

ICT - Information and Communications Technology

ICT20115

Cert. II in Information, Digital Media and Technology

Unit

ICTSAS203

Connect hardware peripherals

This is a SAMPLE document

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Student/Trainee Manual



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STUDENT/TRAINEE DETAILS

Student/Trainee Name

Student/Trainee Email

Teacher / Trainer Name

School / Institution / Training Organisation / Employer

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INTRODUCTION

This manual was developed to provide training content that addresses the specific 'Unit of Competency' as outlined in the following pages.

We encourage you the student / trainee to take your time when reviewing this content and seek any assistance from your teacher/trainer should you have difficulty in understanding the information.

LEARNING ACTIVITIES

Also included in this Student / Trainee manual are a series of Learning Activities.

The learning activities in the student and/or trainee manuals are 'Form Enabled' so that if the resources are delivered online, the activities can be entered in using the computer keyboard.

Each learning activity is identified with the following icon.

**Learning
Activity**

Learning activities come in the following forms.

- ☆ Questions
- ☆ Research
- ☆ Tasks
- ☆ Interviews

INTRODUCTION—CONT'D

Questions

Questions generally relate to the information presented on previous pages. Questions will also include multiple choice questions, 'Yes' and 'No' questions and/or 'True' and 'False' questions.

Research

This type of learning activity requires you to locate information by using research methods. The research methods could include:

- ☆ Internet searches
- ☆ Reading textbooks and other reference sources
- ☆ Location visits

Tasks

This learning activity type requires you to actually do something and some examples of tasks may include:

- ☆ Creating reports
- ☆ Visiting locations such as workplaces
- ☆ Performing an activity in a workplace

Interviews

This learning activity type would require you to interview person(s) in an actual workplace environment or a person(s) who are experienced in the industry sector which you currently are undergoing training.

You will be made aware of the type of learning activity by noting the learning activity type displayed under the learning activity icon.

INTRODUCTION—CONT'D

USING THE FORM ENABLED FEATURE

If you are using this manual online, you can fill in some of the answers using your computer keyboard.

Your teacher or trainer will provide you with the information and instructions on how to use the 'Form Enabled' feature in this manual.

SELF ASSESSMENT

At the end of each manual is a series of questions that you should review and answer either Yes or No.

The term 'Self Assessment' means you will ask yourself these questions and therefore is no need to provide the answers to the self assessment questions to your teacher or trainer, unless they require you to do so.

This self assessment is to ensure you have reviewed and understood the information that was presented in this manual.

If you answered 'No' to any of these questions or are unsure of your understanding in any of the topics reviewed, you are encouraged to go back and review the information again and/or seek the assistance of your teacher or trainer.

UNIT OF COMPETENCY OVERVIEW

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The following pages are extracts from Training.gov.au website and outlines this specific 'Unit of Competency' including the 'Elements' and the 'Performance Criteria'. The content within this manual has been developed to address this unit.

ICTSAS203 - CONNECT HARDWARE PERIPHERALS

ELEMENT	PERFORMANCE CRITERIA
1. Confirm client requirements	1.1 Identify and confirm peripheral requirements of client according to organisational standards 1.2 Document client requirements and peripherals needed, and report findings to the appropriate person according to organisational standards 1.3 Verify client requirements with appropriate person according to organisational standards and reporting procedures 1.4 Take action to ensure client support expectations are covered by vendor warranty and support services
2. Obtain required peripherals	2.1 Obtain peripherals under instruction from appropriate person 2.2 Enter details of peripherals into equipment inventory according to organisational standards 2.3 Validate that contents of delivered components and physical contents match the packing list and resolve discrepancies if necessary 2.4 Store peripherals according to vendors guidelines
3. Connect hardware peripherals	3.1 Verify timeframe for installation schedule with client 3.2 Remove old peripherals with minimal disruption to clients if they are to be replaced, taking into account environmental considerations and work health and safety (WHS) standards 3.3 Connect new peripherals with minimum disruption to clients, taking into account operating system procedures 3.4 Configure computer to accept new peripherals 3.5 Test hardware peripherals and confirm client satisfaction, paying particular attention to possible effect on other systems and making adjustments as required

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Section One

Confirm Client Requirements

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CONNECT HARDWARE PERIPHERALS

SECTION ONE—CONFIRM CLIENT REQUIREMENTS

INTRODUCTION

As you will know, any computer both those at work, or personal computers are never as efficient or useful without some type of peripheral connected to it.

There is a massive worldwide industry that focuses on the design and manufacturing of hardware peripherals.

Once a hardware peripheral is acquired, it needs to be connected.

In this unit of training, we look at sourcing and connecting hardware peripherals, starting with understanding the client's requirements.

SECTION LEARNING OBJECTIVES

At the completion of this section you will learn information relating to:

- ☆ Identifying and confirming peripheral requirements of client according to organisational standards
- ☆ Documenting client requirements and peripherals needed, and reporting findings to the appropriate person according to organisational standards
- ☆ Verifying client requirements with appropriate person according to organisational standards and reporting procedures
- ☆ Taking action to ensure client support expectations are covered by vendor warranty and support services



IDENTIFY AND CONFIRM PERIPHERAL REQUIREMENTS OF CLIENT ACCORDING TO ORGANISATIONAL STANDARDS AND DOCUMENT CLIENT REQUIREMENTS AND PERIPHERALS NEEDED, AND REPORT FINDINGS TO THE APPROPRIATE PERSON ACCORDING TO ORGANISATIONAL STANDARDS

(Over the next few pages we cover two 'Performance Criteria' points at the same time to avoid repetition)

Through this unit of training you will see the term 'organisational standards'.

When working in the IT sector, there is a significant amount of interaction and communication that takes place with clients.

Much of this communication is electronic, most commonly email.

Organisational standards and sometimes organisational policies or guidelines will dictate how this communication is to take place. For example, if you are using an organisation's email system the standards and/or policies will restrict personal use of the email system.

These standards would also dictate the content of the emails. The content would need to be non-discriminatory, using proper and professional language and not contain any content that would be considered rude or offensive.

This would include any attachments to emails, both from the sending point of view, as well as opening email attachments from unknowns or suspicious sources.

As a person working in the IT industry, much of your research on peripherals would be online. Organisational standards would dictate what websites you would be accessing and what was being downloaded from websites.

When it comes to dealing with clients, there may be the need for written communication. Organisational standards would dictate regarding what form the written communication would take, especially format content. This is especially important when it comes to documents such as specifications, planning and requirements documentation. There may be templates that must be used, and there may be recording/filing policies and procedures.

So when you are taking on the role of sourcing and connecting hardware peripherals, you would want to ensure you fully understand and follow any organisational standards.



DEFINING THE CLIENT

In the business of information technology, the 'client' can mean several things.

If you were working with an IT service provider, the 'client' is generally the 'customer', which could mean a person, or an organisation that has engaged your company to do some IT work for them.

If you worked as an IT specialist in an organisation, then the 'clients' could be your fellow employees, or a department in the organisation.

So in simple terms, any person, persons or departments or other organisations that you do IT work for is your 'client'.

Throughout this unit of training, you will see instances where you have to report to the most 'appropriate person'.

Again, this would depend on the type of organisation you work for.

Generally the most appropriate persons could include:

- ☆ Your supervisor
- ☆ The external client
- ☆ The internal client
- ☆ Authorised business representative of the supplier or manufacturer
- ☆ Supplier or manufacturer's help-desk person
- ☆ Subject matter expert or consultants
- ☆ Client's system administrator

They may be some instances where you are connecting peripherals on behalf of the supplier or manufacturer. In this case you would be reporting to the supplier or manufacturer as well. This would also mean that the supplier or manufacturer would also be the 'client'.



CLIENT REQUIREMENTS

This unit of training focuses on the sourcing and connection of hardware peripherals.

There are an endless number of hardware peripherals today.

The more common ones include:

- ☆ Printers
- ☆ Scanners
- ☆ Modems
- ☆ Routers
- ☆ Monitors
- ☆ Keyboards
- ☆ Speakers
- ☆ External storage devices

...to name just a very few.

Often in general terms, you will know what the client requirements are. For example, the client requires a printer. However, the requirements will often extend further and could include:

- ☆ Type—inkjet or laser
- ☆ Printer only or multi-purpose
- ☆ Standalone or networked
- ☆ Hard connection or wireless
- ☆ A4 or larger
- ☆ Standard quality or photo quality

As you can see, the client's requirements for a printer can extend a fair way. This is the same with most hardware peripherals.



DOCUMENTING CLIENT REQUIREMENTS

So you now know that the most important step in sourcing and connecting hardware peripherals happens to be the first step; understanding the client's requirements.

This would require effective communication skills. Those skills would include:

- ☆ Questioning skills—using open and closed ended questions effectively
- ☆ Active and attentive listening
- ☆ Good writing skills

Asking questions is very important if you are to understand the client's requirements. It is important that you listen to what they are saying and if there is anything that is not clear to you, or you do not fully understand, then you must ask clarifying questions.

When it comes to describing or discussing peripherals, it can be difficult to avoid using highly technical terms or industry jargon. Use terminology at the technical level of the person(s) you are speaking with.

As the client is communicating their requirements, you should be taking notes.

The client may have provided you with some written requirements. Here again, you must fully understand what they have written and if there is any unclear information, you must have this clarified.

**Learning
Activity****SAMPLE ONLY****Interview****LEARNING ACTIVITY ONE**

In this activity we want you to interview three business managers that have and use computers extensively. Each business should be in non-competing areas.

Let them know that you are doing a training assignment and you may want an introduction letter from your teacher or trainer.

Ask them to name at least three peripherals their computers have, starting with what they think is the most important peripheral and working down to the least. Do not include the monitor, keyboard or mouse in the list.

Ask them why they have listed those peripherals in that particular order of importance.

Compile your interview findings in a report form and include the name of the business, the name of the person you interviewed the type of business and the location of the business.

Once completed, present your report to your teacher or trainer for review and discussion.

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Research****LEARNING ACTIVITY TWO**

In this Section we talked about 'organisational standards'. To get a more detailed definition of organisational standards, we want you to do some research and summarise a more general definition of organisational standards.

SAMPLE ONLY

**Learning
Activity**

SAMPLE ONLY

Question

LEARNING ACTIVITY THREE

Who were the seven ‘most appropriate persons’ we mentioned in this Section?

SAMPLE ONLY



**VERIFY CLIENT REQUIREMENTS WITH APPROPRIATE PERSON ACCORDING TO ORGANISATIONAL STANDARDS AND REPORTING PROCEDURES
AND
TAKE ACTION TO ENSURE CLIENT SUPPORT EXPECTATIONS ARE COVERED BY VENDOR WARRANTY AND SUPPORT SERVICES**

(Over the next few pages we cover two 'Performance Criteria' points at the same time to avoid repetition)

The next step is to compile the information that you have gathered about the client's hardware peripheral requirements in a form that is generally dictated by some organisational standard. The most common type of document is called the 'requirements' document. It is a written document that details what type of peripheral is required, what tasks the peripheral is expected to do and what the needs and expectations of the client are .

When writing this document you should avoid using highly technical terms, or industry jargon. Once completed, provide a draft copy to the most appropriate person for review.

Earlier we gave some examples of who those most appropriate persons may be.

This step is mainly to ensure the 'requirements' document has covered everything that relates to the sourcing and connecting of the specific hardware peripheral(s).

One important requirement often overlooked is 'support'. Clients connecting hardware peripherals are often going to be quite reliant on the peripheral and should something go wrong with the peripheral, they would want to know that there is level of support available to resolve the issue or problem. The types of support would include:

- ☆ Warranty coverage
- ☆ Technical support, such as help desks
- ☆ Servicing support
- ☆ Readily available consumables

The 'requirements' document would need to clearly outline the various types of support, how this support is accessed and the terms and conditions of any support service agreements.

Once all the 'requirements' are clearly documented and verified, then the client can be presented with the 'requirements' document to 'sign off'.

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY FOUR**

What does the term 'to verify' mean?

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY FIVE**

What were the four types of support we mentioned in this Section?

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY SIX**

What is a warranty?

SAMPLE ONLY

Section Two

Obtain Required Peripherals

CONNECT HARDWARE PERIPHERALS

SECTION TWO—OBTAIN REQUIRED PERIPHERALS

INTRODUCTION

Once the hardware peripheral has been chosen, there are several steps that still need to be taken before actually installing the component.

Because computers and their hardware peripheral are at times sophisticated technical items, it is important that the correct hardware peripheral is located and obtained.

This is what we will review in this section.

SECTION LEARNING OBJECTIVES

At the completion of this section you will learn information relating to:

- ☆ Obtaining peripherals under instruction from appropriate person
- ☆ Entering details of peripherals into equipment inventory according to organisational standards
- ☆ Validating that contents of delivered components and physical contents match the packing list and resolving discrepancies if necessary
- ☆ Storing peripherals according to vendors guidelines

OBTAIN PERIPHERALS UNDER INSTRUCTION FROM APPROPRIATE PERSON

We are now at an important step being the stage where you need to locate and acquire the hardware peripheral. To get to this stage you would have verified the requirements of the client. You would have clearly identified the type of hardware peripheral required and next would be the choice of peripheral vendors..

So at this stage you would now make contact with the hardware peripheral vendors and request technical specifications of the proposed peripheral. This is required for any type of hardware peripheral.

This is an important stage, because the technical information will determine the following:

- ☆ Does the peripheral the vendor is offering meet the client's current needs now, as well as into the future?
- ☆ What are the computer system requirements for the hardware peripheral the vendor is offering?
- ☆ Is the hardware peripheral the vendor is offering compatible with the computer it will be installed with?
- ☆ Is there any additional or special connectors required in addition to the hardware peripheral the vendor is offering?
- ☆ Does the hardware peripheral the vendor is offering require additional software?

The vendors may also make recommendations that you and those evaluating the hardware peripheral needs may not have addressed, or thought of.

Once the vendors have provided the requested technical specifications of the hardware peripheral that they are offering, the information is compiled, documented, assessed and then final recommendations can be made. The technical specification summary and recommendations are again presented to the appropriate person for a final review and the hardware peripheral and its vendor is chosen.

The recommendations would likely be based on the following:

- ☆ Hardware and software compatibility
- ☆ The hardware peripheral that closest meets the needs
- ☆ Perceived quality of the hardware peripheral brand
- ☆ Availability of the hardware peripheral
- ☆ Price

Specifications	
CPU Support	Intel 4th (Refresh) and 5th Generation Core Series CPUs - Socket LGA 1150 (8 Phase VRM)
Chipset	Intel Z97 Express
Memory Support	2 DIMMs - Max 32GB - Dual Channel - DDR3 1600 to DDR3 1866+ (OC)
Integrated Graphics Support	iGPU, VGA and DVI-D with Intel HD Graphics (Turbo Sync)
Discrete Graphics Support	3-Way CPU, 2-Way SLI, Quad-CPU and Quad-SLI
Expansion Slots	3 x PCIe 3.0 x16 (150, 85 and 40 electrical) 3 x PCIe 2.0 x1
Storage	6 x SATA III (all via Z97) 1 x SATA Express (requires two SATA III ports) 1 x M.2 Port
LAN	1 x Killer E2201 Gigabit LAN
Audio	Realtek ALC1150 7.1 Channel HD Audio
USB	8 x USB 3.0 (6 Rear, 2 Front 6 via Z97, 2 via ASM1042AE) 6 x USB 3.0 (2 Rear, 4 Front all via Z97)
Form Factor	ATX (10.5 cm x 24.4 cm)
BIOS	UEFI BIOS with AMI UEFI (UEFI BIOS 2.3.1 Support, ACPI 5.1 Compliant wake up events)
Back I/O Ports	1 x PS/2 Mouse/Keyboard Port 1 x D-Sub Port 1 x DVI-D Port 1 x HDMI Port 1 x Optical S/PDIF Out Port 1 x USB 3.0 Port 2 x USB 3.0 Ports 4 x USB 3.0 Ports

4.0TB Hitachi Deskstar 7K4000 Specifications:	
Capacity	4.0TB
Form Factor	3.5" HDD
Interface	SATA 6Gb/s
Rotational Speed	7200 RPM
Cache	32MB
Power Consumption	12.8W (idle), 16.5W (idle), 25.5W (idle), 25.5W (idle)
Operating Temperature	5°C to 40°C
Storage Temperature	-40°C to 70°C
Shock Resistance	150G (0.5ms)
Vibration Resistance	0.5g (10Hz to 200Hz)
MTBF	1,000,000 hours
Warranty	3 years

SAMPLE ONLY

OBTAIN PERIPHERAL TO PREPARE FOR INSTALLATION

Aside from the peripheral, you will need to determine other items that are to be obtained with the peripheral which could include:

- ☆ Cables
- ☆ Connectors
- ☆ Driver software
- ☆ Additional consumables
- ☆ Extra user manuals

The organisational standards and instructions from appropriate persons would dictate how the hardware peripheral and associated items are purchased.

If you worked in the organisation, then they may have a purchasing procedure that you would need to follow. This could include creating a purchase order, having the purchase order approved and then sending the purchase order to the vendor to finalise the purchase of the hardware peripheral.

If the organisation is required to pay for the hardware peripheral at the time of purchase, then payment by company credit card or electronic funds transfer would need to be organised.

If you were an ICT contractor to the organisation you would probably need to get some documented approval from the organisation before buying the hardware peripheral on behalf of the organisation.

If the hardware peripheral is being delivered, the confirmation of a delivery date should be sought.

This is also important when there are several suppliers delivering parts required for the installation of the hardware peripheral. Nothing worse than scheduling the installation, only to find out that one very important cable has not yet been delivered.

**SAMPLE ONLY**

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY ONE**

Before committing to a specific hardware peripheral, you should contact a couple of vendors or suppliers and request technical specifications of the proposed peripheral. What were the five reasons for doing this?

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY TWO**

If you were to recommended a vendor and a specific peripheral, what five reasons would you base your recommendations on?

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY THREE**

Aside from the actual peripheral, what five other common items would need to be obtained?

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY FOUR**

What would be dictated by the appropriate people in regard to organisational standards and instructions?

SAMPLE ONLY



ENTER DETAILS OF PERIPHERALS INTO EQUIPMENT INVENTORY ACCORDING TO ORGANISATIONAL STANDARDS

AND

VALIDATE THAT CONTENTS OF DELIVERED COMPONENTS AND PHYSICAL CONTENTS MATCH THE PACKING LIST AND RESOLVE DISCREPANCIES IF NECESSARY

AND

STORE PERIPHERALS ACCORDING TO VENDORS GUIDELINES

(Over the next few pages we cover three 'Performance Criteria' points at the same time to avoid repetition)

Hardware peripherals can be obtained in two basic ways:

- ☆ You go to the supplier and pick up the hardware peripherals
- ☆ You order the hardware peripheral and it gets delivered

If you were to go to the supplier and pick up the hardware peripheral, then it would mean that it is you that is transporting the hardware peripheral from the supplier to the installation location. In most cases, the hardware peripheral will be packed in the manufacturers packaging and this generally protects the hardware peripheral from most unavoidable knocks and bumps when in transport.

Once you would have reached your location, then the hardware peripheral should be immediately unpacked and checked for the following:

- ☆ Damage
- ☆ User manuals
- ☆ Warranty documents
- ☆ Any cables
- ☆ Any CDs (driver software)

If there is any damage or items missing, these should be noted and immediately reported according to established procedures.

These procedures may require you to report it to the most appropriate person in the organisation and seek further instructions, or you may need to follow the established procedures of the supplier.

SAMPLE ONLY

If you had ordered the hardware peripheral and it was being delivered, then when it arrives, you would need to first check the shipping documents to ensure that the delivery was complete.

If the shipping documents show three boxes, then you should have received three boxes. If there were boxes or parcels missing, then this would need to be noted and reported. Generally, the shipping company would need to chase up the balance of the shipment. Organisational procedures would dictate how this would be reported and actioned.

Assuming the shipment was complete, the 'packing slip' (the document that lists what is in each box or parcel) would be compared to what is actually in each box or parcel. If items were missing, then it would be noted and this would need to be reported as per organisational procedures.

Next, the items delivered would need to be compared to the purchase order. In other words, what was delivered was in fact what was ordered. If wrong items were sent or any are missing, again these would be noted and this would need to be reported as per organisational procedures.

Next, the boxes and/or parcels would be opened and checked for damage. This would include opening the packaging in which the hardware peripheral was sent in. Again, you would check for the following:

- ☆ Damage
- ☆ User manuals
- ☆ Warranty documents
- ☆ Any cables
- ☆ Any CDs (driver software)

If there is any damage or items missing, these should be noted and immediately reported according to established procedures.

As mentioned earlier, procedures may require you to report it to the most appropriate person in the organisation and seek further instructions, or you may need to follow the established procedures of the supplier and/or the shipping company.

SAMPLE ONLY

SAMPLE ONLY

RECORDING NEW HARDWARE PERIPHERALS

Hardware peripherals in 'accounting terms' are business assets. In most business they will have what is called an 'Asset Register'.

This register, often part of an accounting software program, will list all the assets of the business and this includes hardware peripherals.

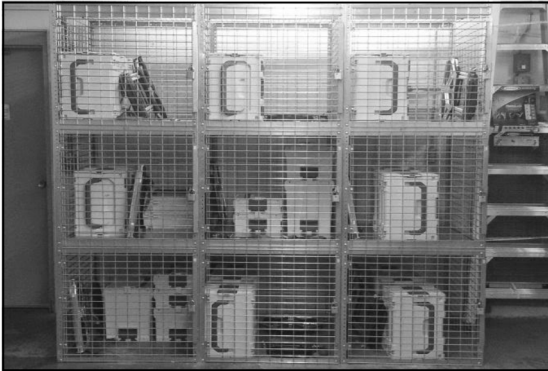
It may be your role to enter the details of any new hardware peripheral into the business's asset register or some other inventory record keeping system.

The general information that would need to be recorded would include:

- ☆ Description of the hardware peripheral
- ☆ The brand and model of the hardware peripheral
- ☆ Serial numbers
- ☆ Date purchased
- ☆ Supplier
- ☆ Warranty details

In most cases, the hardware peripheral is recorded when the item has been purchased and delivered.

SAMPLE ONLY

SAMPLE ONLY

STORING HARDWARE PERIPHERALS

If the hardware peripheral is not being connected immediately when delivered, then it will need to be stored until the scheduled installation.

Manufacturers spend a considerable amount of time designing packaging for their hardware peripherals. The packaging is designed to protect the hardware peripheral from damage, so it is recommended that if the hardware peripheral is not being installed immediately, it is repacked in the packaging it came in and stored.

Manufacturers of hardware peripherals will often provide storage instructions and this would generally include:

- ☆ A dry and cool location
- ☆ Stacking restrictions (meaning nothing placed on top of the hardware peripheral being stored)
- ☆ Away from liquids and chemicals
- ☆ Some hardware peripherals, such as hard drives require anti-static packaging
- ☆ Away from any vibration or potential for knocks

As we mentioned earlier, hardware peripherals are a business asset and this means any hardware peripherals being stored should be stored in a secure location, such as a lockable store room or cabinet.

Any cables, connectors and fittings should also be stored with the hardware peripheral. This will ensure that when the time comes to install the hardware peripheral, all the required cables, connectors and fittings are all readily available.

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY FIVE**

What five things should you be looking for when you open a hardware peripheral packing box that you have picked up or has been delivered?

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY SIX**

If you were checking a delivered hardware peripheral order, what three documents need to be checked?

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY SEVEN**

What are the six common details of a hardware peripheral that are often recorded on an asset register, or inventory system?

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY EIGHT**

What are the six recommendations that should be considered when storing hardware peripherals?

SAMPLE ONLY

Section Three

Connect Hardware Peripherals

CONNECT HARDWARE PERIPHERALS

SECTION THREE—CONNECT HARDWARE PERIPHERALS

INTRODUCTION

Installing hardware peripherals can be a simple project, or it can become a major and disruptive project. As with other types of projects it is important to plan out the project carefully before starting.

We look at some planning steps that should be considered, as well as what steps should be taken after the hardware peripheral has been installed.

SECTION LEARNING OBJECTIVES

At the completion of this section you will learn information relating to:

- ☆ Verifying timeframe for installation schedule with client
- ☆ Removing old peripherals with minimal disruption to clients if they are to be replaced, taking into account environmental considerations and work health and safety (WHS) standards
- ☆ Connecting new peripherals with minimum disruption to clients, taking into account operating system procedures
- ☆ Configuring computer to accept new peripherals
- ☆ Testing hardware peripherals and confirming client satisfaction, paying particular attention to possible effect on other systems and making adjustments as required

SAMPLE ONLY

VERIFY TIMEFRAME FOR INSTALLATION SCHEDULE WITH CLIENT

Installing hardware peripherals can be a simple task taking only minutes and causing very little if any disruption to the users.

However, should the installation be a far more complicated task, then pre-planning the installation is essential.

For example, the installation task may mean the system may not be accessible for a period of time. If old hardware peripherals are to be removed and new ones installed, this may require the computer or computers to be shut down. In an environment where computers are an essential part of the operation, this could mean significant disruption.

So in many cases, the installation of the hardware peripheral needs to be a planned effort.

We now will look at how the planning stage should be approached.

SAMPLE ONLY

DEVELOPING INSTALLATION PLANS

There are numerous software planning tools available. The common one is called a GANTT chart.

A GANTT chart, commonly used in project management, is one of the most popular and useful ways of showing activities (tasks or events) displayed against time required to do each.

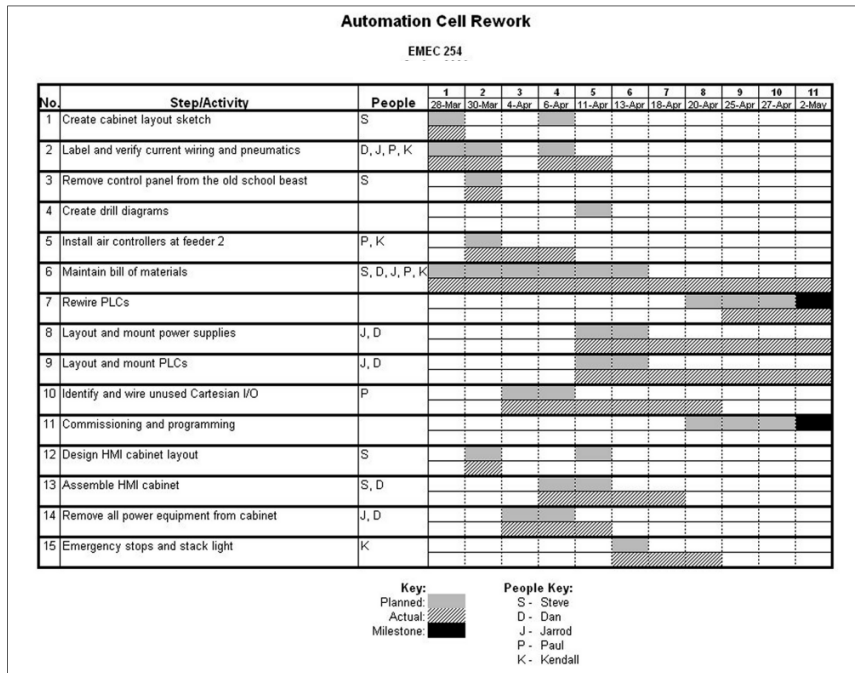
This would be an effective method of planning when, for example, the whole network system is being upgraded with new peripherals.

On the left of the chart is a list of the activities and along the top is a suitable time scale. Each activity is represented by a bar; the position and length of the bar reflects the start date, duration and end date of the task. This allows you to see at a glance:

- ☆ What the various tasks are
- ☆ The order in which each task must be done
- ☆ When each task should begin and end
- ☆ How long each task is scheduled to take
- ☆ Where tasks overlap with other tasks and by how much
- ☆ The start and end date of the whole project

For simple installation projects a spreadsheet application is useful.

Whatever form the plan will take it needs to show all the potential tasks required to complete the installation, the prioritised order of each task, as well as an estimate of how long each task is likely to take.



GANTT chart

SAMPLE ONLY

CONTINGENCY ARRANGEMENTS

Then there is the need for contingency arrangements. The term contingency simply means to plan for the 'What ifs!'.

The more tasks that are involved in an installation, the greater the likelihood for problems. These problems could have a dramatic effect on the successful completion of the project and cause greater disruption to the organisation.

To avoid the effects of potential problems, additional plans may need to be in place to address those 'What ifs'. If the installation project has been plagued with some problems, a contingency arrangement may be to have a spare PC on standby to use, or have the old peripheral ready to be re-installed that may reduce the disruption due to some unforeseen issues in the project.

You may have arranged to have someone help you and then they become unavailable, so you would need to have someone else on standby as a contingency arrangement.

The more experienced you become in doing hardware peripheral installations, the more you will be able to prepare for the unforeseen issues which may arise with such projects.

SAMPLE ONLY

SAMPLE ONLY

LIAISE WITH APPROPRIATE PERSON TO VERIFY INSTALLATION PLANS

Once the plan has been developed, you would need to have the plan approved. This is especially important when the organisation will be experiencing some level of disruption, or even have the potential of experiencing disruption.

It may be a good idea to have someone more experienced in hardware peripheral installations to review your plan, before you seek approval from the organisation. They may see something you overlooked, or help you streamline the tasks involved.

Gaining approval for the installation plan often means determining the most appropriate person to seek the approval from. If you are a contractor, then it would likely be the person in the organisation who had engaged your services. If you work in the organisation, the first person would generally be your manager. If they are not the appropriate person, they would likely be able to direct you to the most appropriate person.

Gaining approval often involves a meeting with the designated person or persons then going through each step in the installation process and answering any questions.

You would need to be prepared for modifications to the plan. It could be for a variety of reasons. However, before finalising the plan with modifications, make sure that the tasks are not affected due to the modifications. So it is suggested that you go back, make the modifications (if they are possible) and then seek approval again.

Once the plan has been finalised and approved, then you are now able to start the installation project.

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Task****LEARNING ACTIVITY ONE**

Planning is an essential stage of any internal hardware installation project, especially if the project has the potential to cause disruptions.

Developing planning documents is a skill and that is why there are good planning application software available that make planning a complex project far simpler. We mentioned one type in this section.

What was it? - _____

We also want you to locate a brand of this software.

Tell us the brand, the supplier, as well as the cost.

Name of Application***Brand and Supplier Information*****SAMPLE ONLY**

Learning Activity

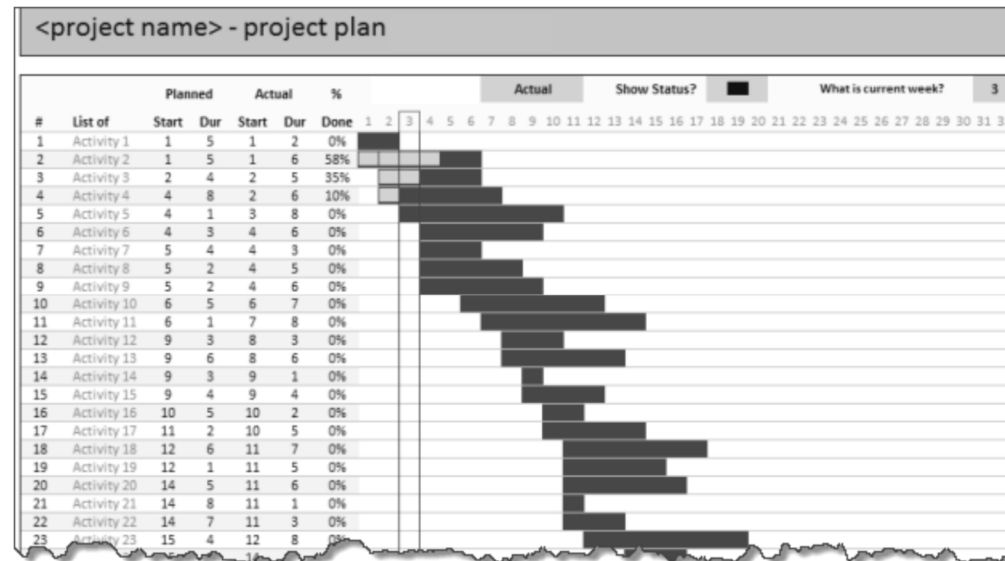
Question

LEARNING ACTIVITY TWO

As we mentioned earlier, planning is an essential stage of any internal hardware installation project. In the previous activity we reviewed a type of planning software often used for complex projects.

Below is a picture of a chart similar to the one referred to in the previous activity, however it was created using a common software application.

What is this application?



**Learning
Activity****SAMPLE ONLY****Task****LEARNING ACTIVITY THREE**

In this section we mentioned that a project plan needs to include any contingency plans.

Here's a scenario.

You have the job of removing and replacing three network printers on three different floors of an office building. What contingences would you think you need to take into account in your project plans?

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY FOUR**

In this Section we learned that once an installation plan has been developed it needs to be approved. If you were a contractor working for a service company and you are preparing a plan for a client, who would you have the plan initially approved by?

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY FIVE**

When seeking approval for an installation plan, what should you expect?

SAMPLE ONLY



REMOVE OLD PERIPHERALS WITH MINIMAL DISRUPTION TO CLIENTS IF THEY ARE TO BE REPLACED, TAKING INTO ACCOUNT ENVIRONMENTAL CONSIDERATIONS AND WORK HEALTH AND SAFETY (WHS) STANDARDS

If the project requires old hardware peripherals to be removed, then there are certain considerations that need to be factored into this part of the project.

To start with it would involve workplace health and safety issues. Many hardware peripherals are large and heavy, so proper manual lifting procedures would need to be used. This would include:

- ☆ Using suggested lifting techniques
- ☆ Seeking assistance whenever possible
- ☆ Use hand trolleys or dollies to move the items

Hardware peripherals are generally operated by using electrical power. Understanding the dangers of electricity and using proper electrical power cables and connectors is essential.

Hardware peripheral disposal is also an major issue. If the old hardware peripheral is to be retained, then the peripheral should be packed back in its original packaging (if available) and use the manufacturer's storage recommendations.

If the hardware peripheral is to be disposed of, then this task would need to follow environment regulations and procedures. There are numerous recycling and disposal businesses that take old computer hardware, including peripherals and recycle the items in an environmentally safe manner.

Unusable consumables such as ink cartridges or toner cartridges should be disposed by depositing the cartridges with businesses that take old and used ink cartridges or toner cartridges.

Removing old hardware peripherals, as we mentioned earlier, can be disruptive. If pre-planning was done, those affected by the disruption should have been notified in advance of the removal and installation of hardware peripherals and therefore the disruption somewhat minimised.

**Learning
Activity****SAMPLE ONLY****Task****LEARNING ACTIVITY SIX**

In this activity we want you to locate the nearest business in your area that takes old computer hardware, including peripherals for recycling. Give us the details below including their name, address and contact details.

SAMPLE ONLY

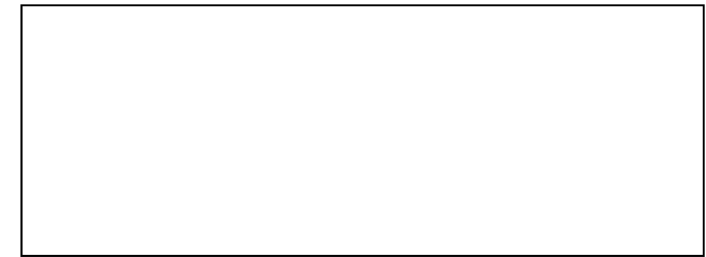
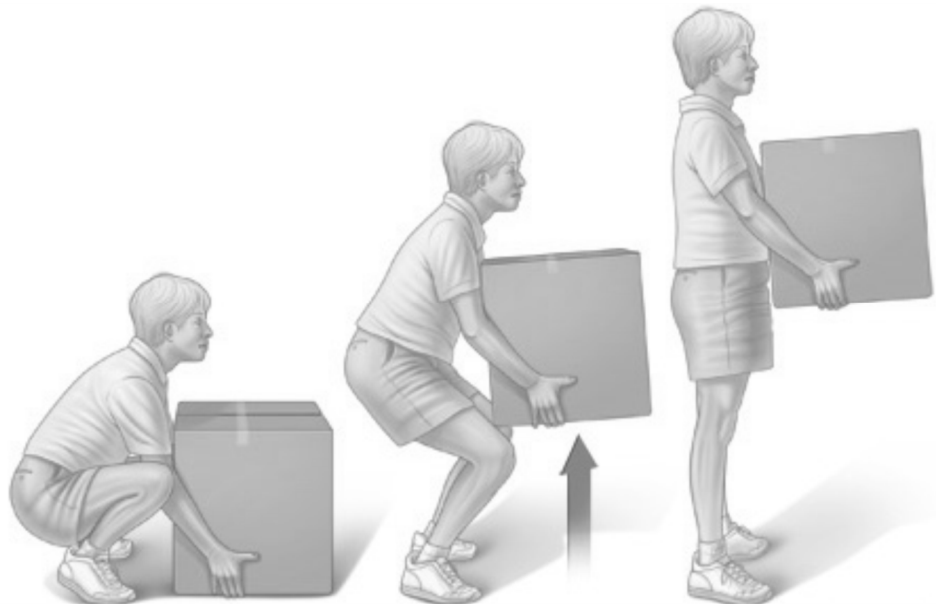
**Learning
Activity****SAMPLE ONLY****Task****LEARNING ACTIVITY SEVEN**

In this activity we want you to locate the nearest business in your area that takes used ink cartridges or toner cartridges for recycling. Give us the details below including their name, address and contact details.

SAMPLE ONLY

**Learning
Activity****Question****LEARNING ACTIVITY EIGHT**

What is this picture suggesting?



Technical specifications	
Print speed	Up to 22 ppm (A4) Exact speed varies depending on the system configuration, software application, driver and document complexity.
First page out block	As fast as 7 sec
Print resolution	Up to 600 x 600 x 2 dpi (1200 dpi effective output) ; 600 dpi, HP FastRes 1200
Processor	266 MHz
Memory	8 MB
Recommended monthly page volume	250 to 2000 HP recommends that the number of printed pages per month be within the stated range for optimum device performance, based on factors including supplies replacement intervals and device life over an extended warranty period.
Duty cycle (monthly, A4)	Up to 8000 pages Duty cycle is defined as the maximum number of pages per month of imaged output.
Paper	
Input	10-sheet priority feed slot; 250-sheet input tray
Output	150-sheet face-down bin
Duplex printing	Manual (driver support provided)
Sizes	250-sheet input tray: 147 x 211 to 216 x 356 mm; priority feed slot: 147 x 211 to 216 x 356 mm
Weights	40 to 163 g/m ²
Media	Paper (laser, plain, photo, rough, vellum), envelopes, labels, cards
Connectivity	
Interfaces	Hi-Speed USB 2.0 port
Languages and fonts	Host-based printing; Not applicable (Host-based printing)
Client operating systems	Microsoft® Windows® 7 (32-bit/64-bit), Windows Vista® (32-bit/64-bit), Windows® Server 2008 (32-bit/64-bit), Windows® Server 2003 (32-bit/64-bit), Mac OS X (32-bit/64-bit) for current
Network operating systems	Microsoft® Windows® 7 (32-bit/64-bit), Windows Vista® (32-bit/64-bit), Windows® Server 2008 (32-bit/64-bit), Windows® Server 2003 (32-bit/64-bit), Mac OS X (32-bit/64-bit) for current

CONNECTING HARDWARE PERIPHERALS

SAMPLE ONLY

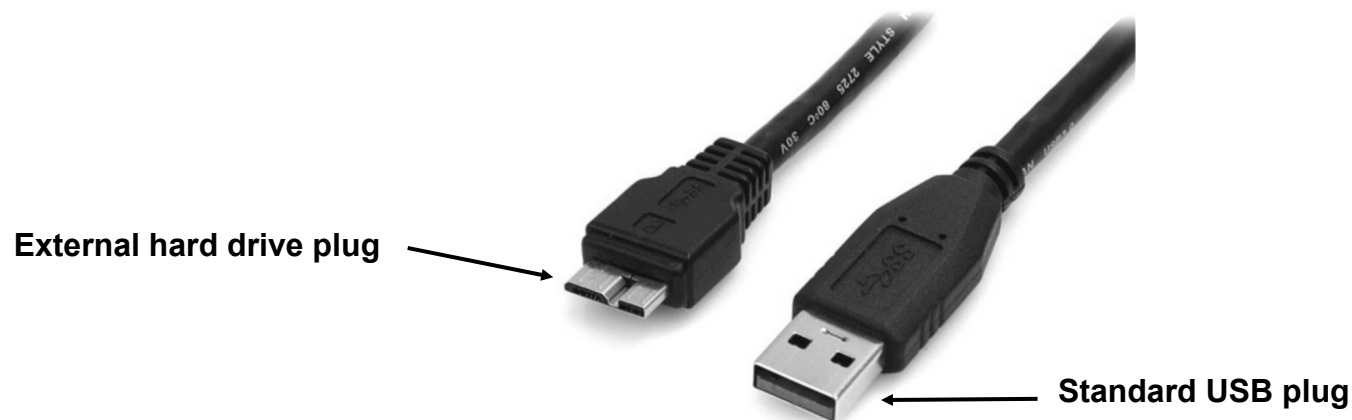
In most cases, hardware peripherals will be connected to a computer system using cables.

For printers the most common type of cable is the “USB” type. At one end is the “Standard USB Plug”. At the other end is the “USB Printer Plug”. The “Standard USB Plug” is plugged into the PC and the “USB Printer Plug” is plugged into the printer.



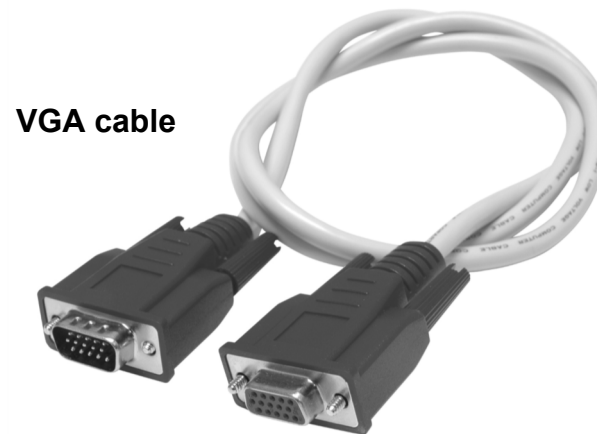
Storage devices such as “External Hard Drives” also use the “USB” type cables. At one end is the “Standard USB Plug”. At the other end is the “USB Hard Drive Plug”. There are several types of the “USB Hard Drive Plugs” depending on the brand of external hard drive you have.

The “Standard USB Plug” is plugged into the PC and the “USB Hard Drive Plug” is plugged into the external hard drive.

**SAMPLE ONLY**

'Digital Projectors' use a special type of cable to connect to a PC. This cable is called a "VGA" cable. This is the same type of cable you use to connect a PC to a PC monitor. One end has small pins. The other end has holes.

The ends with the small pins are plugged into the PC and the other end with the holes is plugged into the "Digital Projector".



Many PCs will have speakers connected to them. The cables used to connect speakers to a PC are called "RCA" plugs.

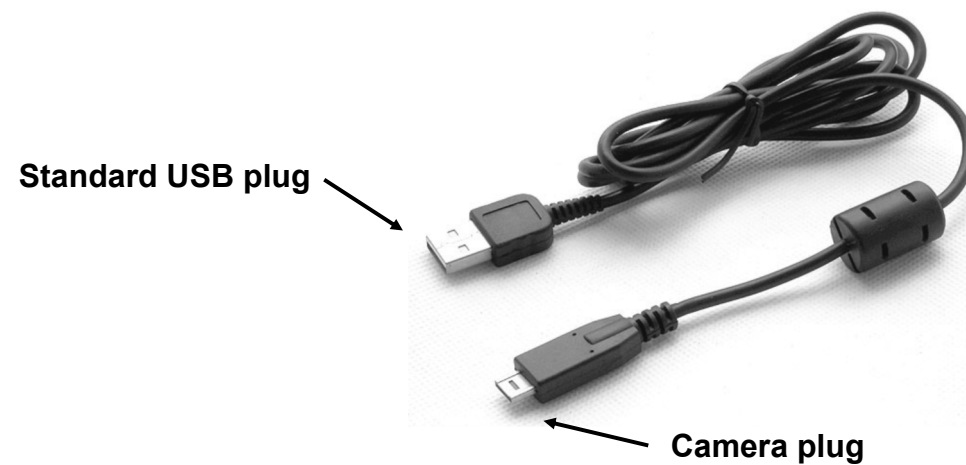
There are three plugs per cable. At one end is a mini speaker plug. At the other end are two "RCA" plugs. The mini speaker plug is plugged into the speakers and the "RCA" plugs are plugged into the PC.



SAMPLE ONLY

To download photos from a digital camera, the camera needs to be connected to a PC using a USB download cable.

It is a cable that has a small USB plug on one end that goes into the digital camera. On the other end is a normal USB plug that would go into a PC.

**SAMPLE ONLY**



WIRELESS CONNECTIONS

For digital devices, the most common wireless connection is Bluetooth. For a Bluetooth connection to operate, both devices must have the Bluetooth application installed.

The most common digital devices that would use Bluetooth connectivity are:

- ☆ Printers
- ☆ Speakers
- ☆ Headsets

If a PC or a PC Laptop does not have Bluetooth capability, a Bluetooth dongle can be used. It is like an aerial that accepts the Bluetooth signal from a device and converts it into a digital language the PC or PC Laptop can use.



INSTALLING THE HARDWARE PERIPHERAL

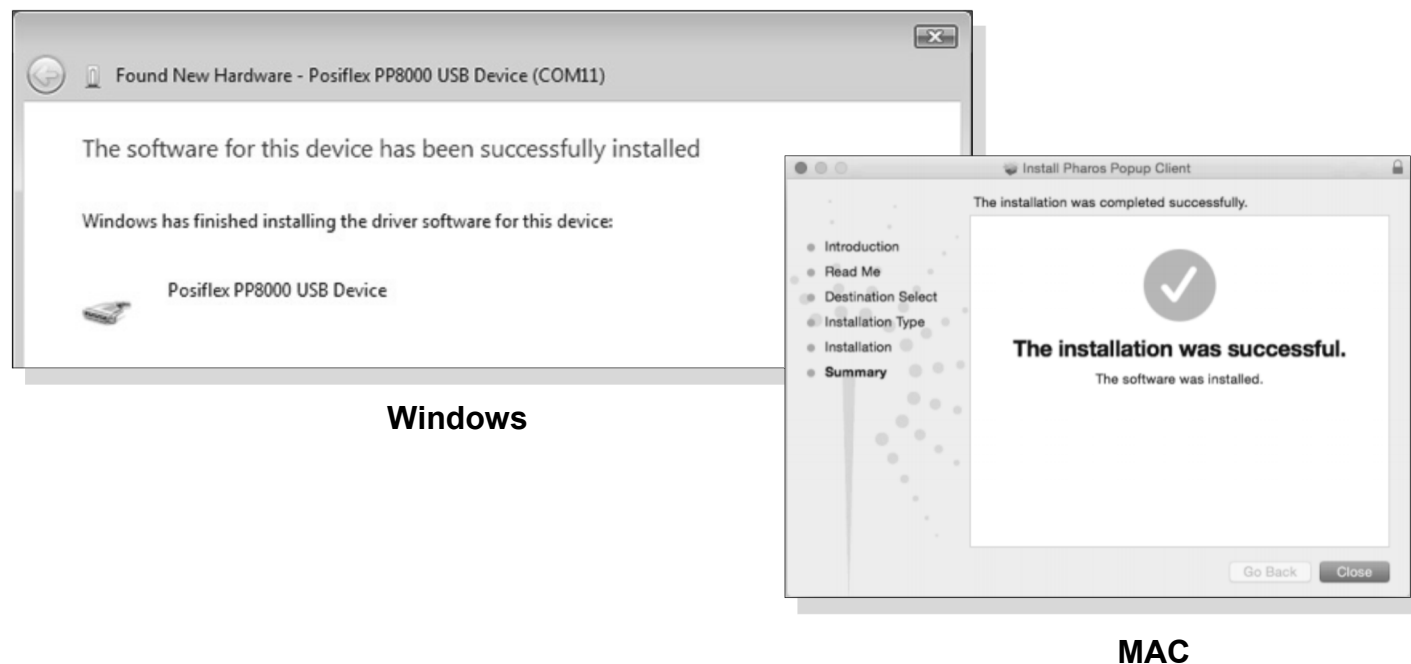
There are two methods of installing hardware peripherals:

- ☆ 'Plug and Play'
- ☆ Using an 'Installation Wizard' program

Many new hardware peripherals are designed to be 'Plug and Play'. 'Plug and Play' is a standard for the connection of peripherals to computers, whereby a device only needs to be connected to a computer in order to be configured to work perfectly.

This works with operating systems such as Windows and MAC OS X.

The installation software and the drivers are automatically installed in the computer when the peripheral is connected. A pop up window is displayed when the peripheral has been successfully installed as well as configured. The term 'to configure' simply means to set up something so it works properly and the case of Plug and Play, this happens automatically.



SAMPLE ONLY

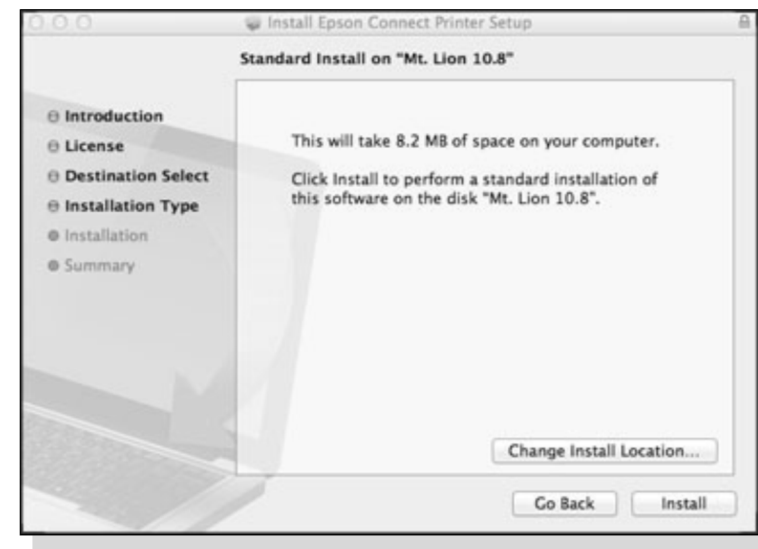
With all hardware peripherals there will always be an installation CD or DVD.

This is used when the Plug and Play feature has failed, or the hardware peripheral is not designed as a Plug and Play device.

The hardware peripheral user manual will outline the steps when using the CD or DVD.

Installation CDs or DVDs use what is known as 'Installation Wizards', basically an installation software program that makes installing a hardware peripheral a simple task.

Once the CD or DVD is booted up, the instructions on the screen appear and the person installing the hardware peripheral would simply follow those instructions.

**Windows****MAC**

Both Plug and Play and Installations Wizards will go through the steps of configuring the hardware peripheral to the computer and operating system.

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Task****LEARNING ACTIVITY NINE**

Below are pictures of different types of cables. Tell us what each cable is used for.



1	_____	2	_____
3	_____	4	_____
5	_____		

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY TEN**

What are the two types of hardware peripheral installation methods?

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY ELEVEN**

What is the simple definition of Plug and Play?

SAMPLE ONLY



TEST HARDWARE PERIPHERALS AND CONFIRM CLIENT SATISFACTION, PAYING PARTICULAR ATTENTION TO POSSIBLE EFFECT ON OTHER SYSTEMS AND MAKING ADJUSTMENTS AS REQUIRED

The final step in connecting and installing hardware peripherals is testing the new hardware. A hardware peripheral was chosen to do specific tasks, so the testing would start with ensuring the peripheral is able to perform the tasks it was designed to do.

Depending on the type of installation, you may find issues or problems during the initial testing stage. This will require some ‘troubleshooting’ to isolate the problem so that it can be resolved. You can troubleshoot a peripheral in many ways, but there are a few basic tips that will quickly isolate or identify the problem:

- ☆ Is it really a problem? Retrace your steps and duplicate the problem. Document your procedure.
- ☆ Check all cables and connections
- ☆ Check the power
- ☆ Trace your steps *backwards* through the installation process to double check that the procedure was correct
- ☆ Explaining the problem to another person often helps you see the answer for yourself, or, if you “can’t see the wood for the trees”, a fresh mind can often see the answer
- ☆ Check for device driver conflicts
- ☆ Reboot the peripheral and/or the computer
- ☆ Reinstall driver software
- ☆ Look for hardware incompatibilities

In most cases, troubleshooting the problem will result in the problem being identified and resolved. If this is not the case, then it may require the assistance of a more experienced technician through a help desk or one set out by the peripheral supplier.

The next type of testing is when the user performs tasks using the peripheral. Many times issues that arise in this stage of testing is related to user confidence and may require some training.

SAMPLE ONLY

SIGN OFF

Once the installation has been completed and the testing is successful, you would need to have the client 'sign off' on the installation project.

The 'sign off' is the last, but a very important step in the hardware peripheral installation.

The 'sign off' is a method of confirming in writing that the client has agreed that the hardware peripheral has met their requirements and after testing, that the performance of the new hardware peripheral has met their expectations.

The 'sign off' document needs to outline what the requirements were, a summary of the installation process and testing, as well as outcomes of the testing.

Then simple declaration by the client that they sign confirming that the hardware peripheral installation has met their expectations, satisfaction and needs and the project has now ended.

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY TWELVE**

In this Section we learned that you can troubleshoot hardware peripheral problems in many ways. We looked at nine basic tips that will quickly isolate or identify the problem. What were those twenty tips?

SAMPLE ONLY

**Learning
Activity****SAMPLE ONLY****Question****LEARNING ACTIVITY THIRTEEN**

In your own words tell us what is an installation project 'sign off' and why is it important?

SAMPLE ONLY

SELF ASSESSMENT

Self assessment is where you ask yourself certain questions to ensure you have understood what you have learned while reading this manual and completing the learning activities.

This unit requires you the student or trainee at the completion of your training to have a certain level of 'Required Knowledge' in which you would need to have acquired and in which you will be assessed on.

This self assessment section reviews this required knowledge by way of questions and if you are able to say YES to all of them you can be confident your assessment will be satisfactory.

- ☆ In the first section of this training unit we focussed on client requirements. After completing Section One are you confident that you are able to now:
 - 1) Identify and confirm peripheral requirements of client?
 - 2) Document client requirements and peripherals needed?
 - 3) Report findings and verify client requirements with appropriate person?
 - 4) Take action to ensure client support expectations are covered by vendor warranty and support services?
- ☆ After completing Section Two are you confident that you are able to now:
 - 1) Obtain peripherals under instruction from appropriate person?
 - 2) Enter details of peripherals into equipment inventory?
 - 3) Ensure delivered components and physical contents match the packing list?
 - 4) Store peripherals according to vendor's guidelines?
- ☆ Finally, after completing Section Three are you confident that you are able to now:
 - 1) Plan and develop a timeframe for installation schedule with client?
 - 2) Remove old peripherals with minimal disruption to clients?
 - 3) Connect new peripherals with minimum disruption to clients?
 - 4) Configure computer to accept new peripherals?
 - 5) Test hardware peripherals and confirm client satisfaction?

If there were any questions that you were unable to confidently say YES to, we encourage you to review the information again in this manual and if needed seek the assistance of your teacher or trainer.

SAMPLE ONLY

NOTES

SAMPLE ONLY