

### RECRUTEMENT:

The course requires a technical or scientific “Bac / Bac Pro” and / or IT experience

### OBJECTIVE:

An IT technician is a computer science professional who diagnoses and handles technical issues. An IT technician is expected to bring solutions to users by providing service either on site or remotely. Requests include incidents or upgrade needs in office softwares, operating systems, servers, network infrastructure and traverse applications.

The role of a technician is centered on 3 tasks, for which he/she must possess the required skills:

- provide remote assistance in IT service centres (CCP N°1433)
- provide assistance on IT systems and networks (CCP N°1434)
- provide assistance on traverse applications (CCP N°1435).

### QUALIFICATION:

**Titre professionnel Niveau III « Technicien Supérieur de Support en Informatique » (TP-00485)**  
(official professional title given by the French Employment Ministry)

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## COURSE CONTENT

### **I – Provide remote assistance in IT service centres**

- I.1 – Diagnose a hardware problem
- I.2 – Diagnose a problem related to network protocols
- I.3 – Configure and update a workstation computer
- I.4 – Set up and maintain virtual machines
- I.5 – Assist users with office applications
- I.6 – Use the tools provided by service centres

### **II – Implement and manage an IT server**

- II.1 – Manage a proprietary directory service
- II.2 – Maintain a proprietary server system
- II.3 – Manage TCP/IP services on a proprietary server system
- II.4 – Implement a proprietary system and network solution
- II.5 – Manage an Open Source server system
- II.6 – Manage TCP/IP services on an Open Source server system

### **III - Implement and deploy IT networks and systems**

- III.1 – Deploy workstations on an enterprise network
- III.2 - Automate tasks using scripts
- III.3 – Implement routing and switching
- III.4 – Secure the infrastructure and backup the data
- III.5 – Implement a multiplatform system and network architecture

### **IV – Provide assistance on traverse IT applications**

- IV.1 – Configure and troubleshoot proxy servers
- IV.2 – Configure and troubleshoot HTTP and FTP servers
- IV.3 – Configure and troubleshoot an IT email system
- IV.4 – Configure and troubleshoot a database server
- IV.5 – Configure and troubleshoot traverse applications

### **V – Enterprise work placement**

### English Language Immersion

**Objective:** reinforce English vocabulary, expressions and grammar as well as written and oral skills

**Content:**

- Understanding audio and video clips
  - Easy (documentaries about a known subject with specific vocabulary)
  - Medium (world news)
  - Difficult (conversation, film trailer)
  
- Talking about current world news
  - Watching a debate and understanding opinions
  - Participating in a debate and expressing an opinion
  
- Getting around : role-plays based on everyday life
  - Travelling and asking directions
  - Doing some shopping
  - Booking a service (hotel, restaurant, ...)
  
- Developing good writing skills
  - Writing a letter or an email
  - Making a report or a summary about a selected topic

## **I – Provide remote assistance in IT service centres**

At the request of a customer or a user, remotely diagnose and if possible solve an IT incident, in order to ensure optimal use of IT resources, within the frame of the service contract.

### I.1 – Diagnose a hardware problem

**Objective:** make use of personal knowledge and search results to diagnose a hardware problem. Propose a hardware configuration suited to the customer's needs.

**Content:**

- Support material:
  - Identify the architecture of a PC: components, memory modules and storage
  - Configure the Setup of a PC
  - Understand the difference between workstation and server
  - Solve a printing problem
  
- DOS / client 3.0
  - Install and configure MicroSoft DOS
  - Use the main MS DOS commands
  - Install and configure the Microsoft Network client 3.0
  - Modify the various settings of the MS Network client 3.0
  - Create a boot disk
  - Automate full installation sequences
  
- Technological watch
  - Understand the evolution of hardware components in order to propose solutions adapted to technological changes

### **I.2 – Diagnose a problem related to network protocols**

**Objective:** Identify network concepts. Diagnose a problem related to network protocols

**Content:**

- Network concepts:
  - Define the architecture of the TCP/IP stack
  - Define and understand IP addressing (classes and masks)
- Manage subnets, calculate IP subnets
- Understand and set up IP routing (static and dynamic, RIP protocol)
- Diagnose problems related to the TCP/IP protocol
  - DHCP protocol
  - Name resolution (NetBIOS, Lmhosts file, hostname, Hosts file)
  - TCP/IP printing utilities

### **I.3 – Configure and update a workstation**

**Objective:** Within the frame of a planned project, or following a technical problem, install a workstation, install software updates, and check the compliance of the network in order to meet the requirements of the company as well as the users

**Content:**

- Install and configure Windows XP Professional
- Configure and manage hardware components of a computer running Windows XP
- Manage disks
- Configure and manage the file systems
- Solve problems related to the boot process and to the system
- Configure the desktop environment and user profiles
- Configure the TCP/IP protocol
- Handle remote users and configure XP Pro for mobile use

### **I.4 – Set up and maintain virtual computers**

**Objective:** In response to simulation needs or to a scope statement, set up a virtualised host environment (OS and applications), either for testing or validation or for the start of operations. In response to an incident, troubleshoot a virtualised host environment in order to restore operational conditions as defined in the service contract.

**Content:**

- Virtualisation concepts
- Virtualisation as a long-term development axis
- Different types of virtualisation (OS, application, desktop, network)
- Comparison of different techniques of OS virtualisation (full virtualisation and paravirtualisation)
- Main editors of virtualisation solutions
- Implementation of a full virtualisation technology
- Creation and management of virtual machine
- Configuration of virtual machines
- Tool usage (snapshots, screenshots...).

### **I.5 – Assist users on office applications**

**Objective:** assist users on the main functionalities of Windows and OpenSource office applications.

**Content:**

- Email:
  - Account configuration, sending and receiving messages, organisation of mail boxes and archiving, calendars and tasks
- Spreadsheet:
  - Creating tables and graphs, copying and moving cells, using functions and pivot tables
- Word processor:
  - Creation of texts, templates, formats (fonts, paragraphs, and sections)
  - Field insertion and mailshots
  - Creation of tables
  - Complex documents (insertion of objects, diagrams, graphs...)
- Assistance:
  - Preparation of the intervention
  - Use communication tools
  - Stress and time management
  - Rephrasing a request
  - Explanation of the intervention
  - Job sheet
  - Professional simulation

### **I.6 – Use of service centers tools**

**Objective:** Use tools that are generally in production in a service centre: reporting, case tracking and inventory softwares, incident management and knowledge-base tools, remote control tools and package distribution

**Content:**

- Reporting and inventory management tools:
  - Basics of nomenclature, inventory monitoring agents, inventory database
- Tools for incident and knowledge management:
  - Link with IT equipment management
  - Creation and closure of an incident
  - Report a solution in the knowledge base tool
  - Search a solution in the knowledge base tool
- Tools for remote control and deployment
- Advantages of these tools
  - Remotely control a workstation (ethics and techniques)
  - Remote deployment (as a tool for troubleshooting and installation)

## II – Implement and manage an IT server

Manage the proprietary and Open Source company or customer servers, according to service contracts agreed by the operational departments, service providers and. Manage and optimise services within the frame of the security policy.

### II.1 – Manage a proprietary directory

**Objective:** Manage accounts and resources on a Windows Server domain.

**Content:**

- Create and manage users and groups
- Create organisational units and add user and computer accounts
- Manage access to objects using organisational units
- Implementer a group policy
- Manage the user and computer environment with a group policy
- Manage access to resources
- Implement and manage printing

### II.2 – Maintain a proprietary server system

**Objective:** Maintain resources, monitor performances and secure the data of a Windows server.

**Content:**

- Manage server resources
- Monitor system performances
- Manage devices drivers
- Manage data storage and emergency restoration
- Use the System Update Service for software maintenance.

### II.3 – Manage TCP/IP services on a proprietary server

**Objective:** Work with Windows Server network technologies

**Content:**

- Configure routing using the Routing and Remote Access Service
- Implement and manage a DHCP server (Dynamic Host Configuration Protocol)
- Implement and manage a DNS
- Resolve NetBIOS names using WINS (Windows Internet Service)
- Configure network access, manage and monitor network access.

### II.4 – Implement a proprietary system and network solution

**Objective:** Deploy an Active Directory architecture and implement network services.

**Content:**

- Practical workshop:
  - Set up a domain controller
  - Create and manage users, groups and organisational units
  - Implement user and computer group policies
  - Implementer access to resources
  - Set up a primary and secondary DNS server
  - Implement a DHCP server
  - Implement a print server.

### **II.5 – Manage an OpenSource Server**

**Objective:** Troubleshoot an Open Source server.

**Content:**

- Use basic text commands
- Manage user accounts and groups
- Manage disks and file systems
- Manage applications and processes
- Plan administrative tasks
- Workshop: administration under Linux:
  - Create users and groups
  - Set up new disks
  - Manage folder permissions
  - Plan tasks
  - Install new applications.

### **II.6 – Manage TCP/IP services on an OpenSource server**

**Object:** Troubleshoot network services on an Open Source server.

**Content:**

- Configure and test network parameters
- Implement a DNS server
- Set up a DHCP and SAMBA server
- Remote administration
- Workshop: network services under Linux:
  - Set up DHCP and DNS services
  - Share resources and manage permissions on resources
  - Implement remote control.

## **III – Implement and deploy IT system and networks**

Manage client or company IT networks, according to service contracts agreed between operational departments, service providers and/or customers. Manage and optimise services, within the frame of security policies.

### **III.1 – Deploy workstations in an enterprise network**

**Objective:** be able to create and deploy a system image

**Content:**

- Presentation of various workstation deployment techniques
- Unique identifiers
- PXE and boot images
- Prepare and create a base OS image
- Create answer files
- Deploy a base OS image (via unicast and multicast).

### **III.2 - Automate tasks using scripts**

**Objective:** Within the frame of a planned servicing mission, using a manual or automated procedure, create and trouble shoot a script under Windows as well as under Open Source environments.

**Content:**

- Create and troubleshoot scripts under Windows (Batch, VBscript, Powershell) Create and troubleshoot session opening scripts, integrate scripts in group policies, create automation scripts
- Create and troubleshoot scripts under Linux (Bash): create and troubleshoot session opening scripts, create task automation scripts

### **III.3 – Implement routing and switching**

**Objective:** Troubleshoot an enterprise IT network according to the characteristics provided by the network architecture.

**Content:**

- Routing concepts and protocols, configure a router, implement the routing protocol
- Switching concepts (LAN Ethernet/802.3 networks)
- Configuration of a switch
- Spanning Tree protocol (STP)
- VLAN implementation
- VTP Protocol (VLAN Trunking Protocol)
- Set up of various configurations using Cisco hardware
- Group workshop: design and apply a network addressing map for the classroom according to specific requirements, implementation of routing using VLANs

### **III.4 – Secure the infrastructure and backup the data**

**Objective:** Set up techniques to secure a system and network infrastructure and understand IT security risks. Implement a data backup strategy.

**Content:**

- IT security:
  - Global methodology of a network attack
  - Presentation of various attack types
  - Viruses and malware
  - Securisation methods
  - Presentation of a business continuity planning (BCP)
- Backup:
  - Main media
  - Storage architectures
  - Data backup: strategies and softwares

### **III.5 – Implement a multiplatform system and network infrastructure**

**Objective:** Setup interoperability solutions between Linux and Windows services.

**Content:**

- Individual workshop: Implement a DHCP server under Linux and Windows:
  - Set up a primary DNS server under Windows and a secondary DNS server under Linux
  - Install a Windows domain controller
  - Integrate a Linux server in the Windows domain using a documented procedure
  - Implement an alias to "my documents" on the Linux server
  - Configure remote administration for Windows and Linux servers
  - Automate tasks using scripts
  - Set up a backup strategy
  - Set up interoperability solutions between Linux and Windows network services

### **IV – Provide assistance on traverse IT applications**

At the request of a customer, a technician or a manager, diagnose and remotely solve an incident on a mail server, a database or a traverse application in order to ensure optimal use of the IT resources as agreed by the service contract. Whenever applicable, describe the incident on distributed application architecture and take appropriate action.

#### **IV.1 – Configure and troubleshoot proxy servers**

**Objective:** Identify and solve a failure on a distributed architecture involving a Proxy server.

**Content:**

- Concept of a Proxy
- Install and configure Microsoft ISA Server : filtering rules, caching, VPN (PPTP, L2TP)
- Install and configure Squid proxy: set up filtering rules, caching and configure transparent mode
- Cache servers under Linux (Squid) and Windows (ISA)
- Firewall under Linux (IP Tables) and Windows (ISA)
- Intranet and Internet services (ProFTPd, SSH, IIS).

#### **IV.2 – Configure and troubleshoot HTTP and FTP servers**

**Objectives:** Identify and solve a failure on HTTP and FTP servers.

**Content:**

- Install and configure the IIS web server: implement security, create and manage websites and FTP under IIS
- Install and configure the Apache web server: implement security under Apache, create and manage websites, configure the FTP server Proftpd.

#### **IV.3 – Configure and troubleshoot a mail server**

**Objective:** Configure and troubleshoot an email system at server and client level.

**Content:**

- Protocols and basic email concepts
- Administration of Exchange Server 2003:
  - Install Exchange server 2003
  - Configure and manage Exchange server 2003
  - Manage an address book and email lists
  - Manage client access protocols (MAPI, POP, IMAP, OWA)
  - Configure email clients (Outlook Express and Outlook).

#### **IV.4 – Configure and troubleshoot a database server**

**Objective:** configure and troubleshoot a Client/Server database architecture.

**Content:**

- Administration of a MySQL database management system:
  - Install and manage a MySQL server
  - Install PHPmyadmin
  - Create and manage user permissions via PHPmyadmin and via command line
  - Create a database via PHPmyadmin and via command line
  - Execute queries via PHPmyadmin and via command line
  - Export and import data via PHPmyadmin and via command line

### **IV.5 – Configure and troubleshoot traverse IT applications**

**Objectives:** Set up an Exchange Mail server. Implement a HTTP and FTP site under Windows and under Linux. Install and configure Mysql et PHPmyadmin, solve failures related to the management of IT applications such as e-mail, database, FTP and web services.

**Content:**

- Individual workshop: set up a network that has:
  - 1 DHCP server under Windows server 2003
  - 1 Active Directory under Windows server 2003
  - 1 primary DNS server (direct and reverse zone) under Windows server 2003
  - 1 Exchange 2003 mail server under Windows server 2003
  - 1 FTP and HTTP server under IIS
  - 1 Apache server under Linux (debian version stable)
  - 1 MySQL server under Linux (debian version stable)
  - 1 Proftpd server under Linux (debian version stable)
  - 1 client workstation under Windows XP.