDU and or other peripheral devices are not being placed in or taken out of the recess/es. One or more of the cover means may also be provided for the one or more access holes. One or more of the cover means may also comprise locking means to prevent access to unauthorized personnel.

15 Each desk and bridge unit preferably comprises connecting means to interlock one desk to another desk or bridge unit. The connecting means preferably holds the desks/bridge unit securely together when connected to each other but allow easy disassembling when they are required to be moved. Preferably the connecting means comprises at least one connecting recess located in one desktop/bridge-top and/or chassis and one or more retaining teeth of
20 complementary shape to the holding recess in the opposing location of the adjacent side of the desktop/bridge-top and/or chassis. Preferably the connecting means comprises a jigsaw like interlocking holding recess and tooth. Preferably the retaining tooth of one desk/bridge unit when placed in the retaining recess of the abutting desk/bridge unit may rest on the latter desk/bridge unit thus removing the need for separate support means on at least one side of at least
25 one desk/bridge unit. Preferably the retaining tooth rests on a part of the chassis exposed by the holding recess. Fixing means may also be used in conjunction with the recess and teeth. It will be appreciated that various other shapes of connecting means may be used. Any suitable connecting means may be used for example bolts or screws connecting desktops and/or chassis of desks or bridge units adjacent each other. Preferably there are also provided end caps which on
30 one side are complementary in shape to the retaining teeth or locking recess and can be used on a

free end of the desk, ie an end that is not connected to another desk or bridge unit, to provide a straight end for the desk.

A computer, Internet communicator and similar devices comprise not merely electronics components, for example a CPU, a disk drive unit etc. but also a mouse (not shown), a keyboard (not shown), and a VDU. These units are standard units that may be located on the desktop as required.

The VDU, where it is of a TFT or other flat screen type, is preferably located on VDU mount means that preferably takes up minimal desk space and minimally restricts the users view behind the desk. Preferably the VDU mount means comprises a single arm rotatably connected to the desk. The arm may be flexible or stiff and is preferably hollow with any signal and power cables for the VDU located within the arm to protect them. Preferably the VDU mount comprises a hollow tube and the VDU is mounted adjacent an end of the tube remote from the desktop.

Preferably the VDU is connected to the remote end of the VDU mount with a universal or swivel joint that permits positioning of the VDU by the user. Preferably the VDU mount is mounted on the desk towards the center at the back, thus providing clearance from the desktop and allowing appropriate movement of the VDU by the user. Various models for the VDU mount means are suitable, giving varying degrees of flexibility in the movement of the monitor. A suitably robust transparent protective screen can be mounted in front of the VDU if desired. Where the VDU is of a CRT type, then this may be positioned on the desktop. Preferably, the desktop for CRT VDU usage should be some 200 mm deeper than where a TFT VDU is used. This preferably gives desktop depths of approximately 800 mm and 600 mm respectively.

As an alternative to the VDU bracket referred to above, the VDU can be stowably mounted. For example, it may be mounted on a gas strut combined with a guide, such that when pressure is applied to the top of the VDU, the unit sinks down on the gas strut to below the desktop, where it may be locked into position. Alternatively, or in conjunction with a gas strut, the VDU may move along a guide rail, for example into a vertical position at the back of the chassis or horizontal position within the chassis. In order to accommodate this action, a hatch in the desktop

may open and close, for example by applying pressure to the hatch when it is in a closed position, whereupon a pressure catch releases the hatch and a spring mechanism opens the hatch to its fully opened position, thus allowing the VDU to be stowed away and the hatch to be closed. When the VDU needs to be revealed, then reversing the above action will open the hatch and
5 allow the VDU to rise into an operational position and the hatch to close again.

The power distribution system preferably comprises split power cabling. The cabling preferably provides a connection between one side of the desktop and another side and also to the cassette/s. The power may be a low voltage system that provides power to the electronic units directly; the
10 low voltage may be provided by mains powered transformer unit/s coupled to one end of a sequence of power distribution systems in a sequence of two or more desks. Alternatively, the power may be a mains type system (AC, and 100 V or 230 V) in which case, a cassette may comprise a power unit. Any suitable power cable may be used, for example when using a standard power supply in the UK, 240 V, adjacent desks and the cassette and/or cassette may be
15 linked using one or more standard IEC power cables linked together. The cables are located beneath the desktop. Preferably the cables terminate adjacent a side of the desk in cable connecting means which enable the cables to be connected to the cables of another desk. In one embodiment the cable connection means comprises one or more plugs. In one embodiment a cable or group of cables ends at a male plug at one side of the desk and a female plug at the other
20 side of the desk. The connection means enable easy connection of the cables of adjoining desks, thus creating a continuous power circuit supplying adjoining desks.

In another embodiment, the power distribution source comprises a cable extending from one side of the desktop to a power connector unit connected to the chassis. The cable is preferably
25 sufficiently long that it can be inserted through a hole in the chassis side of an adjacent desk and connected to a connector unit of the adjacent desk.

The cabling is located in the desk in protective conduits connected to the desk. Preferably the conduits and/or trays are part of the chassis. In one embodiment the chassis comprises a
30 segregated metal cable channel running between adjacent one side of the desk the cassette/s and

another side of the desk, thus enabling easy installation of the cables and protecting them from unauthorized access and damage.

Preferably the cable/s is split at one or more suitable points along its length to provide a section
 5 that also has a connector on its end to connect to a power input connector on the back of a power supply unit of the cassette/s. The use of a splitter cable/s preferably allows one or more cassette units to be taken out of the power circuit without other units losing power.

A power supply unit may be incorporated in the chassis or support means as part of a power
 10 distribution system of the desk. Alternatively, a power supply unit may be located within the cassette or so that the cassette can be connected to it. The power supply unit/s provide suitable DC power supplies for the computer components and VDU. Any suitable convenient values can be used and comprise +11 V., +5V, +2.3 V, 0 V., -2.3 V, -5 V, and C11 V. The power supply unit/s are preferably mains powered and supplied via the power cables. The power distribution
 15 system also preferably supplies power to the VDU/s and one or more cables may be split to connect to the VDU/s. Preferably for some VDU/s the power supply unit also provides power to the VDU. If a CRT (cathode ray tube) unit is used, then a standard voltage power supply is likely to be used and this is supplied either by an alternative splitter lead that provides an additional link or from an additional power connection.

Where a low voltage power supply is used (i.e. any power supply of 100 V or less), preferably a transformer unit supplies power to the system. Preferably this transformer unit may be positioned on the wall (or any other convenient place) between a mains power socket and the first desk. This power supply unit should be a Transformer of a suitable rating to allow transforming the
 25 incoming low voltage power to the appropriate voltages for the electronics and display components. Preferably, instead of the IEC splitter cable, at least three alternative cables/bus bars (live, neutral, and earth) may be used, with an appropriate specification for the voltage used. Each cable or bus bar meets at a connector to the cassette to facilitate a connection to the power supply unit for the cassette.

In those cases where the electronics are networked there may be included network cabling.

There may also be included one or communications systems, for example Internet, Intranet, access to one or more databases, audio and video systems, fax and other known systems.

Cabling connecting the electronics system and any separate communication system may comprise

5 split cabling or may link certain components in series or as otherwise required. The cabling provides a connection from adjacent one side of the desktop to adjacent another side of the desktop and also to one or more of the cassettes and possibly also to one or more peripheral devices. Where possible, the cabling is located within the desk, most of it being located in protective conduits and/or trays connected to the desk. Preferably the conduits and/or trays are

10 part of the chassis. The communications and/or connections system may comprise one or more cables and/or UV, infrared, wireless or other systems for enabling electronics devices or units in one part of the desking system to communicate with electronics devices or units attached to the same desk or located in another part of the desking system. Network and communications cables preferably end adjacent each side of the desk that is to be connected to another desk with cable

15 connecting means. In another embodiment, the electronics and/or communications distribution system comprises a cable extending from one side of the desktop to an

electronics/communications connector unit connected to the chassis. The cable is preferably sufficiently long that it can be inserted through a hole in the chassis side of an adjacent desk and connected to a connector unit of the adjacent desk. In one embodiment the chassis comprises a
20 segregated metal cable channel running between adjacent one side of the desk the cassette/s and another side of the desk, and also between those cables, the chassis and the various electronics components and peripheral devices, thus enabling easy installation of the cables and protecting them from unauthorized access and damage. In one embodiment the network and

communications cable connection means comprises one or more plugs. In one embodiment a
25 network and communications cable or group of cables ends at a male plug at one side of the desk and a female plug at the other side of the desk. The connection means preferably enable easy connection of the cables of adjoining desks, thus creating a continuous link between adjoining desks. Many of the electronics cables are preferable conveniently accommodated within the chassis. Where UV, infrared, wireless and like links are used there may be included repeater,
30 transponder or other means to facilitate linking of the devices. Infra-red or wireless coupling can

be included in the computers, so that such network cabling is unnecessary. If additional cable channels for power and network cables are desired additional cable channels can be located in or adjacent the chassis, either fixed to the chassis or fixed to a wall or similar building component.

5 The location of the cables makes it possible to arrange a series of desks in such a way that there is a continuous route for cables. Rubber grommets are preferably provided at the openings at the sides of the desk where the cables exit and at ends of cableways in the desks to protect the cables. Preferably some grommets are such that when two desks are positioned side by side against each other two facing grommets compress against each other and therefore protect the cables where
10 they cross the gap between the desks. It will be appreciated however, that spur and/or ring power cable arrangements are possible using various openings for cable entry routes. In another embodiment cable plugs may be positioned on each desk such that when two desks are positioned side by side against each other and connected together two plugs connect together. Preferably cabling from power points and electronic and communications cabling for the desking
15 system is located in one or more legs of one or more desks so as to protect it.

According to a further aspect of the invention there is provided a bridge unit that may be used to connect two or more of the desks together. The bridge unit comprises a bridge-top comprising a top-face, bottom-face, and sides; a chassis; and a power distribution system mounted beneath the
20 top and within the chassis from one side of the bridge-top to another, connectable to adjacent desks an/or bridges at one or more sides. The bridge unit may or be mounted on its own support means. The bridge unit may include a power connector box and/or an electronics connector box.

One or more of the desks to which it is connected may support the Bridge unit in place. The bridge unit may comprise a cassette comprising one or more electronics systems releasably
25 connected underneath the bridge-top face, but in many cases no cassette will be included. The bridge units may be linear in shape similar to a desk but without a cassette, or angle units enabling desk to be connected in the system in different configurations. The bridge units are in effect dummy units that can be included in the system to allow the spacing of the desk units to be increased and/or the line of desk units to include turns. Means (not shown) may be provided for
30 screwing or bolting the units together in addition to the interlocking by teeth and recesses. The

desks will normally be rectangular (possibly of different widths) and the bridge units will normally be square; however, they may be of any convenient shape, depending on the preferred layout to be achieved. The desks and bridge units may be made of any suitable combination of materials, for example metal, wood and/or medium density fiberboard (MDF).

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The present system considerably eases the installation of desk systems, since it uses units that can be prefabricated and need little or no modification on site. Desk units may connect together and power cables may clip together to provide a system that is literally 'plug-and-play'. The system also reduces the chance of electronics components being damaged and/or stolen, because the components are located in a more protected area than in current desks. The components may be largely encased in a lockable cassette. Preferably the cassette itself is non-standard, making casual theft less likely. Accidental abuse is significantly reduced through the robust design of desk components and the encasing of cable and computer components within the chassis.

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The desk provides flexible usage, either as computer desk or as an ordinary desktop generally cleared of computer components. The desk system provides the opportunity to provide desk, computer, VDU, and cabling more cost effectively, because the production processes involved in the manufacture of the desk components may also provide the infrastructure for the other components, such as a case for the computer components, a cable-way for the power, direct connections for both power and networking cables, and a combined power supply unit for both computer and TFT VDU.

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Further features of the invention will become apparent from the following description of a desk and desk system embodying one aspect of the invention, given by way of example and with reference to the drawings, in which:

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Fig. 1 is a top view of a desk according to one aspect of the invention.

Fig. 2 is a top view of the desk of Fig. 1 with the desktop removed.

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Fig. 3 is a front view of the desk of Fig. 1.

Fig. 4 is a side view of the desk of Fig. 3.

5 Fig. 5 is a top view of a series of desks of the type shown in Fig 1 according to one aspect of the desking system of the invention

Fig. 6 is a front view of series of desks of the type shown in Fig 1 according to one aspect of the desking system of the invention.

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Fig. 7 is a top view of a desk showing an alternate power distribution system, with the desktop removed

In Fig. 1 there is shown a part of a desk system according to the invention comprising desk 10.

15 Desk 10 may be connected to a similar desk according to the present invention, which may be the same or a different plan shape to the desk shown in Fig. 1. The desk has connecting means comprising connecting recess 13 at one side and a complementary retaining tooth 14 at the other side, so that two similar desks can when abutting interlock with each other. Also shown in Fig. 1 is a bridge unit 11 having a retaining tooth 15 and complementary connecting recess 16. As
20 shown, the teeth and recesses may be on opposite sides of the desk/bridge unit or on adjacent sides.

Fig. 2 shows desk 10 with the desktop removed. In a stand-alone situation, the chassis 30 includes frame 31 in the form of metal tubing forming a rectangular frame. Four threaded
25 mounting sockets 32 are cut into frame 31 at its corners to accommodate the legs 50, and a chassis 30 to which the mounting sockets are attached. The legs can conveniently be threaded and are screwed into mounting sockets 32. If two or more desks are positioned adjacent to each other, then only one desk requires four legs and the remaining linked desks each only need two legs, with the end without legs being supported on frame 31, which is part of the chassis 30,
30 exposed by the cut-out 13 or the recessed sections of each retaining tooth. Alternatively, each

alternate desk/bridging unit may have 4 legs with each desk/bridging unit in-between resting on it.

The chassis 30 has an open section at its front edge that accommodates a computer cassette 37 that contains a central processing unit 45. The cassette includes a disc drive unit 43, a floppy disc drive, a Zip drive and a CD disk drive and other computer components. Those functions to which user access is required, such as the floppy and CD disk drives, the power-on switch, and possibly some USB ports, and headset connection ports and the like are located at the front of the cassette 37 adjacent the desk side at which the user works. Other functions, such as serial, parallel, and additional USB ports and speaker and perhaps headphone connectors, are located at the back of the cassette 37 and are accessed via the hole covered by hatch 19. For security purposes, the power-on switch may be located at the back of the cassette and accessed only through the hatch 19. The cassette is lockable against the chassis using a key mechanism 39 once the cassette has been fully inserted into the chassis.

The front of cassette 37 may conveniently be painted or finished with a powder coated metal fascia 40 or by any other suitable means and the front of the chassis 30 may be finished with a similar fascia 38. The cassette fascia 40 has appropriate cutouts in it to provide access to the various drives, switches and LEDs. Further, a security cover plate 46 is located in front of the cassette fascia and in one embodiment can be pivoted so that it can be lowered into a position below the cassette. In the raised position, the cover plate is locked into position using the same locking mechanism as for the cassette 39. The cover plate 46 may have the same finish as the fascias 38 and 40 and sits flush with the chassis fascia 38 when in the raised position.

The fabrication and servicing of the cassette is made easier by mounting the various drives in a metal cradle 44, which is then easily located into the cassette as a single unit using a minimum number of fixings. The drives may be held in place within the cradle by raised nodules punched into the two sides of the cradle, which then locate into holes at the side of the drives, and/or by inserting a U shaped channel 42 in between the drives, again with the appropriate nodules on the sides. The center strip 41 of the channel is made from sprung steel to allow the sides of the

channel to be squeezed together to allow the drives to be inserted. Where drives are only required on one side of the cradle, the other side has a dummy section inserted in order to maintain tension in the center channel.

5 The desk shown in Fig 1 operates on 240V and uses a system of standard IEC power cables 36 linked together and located beneath the desktop. Each cable comprises a male plug at the left hand end and a female plug at the right hand end. These plugs connect to the cables of adjoining desks, thus creating a continuous power circuit supplying adjoining desks. The IEC power cables are conveniently accommodated within a segregated metal cable channel within the chassis,
10 running between the left-hand edge of the chassis 30 and the beginning of the cassette 37; this ensures easy installation of the cables and protects them from unauthorized access.

The cable is split at a suitable point along its length to provide a third section that has a female plug on its end. This connects to a power input connector on the back of the power supply unit 34
15 within the cassette. The use of a splitter cable allows one cassette unit to be taken out of the power circuit without other units losing power.

The power supply unit 34 in the cassette 37 provides suitable DC power supplies for the computer components and VDU. The power supply unit is mains powered and is supplied via
20 the power cables 36. Where a TFT (thin film transistor) unit is used, the power supply unit can also provide power to the VDU using a spare power channel from the power supply unit. If a CRT (cathode ray tube) unit is used, then a standard voltage power supply is used and this is supplied either by an alternative splitter lead that provides an additional link or from an additional power connection at the rear of the power supply unit.

25 Where a low voltage power supply is used (i.e. any power supply of 100 V or less), a transformer unit 35 (Fig. 2) is used to supply power to the system. Instead of the IEC splitter cable, three alternative cables/bus bars (live, neutral, and earth) are used, with an appropriate specification for the voltage used. Each cable or bus bar meets at a three way connector located in the chassis 30
30 and positioned behind the cassette 37 to facilitate a connection to the power supply unit within

the cassette.

The computer shown consists not merely of a CPU and a disk drive unit but also a mouse (not shown), a keyboard (not shown), and a VDU. The VDU is of a TFT flat screen type located on a custom-designed mount means 51 (Fig. 3) mounted on the desk towards the center at the back, thus providing clearance from the desktop. This mount means allows appropriate movement of the VDU by the user. The signal and power cables for the VDU are routed via the hollow tube forming part of the mount means 51 to the VDU.

The signal cable for the mouse runs across the desktop and enters through the desktop via access recess 19 (Fig. 1) to one corner of the desktop and into a connector at the back of the cassette 37. Access recess 19 consists of a roughly oval hole in the desktop with a fitting cover 20 having a suitable number of cutouts 18. One side of cover 20 rests on a rim inside recess 19; the other end has a tongue that is first introduced into a slot in the edge of the desktop within the access recess.

Pressing the access hatch 20 where the rim is not present will therefore cause it to tilt, so that it can be temporarily removed to provide access to the rear of the chassis 30 behind the cassette 37. The cover 20 is locked to the desktop using a key-operated catch 12. Not only does the access hatch provide access to cable connections at the rear of the cassette 37, but it also provides a space to stow the mouse if desirable.

The desktop also has a slot 17 for storing the keyboard when it is desired to clear a larger space on the desktop. The signal cable to the keyboard can pass through the slot 17, facilitating stowage of the keyboard.

Network cabling is included in cable channel 33 for networking the computer to a central server. Telephone cabling is also provided. A modem is included in cassette 37 (or it could be connected to chassis 30 or on the desktop 10).

In Figs 5 & 6 there are shown 3 desks 10 of the type shown in Fig. 1 with the connection recess 13 and retaining tooth 14 interconnected to connect the desks. Ends 80 and 81 have been

connected to cover the free connection recess 13 and retaining tooth 14 to thereby provide straight sides at the free ends of the series of desks.

5 In Fig. 7 a power cable 101 is connected to power unit 100. The second cable connecting a second desk to power connector 100 is not shown. Trays 160 and 162 are located under the desktop, one adjacent each of two sides of the desk. Preferably one or both of the trays create an air channel that assists in ventilating and cooling at least some of the electronic components. Cassette 137 slidably inserts into opening 190 in frame 131 of chassis 130. Locks 105 may temporarily lock cassette 137 in place.

10 It can be seen, therefore, that the desking system as described may involve critical relationships between the leg mounting sockets 32, the cable channel 3, the access hatch 19, the keyboard slot 17, and various openings within the chassis for cable entry routes.

15 The present system is obviously susceptible to numerous modifications and variations. For example, units may have variable height legs and/or fold back against the wall to provide flexible use of space. Where desktops form the end of a run of desks, then the free end of the desktop can be manufactured without a cut-out or projection in order to provide a neat end profile.

20 The cassette/s are also capable of being accommodated within other pieces of furniture where the concept for their accommodation and operation remain the same.

Claims:

1. A desk adapted for connection to another desk as part of a network of desks, each desk comprising:
 - a desktop comprising sides, a bottom-face, and a top side with work surface;
 - a chassis comprising one or more cassettes containing one or more electronics systems;
 - a power distribution system to enable power to be passed from at least one desk to another desk and connectable to provide power to at least one cassette in each desk
 - an electronics connections system to enable connection of electronics located in at least one cassette in at least one desk with electronics located in at least one other desk,both the power distribution system and the electronics connections system being substantially located beneath the desktop and within or adjacent the chassis and extending from one side of the desktop to another.
2. A desk as claimed in claim 1 wherein at least one face of a cassette is located adjacent a desktop side at which a person can work, wherein said cassette face includes one or more ports and the cassette or one or more ports in the cassette are accessible to that person from that side.
3. A desk as claimed in claim 1 or claim 2 wherein the cassette/s are located under the desktop.
4. A desk as claimed in any one of claims 1 to 3 wherein the cassette is removably mounted within the chassis.
5. A desk as claimed in any one of claims 1 to 4 wherein the cassette is slideably mounted within the chassis.
6. A desk as claimed in any one of claims 1 to 5 wherein the underside of the desktop is recessed to accommodate part or all of the cassette and components contained therein.

7. A desk as claimed in any one of claims 1 to 6 wherein components within at least one cassette can be accessed without removing the desktop from the desk.
8. A desk as claimed in any one of claims 1 to 7 wherein the desk includes locking means such that the cassette and components inside the cassette cannot be accessed by unauthorized persons.
9. A desk as claimed in any one of claims 1 to 8 wherein the power distribution system and electronics connections system cannot be accessed by unauthorized persons.
10. A desk as claimed in any one of claims 1 to 9 wherein the desk comprises a docking station and at least one cassette is a Laptop, Notebook or other portable computer or electronics device that can be temporarily connected to the docking station.
11. A desk as claimed in any one of claims 1 to 10 wherein the desk comprises desk connecting means to interlock one desk to another desk or bridge unit.
12. A desk as claimed in claim 11 wherein the connecting means holds the desks/bridge unit securely together when connected to each other but allows easy disassembly when a desk is required to be moved.
13. A desk as claimed in claim 11 or claim 12 wherein the connecting means also provides the means of supporting that side of at least one of the two connected desks.
14. A desk as claimed in any one of claims 11 to 13 wherein the connecting means comprises two complimentary jigsaw shaped sides of two adjacent desktops.
15. A desk as claimed in any one of claims 1 to 14 wherein power and electronics cables are, except for those extending to the VDU mouse keyboard and any other devices above the work surface, substantially located beneath the desktop within the chassis.

16. A desk as claimed in any one of claims 1 to 15 wherein the cabling is located in protective conduits and/or trays connected to the desk.
17. A desk as claimed in any one of claims 1 to 16 wherein the conduits and trays are part of the chassis.
18. A desk as claimed in any one of claims 1 to 17 wherein the chassis comprises at least one cable channel running from a location in the region of one side of the desk to a region of another side of the desk and also to the region of the cassette/s.
19. A desk as claimed in any one of claims 1 to 18 wherein power cables, network and other systems cables extend from cable connecting means adjacent one side of one desk to cable connecting means located adjacent a side of another desk, and the connecting means enable easy connection of the cables of adjoining desks, thus creating a continuous power circuit supplying adjoining desks and also a continuous electronics network and communications circuit.
20. A desk as claimed in any one of claims 1 to 19 wherein at least one cable from a power distribution system of one desk can be inserted into an adjacent desk and connected to that desk so that power connection from one desk to an adjacent desk is provided.
21. A desk as claimed in any one of claims 1 to 20 wherein at least one cable from the electronics and/or a communications system of one desk can be inserted into an adjacent desk and connected to that desk so that electronics and/or communications connection from one desk to the other is provided.
22. A desk as claimed in claim any one of claims to 1 to 21 wherein each desk comprises at least one mouth in each of at least two sides of the cassis through which power and/or electronics cables may be inserted to enable connection of each desk and at least one mouth comprises one or more flexible cushioning means where the cables exit and the cushioning means are formed such that when two desks are positioned side by side it compresses and thereby protects the cables where they cross

between the desks.

23. A network of desks comprising two or more of the desks described in any one of claims 1 to 22 connected together.

24. A desking system comprising two or more of the desks described in any one of claims 1 to 22 further comprising at least one bridge unit adapted so that cables from one desk can be securely contained and connect to another desk on the opposite side of the bridge unit.

25. A desking system as claimed in claim 24 wherein the bridge unit is primarily supported on at least one side by the desk to which it is connected.

ABSTRACT

A desk and desking system, each desk being adapted for connection to another desk as part of a
5 network of desks, each desk comprising:
a desktop comprising sides, a bottom-face, and a work surface on the top side of the desktop;
desktop support means; a chassis comprising one or more cassettes containing one or more
electronics systems; a power distribution system and an electronics connections system, both
mounted beneath the desktop and within the chassis and extending from one side of the desktop
10 to another, connectable to at least one cassette and connectable to similar adjacent desks at one or
more sides.