Expert training on Images Voice Data Networks

ETR400LRT Did@VDI++

Winners of the 15th Worlddidac Award 2012

Self-operating laboratory to deploy VDI convergence, for experts

MAIN CHARACTERISTICS

- Central cabinet :
  - SIP, RTP **V**oice server, HTTP, FTP Data ; **I**mage/Video : IGMP, RTSP …,
  - Service control LCD Interface,
- Student development workstation :
  - **V**oice : Basic architecture, user function configuration & installation, voice menus & mails,
  - **D**ata : SSH et FTP server configuration & installation, HTTP, MySQL & PHP web server installation,, POP3 & SMTP courier server installation,
  - **I**mage & Video : IPTV service installation & configuration with STB or HTPC customer, video surveillance, etc…
  - **N**etwork : configuration & segmentation level 2 & 3 (switch, router, Wifi) etc…

AREAS OF APPLICATION

- **Training on IP telephone display, IP television transmission,**
- **Technical colleges & Universities specialized in Telecommunication Network,**

The **ETR400LRT Did@VDI++** is a self-operating laboratory, **it is fully isolated from the Internet network.** This specific characteristic enhances four main advantages :

- Mistakes made by the Students **would not cause any damage on the School network**,
- As the Laboratory is completely isolated from outside, only the Teacher has an access to the selection of videos & images available on the HTTP& FTP server, **this eliminates all risks of intrusion into sensible sites**,
- Network wiring is carried out on a mixing panel in order to **protect the mechanical parts (connectors) of the actuators** (server, router..)
- One single LCD interface enables the « *quick wiping* » of HTTP/FTP service exchange files,
- One « Mirroring » port **enables the display of all network exchanges**.

The Laboratory includes one ETR440B « ISP service provider ». It is constituted of one set of equipment including from1 to 8 development workstations with : 1 cabinet with server, router, switch & STB, 1 videophone set, 1 development PC computer with Linux.

ETR440B, « ISP » set for Did@VDI++ self-operating laboratory, including :

ETR440000, 12 Units DATA PROCESSING CABINET :

- Table-top or wall-mounted metal structure,
- Mixing panel with UTP, USB, HDMI crossbars,
- 2 U drawers,
- Electrical panel with differential circuit-breaker.

2 x Cisco Switch 8 LAN ports :**

- 8 LAN ports 10/100/1000 Mbps RJ45
- Manageable
- IGMP Snooping compatible,
- Configuration backup & restoring

1 x Cisco Router ** 8 LAN ports, 1 WAN port, Wifi :

- 4 LAN ports 10/100 Mbps RJ45
- 1 WAN port, 1 Gbs, SPI firewall,
- IGMP Snooping compatible,
- WIFI bridge
- IP addressing : DHCP (customer & server)
- Configuration backup & restoring

ETR440B, « ISP » set for Did@VDI++ self-operating laboratory :

ETR441000, Did@VDI+ SERVER :

Hardware functions :

- Core2 uATX MB system board, 1xLAN, 3 x SATA, 2xDDR2
- Intel Dual Core Pentium E5700 CPU 3.0GHz 2M 65W
- 1U Active Blower w/Heatsink, 4GB HDR2 RAM 32bit PCI Flexible Riser Card for 1Unit
- Mini-1Unit Rack with Power Supply, DD 2"1/2 60GO SSD extractible, LCD display keyboard.

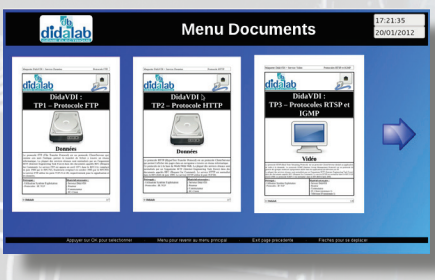
Software functions :

Linux working system with a set of free programs «**Astérisk****, **Apache****, etc… » for Voice, Data & Images service preconfigured, it ensures the following functions :

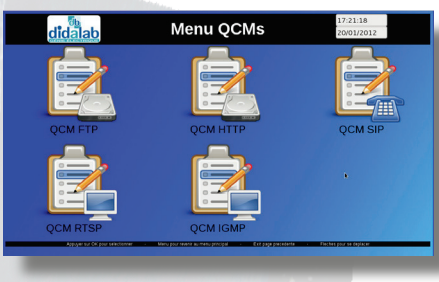
Voice Service	DataService	Images (Video) Service	Server :
SIP account : ➢ On, ➢ Off, ➢ State of registers	➢ HTTP : On/Off, ➢ FTP : On/Off,	➢ RTSP : On/Off, ➢ IGMP : On/Off,	➢ Network inf., service state, ➢ All services off, ➢ Reset exchange file, ➢ Server start & stop.

Some examples of services provided by Did@VDI++ :

Video pattern of 8 channels, duration: 1h30 each.



Set of Practicals downloaded from the server.



Training activities & MCQ with self-corrections& automatic assessments.

ETR370B, Set-Top-Box / Television set :

- Complete set enabling the study of the Video operation on « **VOD** » (Video On Demand) :
- Set-Top Box, IP/HDMI transcoder with remote control,
- 21.5" HD screen, built-in loud-speakers with HDMI input,
- HDMI leads, Power Supply.

ETR450B Did@VDI++ & network architecture development workstation :

ETR450000, 6 Units Data processing cabinet :

- Table-top or wall-mounting metal structure,
- Mixing panel with UTP, USB, HDMI crossbars,
- 2 U drawer,
- Electrical panel with differential circuit-breaker.

1 x Cisco** Switch 8 LAN ports :

- 8 LAN ports 10/100/1000 Mbps RJ45,
- Manageable,
- IGMP Snooping compatible,
- Configuration backup & restoring.

1 x Cisco** Router 4 LAN ports, 1 WAN port, Wifi :

- 4 LAN ports 10/100/1000 Mbps RJ45,
- 1 WAN port, SPI fire break,
- IGMP Snooping compatible,
- WIFI bridge,
- IP addressing : DHCP (customer & server)
- Configuration backup & restoring.

ETR441B Set-Top-Box :

- Complet set enabling the study of the Video operation on « **VOD** » (Video On Deman),
- Set-Top Box with remote control, IP/HDMI transcoder.

ETR450B, Did@VDI++ development workstation & network architecture, following :

ETR451000, Did@VDI+ SERVER, student :

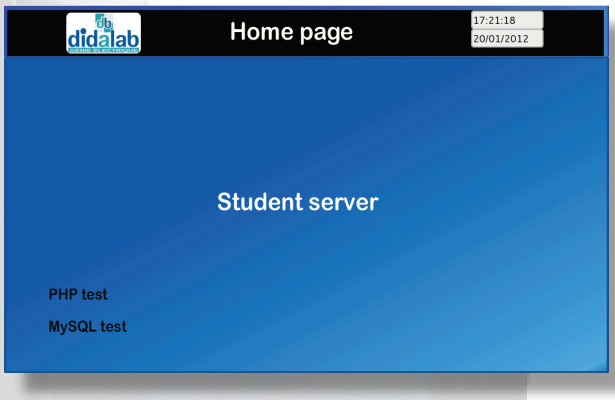
Hardware functions :

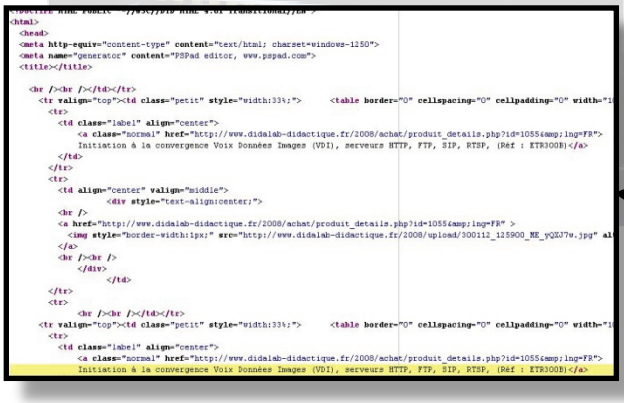
- Core2 µATX MB 1xGLAN, 4xSATA, 2*DDR3, 3 USB,
- Intel Dual Core Pentium E5700 CPU 3.0GHz 2M 65W,
- 1U Active Blower w/Heatsink, 4GB DDR3 RAM, mechanical DD 500 GO,
- The main board connection is on the side , this particularity facilitates the wiring.

Software functions :

Linux working system with a set of preconfigured free programs : SSH Server, FTP server, HTTP server, IPBX server, Video-surveillance server, IPTV Server ...

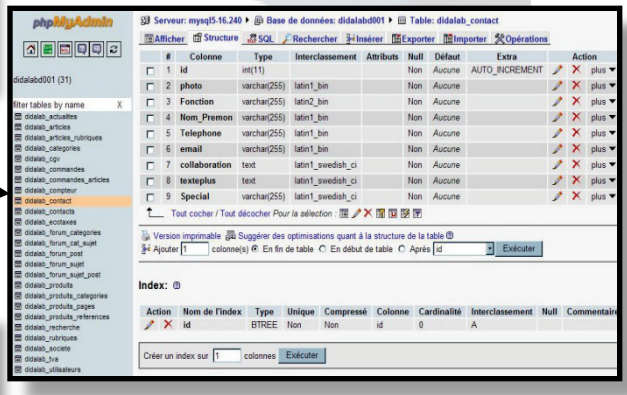
Example of a welcome screen for student server, available on HTML.





Example of HTML application development

Example of basis MySQL operation



Example of PHP development

ETR460B, " Did@VDI++ convergence development " student pack, including :

ETR360000 : Vesa Mini PC computer Linux provided with Open Office,
Quad-Core 1.5 GHz /2.3 GHz turbo, 1 LAN, Hard disk 500 GB, Ram 4 GB DDR4, Socket Mini PCI, external Mains Power Supply provided,
Audio/video peripherals control programs installed.
Free programs installed :

- **Nmap**** : State of TCP & UDP services.
- **FTP Customer **** : FTP control lines file transfer,
- **FileZilla**** : FTP file transfer through graphic interfac
- **Iceweasel**** : Internet explorer,
- **Ekiga**** : PC program telephone,
- **Ngrep**** : TCP UDP packets analysis,
- **VLC**** : Multimedia reader,
- **Wireshark**** : Network protocole analysis,

External connection : 2 USB, SPDIF, , HDMI, VGA, DC-IN, Jack.
21,5 inches LCD screen, 1680x1050 full HD, HDMI input, loud-speakers, built-in Webcam.
Keyboard, mouse,
Audio-phonic micro headphone,

ETR350B, Pack « IP Telephony, videoconference » :

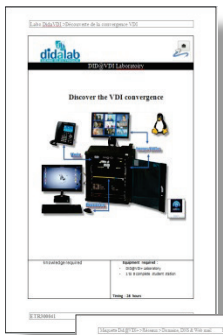
ETR350000 : Videoconference telephone

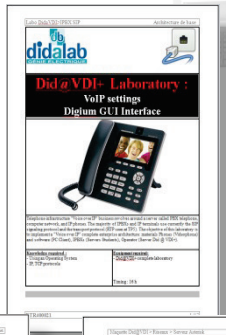
- LCD 4,3 inches color screen, CMOS 1,3 mega pixels video camera, codec video H.264, H.263 compatible,
- Control of 6 SIP direct lines, 2 Ethernet RJ45 ports,10 / 100 Mbps, Wifi connection,
- Six-customers conference, hand-free Full Duplex with echo withdrawal,
- Broadbandsound, Son large bande, 3,5 mm headphone jack,
- 1 USB 2.0 port + SD / MMC & SDHC card reader, HDMI output,
- Lift-free line connection, call number & name display,
- Off-image, call transfer, do not disturb, hold, double call.

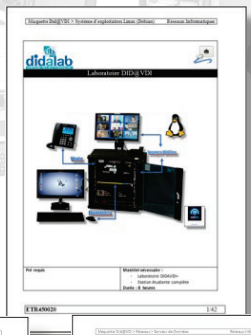
LRT Manuals of practicals, topics :

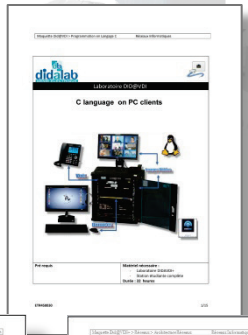
Did@VDI++ laboratory is accompanied by a rich educational file. Indeed a very large number of documents are provided, technical files, reference manual and ten manuals of practical works.
Topics are progressive, exploring the convergence VDI, VoIP settings by Digium GUI service, creation by command line, etc. ..
PWs provided totaled 280 hours of practical works in pairs or 2,240 hours for laboratory 8 student pairs.
See the list below, check all the details on our website : **http://didalab.fr**

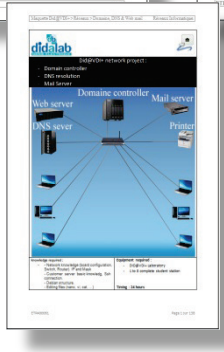
Désignations, *(2011 ISCED level)*	**PWs**	**Désignations, *(2011 ISCED level)***	**PWs**
ETR340041 : Discovery of VDI convergence, *(III, IV)*	**28 h**	**ETR400061 : Domain controller (DNS, mail server), *(VI, VII)***	**24 h**
PW1 FTP Protocol	4 h	PW1 Domain server	8 h
PW2 HTTP Protocol	4 h	PW2 DNS Server, HTTP protocol	8 h
PW3 RTSP and IGMP video service protocols	4 h	PW3 Mail server	8 h
PW4 Voice protocol, phone functions	4 h		
PW5 Voice, SIP and RTP Protocols.	4 h		
PW6 ARP protocol	4 h		
PW7 DHCP protocol	4 h		
ETR400021 : VoIP settings via Digium GUI, *(V, VI)*	**32 h**	**ETR400071 : VoIP server writing in command line, *(VI, VII)***	**40 h**
PW1 IPBX VoIP calls, Trunk SIP voice interconnection	16 h	PW1 Asterisk configuration : SIP account management, calls, voicemail	12 h
PW2 IPBX Phone functions	8 h	PW2 Trunk configuration : remote call Asterisk inter-server.	8 h
PW 3 IPBX voice mail and voice menus	8 h	PW3 Complete scenario of VoIP server.	12 h
		PW4 Implementation of a control web interface	8 h
ETR400031 : Imaging & Video, *(V, VI)*	**24 h**	**ETR400081 : Streaming server & VOD, *(VI, VII)***	**24 h**
PW1 IPTV ,Web Video service and clients Set Top Boxes	8 h	PW1 Handling VLC software	4 h
PW2 IPTV, Digital VCR and customer service Media center	8 h	PW2 Encoding, distribution & streaming reception (GUI)	4 h
PW3 CCTV Service	8 h	PW3 Encoding, distribution & streaming reception (commande line)	4 h
		PW4 Video on Demand Service	4 h
		PW5 Streaming & VOD Integration in PHP server.	8 h
ETR400041 : Web development (on student server), *(V, VI)*	**40 h**	**ETR450021 : Linux exploitation System (Debian) , *(V, VI)***	**8 h**
PW1 HTML	8 h	PW1 Linux discovery	2 h
PW2 PHP	8 h	PW2 Files	2 h
PW3 Creating SQL Databases/Tables, import & export rights management	8 h	PW3 Process	2 h
PW4 Implementation of a WEBsite (HTML/PHP & SQL)	16 h	PW4 Scripts	2 h
ETR400051 : Network architectures, *(V, VI)*	**28 h**	**ETR450031 : C language on PC clients, *(V, VI)***	**32 h**
PW1 Switch discovery	4 h	PW1 GCC compiler	8 h
PW2 VLANs (1 & 2 level)	8 h	PW2 Data type	4 h
PW3 Router discovery	4 h	PW3 Inputs/Outputs	4 h
PW4 Static routing	4 h	PW4 Tables/Structures	4 h
PW5 Dynamic Routing (RIP)	8 h	PW5 Network programming (sockets)	12 h
Total =	**152 h**	**Total =**	**128 h**

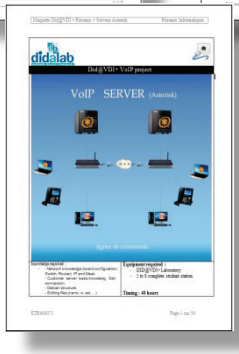


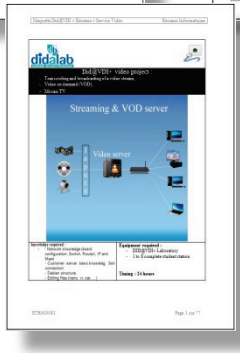


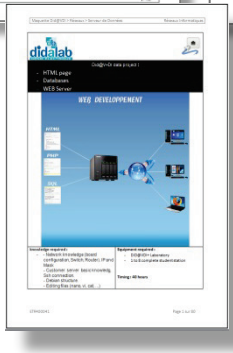


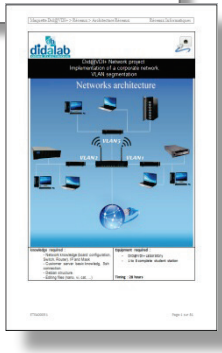












STANDARD CONFIGURATION :

ETR400LRT : SELF-OPERATED LABORATORY (from 1 to 8 workstations), DEVELOPMENT OF THE VDI CONVERGENCE & NETWORK ARCHITECTURE

Reference	Designation	Qty
ETR440B	**« FAI » Pack for Did@VDI++ self-operated laboratory, including :**	**1**
ETR440000	8 workstations + STB pre-fitted cabinet, 12Units, locking sides & door, including : 1 shelf with 1 8 ports switch, 1 Cisco 4 ports router, Wifi bridge, 17 UTP leads, 1 mixing panel, marked off & equipped of UTP crossbars, 1 sliding drawer, 2Units, rackable for telephone, remote control & leads storage, 1 connection block with 4+6 sockets & differential circuit-breaker, On/off, 3 blank front panels, black colour, 1 Unit.	1
ETR441000	Did@VDI+ network emulator, SIP, HTTP, FTP server, leads, UTP, IHM drop-down menu	1
ETR440400	Mixing panel, bypass start, marked off by colour codes, with crossbars.	1
ETR350000	Telephone/ videophone set, IP & color graphic screen, Power Supply & UTP leads, 5m & 2m	2
ETR340200	Set of accessories : 10 UTP leads, 100 Ohms, 6th class, 50 cm long,	2
ETR340021	Reference document "networks"	1
ETR300041	Discover the VDI convergence	1
ETR400021	VoIP settings via Digium GUI	1
ETR400031	Imaging & Video	1
ETR400041	Web Development (on students server)	1
ETR400051	Network Architectures	1
ETR400061	Domain controller (DNS, Mail Server)	1
ETR400071	VoIP Server writing in command line	1
ETR400081	Streaming server and VOD	1
ETR450021	Linux system (Debian)	1
ETR450031	C language programming (on clients PC)	1
ETR370B	**« IMAGE VIDEO TRANSPORT via TCP/IP » Pack, including :**	**1**
ETR370000	Set-top Box adapter, HTTP/FTP server interface to HDMI, remote control, 21.5" HD screen, Qwerty USB keyboard, UTP & HDMI leads.	1
ETR450B	**Did@VDI++ & network architecture development workstation, including :**	**1 à 8**
ETR45000	Data processing cabinet, 6 Units, table-top, locking glass door, equipped of : 1 shelf with 4 LAN port router, with 1 WAN, Wifi port, 8 ports Cisco Switch, UTP leads, 1 mixing panel, marked off & equipped of UTP, USB, HDMI crossbars, 1 sliding storage drawer, 2Units, 1 connection block with 4+6 sockets & differential circuit-breaker, On/Off.	1
ETR451000	Student server with connection leads: UTP, USB & DVI/HDMI.	1
ETR451100	Set Top Box with Power Supply, remote control, Leads : 1 UTP, 1 USB, 1 HDMI, 1 Qwerty keyboard	1
ETR460B	**Student pack " VDI convergence development " including :**	**1 à 8**
ETR460000	Vesa Mini PC computer with Linux, Quad-Core 1.5 GHz /2.3 GHz turbo, 1 LAN, Hard disk 500 GB, Ram 4 GB DDR4, Socket Mini PCI, Power Supply, Audio / peripheral control programs provided. 1 HD HDMI, 1680*1050, 22 inches screen, loud-speakers, built-in Webcam, 1 set of leads : UTP 5m & 2 m long, HDMI, HDMI/DVI adapter, 1 audio-phonic microphone & headphone.	1
ETR350B	**Basic pack " VOICE TELEPHONY WORKBENCH " including :**	**1 à 8**
ETR350000	Telephone / videophone set with IP & colour graphic screen (SIP protocole), Power Supply & UTP leads, 5m & 2m long.	1

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GÉNIE ÉLECTRIQUE

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