The emutel logo consists of a red square in the top-left corner with a white quarter-circle cutout in its bottom-right corner. To the right of this graphic, the word "emutel" is written in a white, lowercase, sans-serif font, followed by a trademark symbol (TM).

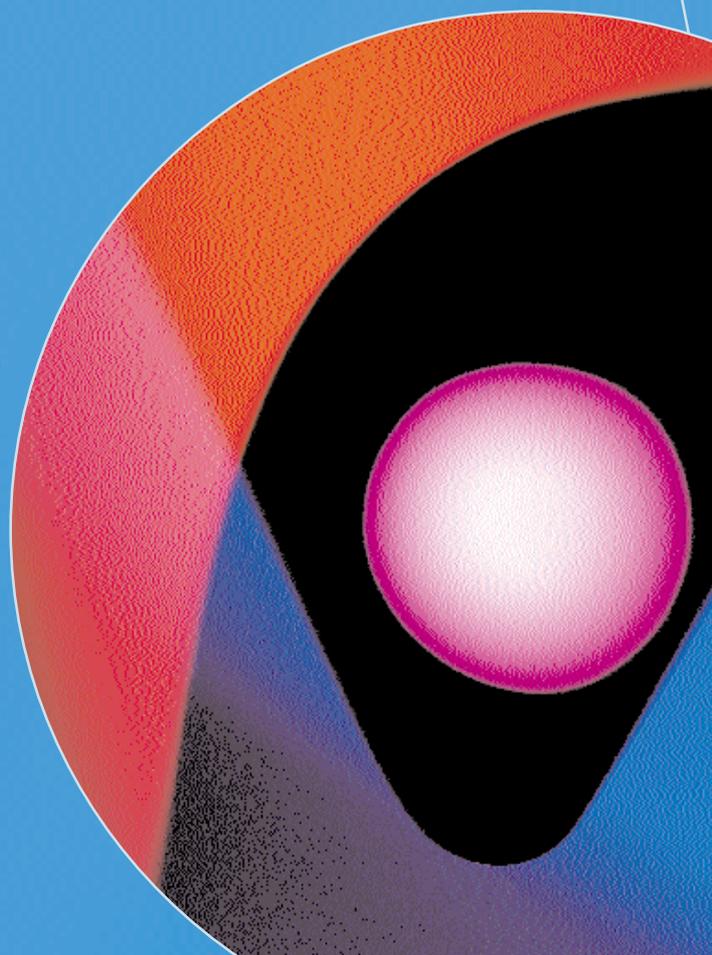
emutel™

# Virtuoso

## V5.1/V5.2 Local Exchange Emulator

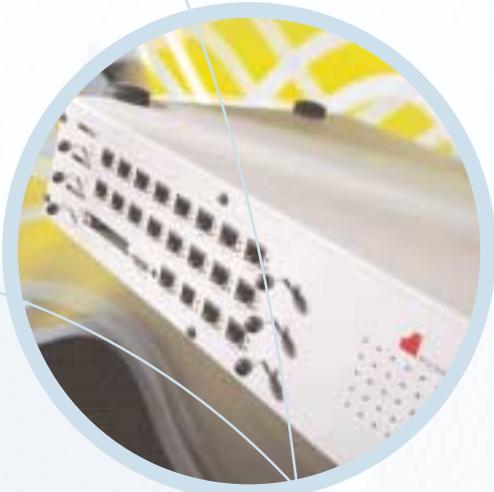
By simulating the operation of the Local Exchange, emutel™|Virtuoso provides up to 8 E1 (2.048Mbps) interfaces which can be configured with multiple V5.1 and V5.2 interfaces, allowing multiple access networks to be connected. emutel™|Virtuoso also has the option of additional PRI, BRI and analog cards which can be used for call generation and speech path verification.

Almost every feature of emutel™|Virtuoso can be customised, for example, telephone number, layer 3 address, timeslot (V5.1 only), signalling channel (V5.2 only), Link ID, Protection Protocol Group 1+2, Variant and Interface ID. Special numbers activate network conditions such as User Busy or Call Rejected. emutel™|Virtuoso supports DTMF detection across the V5 systems.



# emutel™

# Virtuoso



8 E1 2.048 Mbps links. Simulation of V5.1 and V5.2 LE with up to 8 E1 interfaces.

Configuration is extensive but simple using a windows application (GUI).

Helpful LEDs show the status of each interface at a glance.

The Windows application shows the status of each of the V5, PRI, BRI and PSTN ports.

emutel™|Virtuoso can emulate different variants of ISDN and PSTN by changing the PCMCIA personality card at the front.

Depending on the network type a range of ISDN supplementary services are supported for telephones and PBXs.

emutel™|Virtuoso's weight, size and universal power supply make it a convenient portable network for exhibitions, production line testing, development and on-site customer demonstrations.

emutel™|Virtuoso is fully compliant with ETSI standards ETS 300324 and ETS 300 347. The unit provides full simulation of a V5 switch - generates dial tone, DTMF detection, switches call to and from access network, connects the voice path, etc.

emutel™|Virtuoso is extremely easy to use with indicator LEDs showing at a glance what each E1 V5 interface is doing and a windows application (GUI) program displaying status information for each of the ports on the access network. The windows application will also display the status of each link connected to the emutel™|Virtuoso.

Included in the windows application (GUI) is a simple to use configuration tool to setup the V5 LE ensuring compatibility with the connecting access network. Protocol analysis is provided which can display protocol analyser information for the V5 interface.

emutel™|Virtuoso is a truly international product. By plugging in personality cards the system can accurately emulate ISDN variants across the V5 link in a range of different countries. Cards available at present are: Euro-ISDN (Europe) and NTT (Japan). National PSTN mappings may be developed on request.

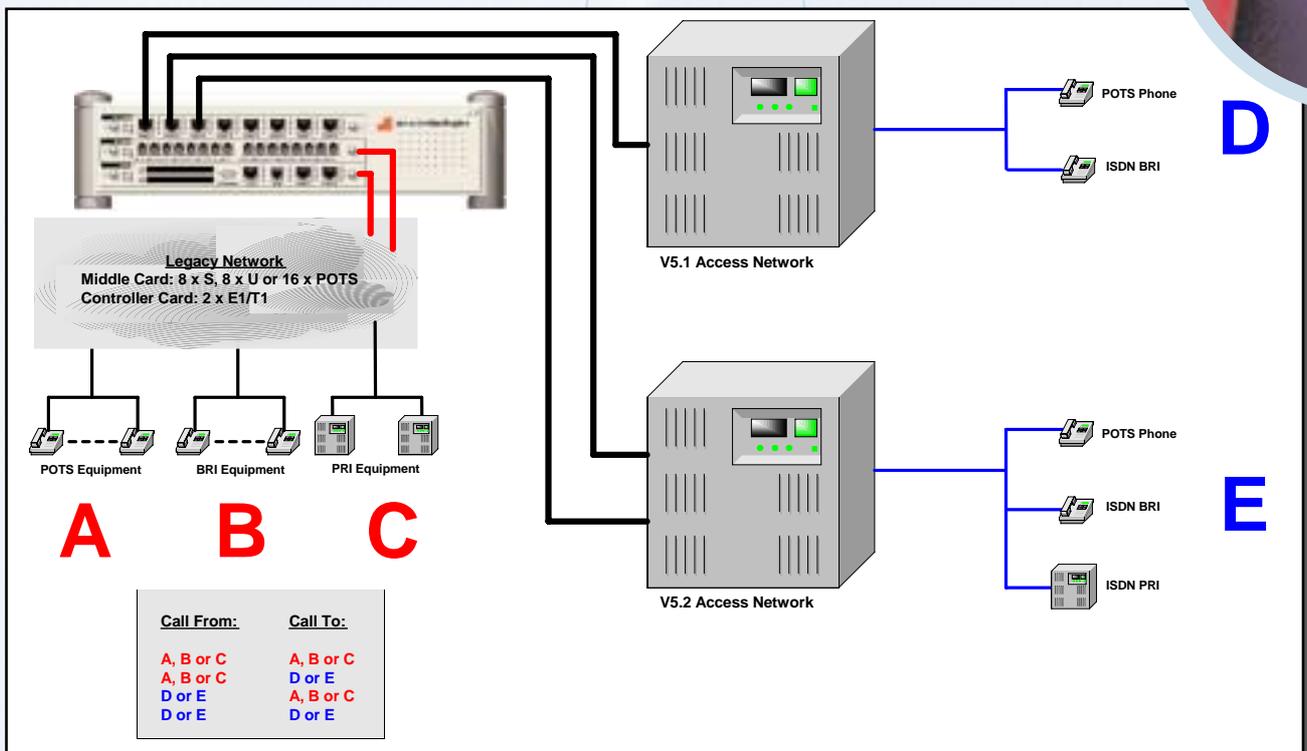
# emutel™ | Virtuoso

Use emutel™|Virtuoso to develop, test, demonstrate:

Wireless Local Loops  
 V5 Gateways  
 VoDSL Gateways  
 V5 Access Networks  
 Voice over IP  
 Satellite  
 Modems

## Features:

- \* Test using V5.1, V5.2, ISDN BRI, ISDN PRI and analog
- \* Supports 1 to 8 V5 interfaces in any V5.1/V5.2 combination
- \* Switch traffic between interfaces & to and from the access network
- \* Protocol analyzer shows messages on all V5 and ISDN interfaces
- \* Control locally or via Ethernet
- \* Configure the unit quickly to match any access network
- \* Create and save test configurations for later use
- \* Examine start up between AN and LE using the analyser
- \* Verify accelerated unblocking procedure and standard unblocking
- \* Verify ISDN call control and PSTN call control
- \* Verify Protection protocol group 1 and group 2 (V5.2 only)
- \* Assign C-channel values (V5.2 only)
- \* Assign Logical and standby timeslots (V5.2 only)
- \* Analyser will provide traces of verification in ASCII and Binary format
- \* Change ISDN and PSTN telephone numbers
- \* Enable calling from one V5 interface to another V5 interface connected to the emutel™|Virtuoso
- \* View DTMF digits detected in the analyser trace
- \* Switch calls for bulk call tests when a bulk call generator is connected to the access network
- \* Attach a normal V5 access network to verify to a potential customer the capability of the V5 gateway
- \* User interface runs under Windows
- \* Flash memory to download new software versions



# emutel™ | Virtuoso

## Specification:

Configuration (user-defined)	System controller with optional 2xE1 module <b>V5 controller</b> with up to 8xE1 links enabled - each link is bought separately and is upgradeable using magic code from arca. The V5 controller can support V5.1 and V5.2 simultaneously <b>Optional expansion card</b> 8 BRI S, 8 BRI U [2B1Q] or 16 analogue telephone module
BRI Interface Power	40V, 1W Normal and Restricted on S 88V, 3W Normal and Sealing on U
Analogue Telephone Interface	-48V line feed, REN4, RJ11 (May be supplied with RJ11 - BT master socket adaptors if required.)
LAN	Ethernet 10BaseT, RJ45
Internal Modem	V.34 modem (optional), RJ11
Semi-Permanent Connection B Channels	Semi-permanent/nailed-up connection on BRI/PRI B channels 2 per BRI, 6-30 per PRI E1
Display Indicators	P (physical), D (datalink), and B (B channel) per interface
Protocol Analyser	Layer 1, 2, and 3 can be analysed for both ISDN and X.25: Configuration for all networks irrespective of networks simulated
Network Variants	ITU, Euro-ISDN* (Europe) and NTT (Japan) - supported by PCMCIA plug-in personality cards (*supplied as standard)
D Channel Packet	X.25 on BRI1/BRI2, 100 logical calls in DCE mode
User Interface	Windows application or VT100 Terminal (V.24 Interface DB9 connection)
Directory Numbering BRI	Two numbers per interface normal, ten numbers per interface if using DDI/MSN and one number per interface for auxiliary working
Directory Numbering PRI	Thirty numbers per interface normal, one hundred numbers per interface if using DDI/MSN and one number per interface for auxiliary working
ISDN Supplementary Service Support	Various depending on network simulated <b>Euro-ISDN</b> - Caller Line Identification, Multi Sub Numbering, Subaddressing, User to User Signalling, Terminal portability, Connected Party Number, Advice of Charge/Billing, Call Waiting, Call Hold, Explicit Call Transfer, Call Diversion, Malicious Call Identification, Three Party Calling <b>Others</b> - available on request.
Test Tones	Dial, Busy, Error, Ringing, and Selected Tones 300 Hz-3400 Hz, +3dBm to -26dBm
Power Requirements	90-260 Vac, 100W
Environmental	0-50oC, 10-80% Humidity (Non Condensing)
Weight	5 Kg
Size	12cm(h) x 48cm(w) x 38cm(d) (desktop) 9cm(h) x 48cm(w) x 39cm(d) (19" rack)
Warranty	<b>emutel™ Virtuoso</b> is supplied with one year's product warranty and free technical support for product life



# emutel™

# Virtuoso



The V5 analyser provides full analysis of all the active C-channels in both the direction of the LE and the AN. V5 and ISDN messages are displayed in the analyser window with decoding for Layer 1, Layer 2, Layer 3 and detected DTMF digits. Messages can be displayed either as full, identified or hexadecimal format and the use of protocol filters allows you to filter out unwanted messages.



A separate window is used on the emutel rack application to view all the configured ports and links on each V5 interface. The rack displays at a glance the current configuration of the selected interface, port status as well as enabling you to block/unblock and request information about any port or link. The graphical LED's show if all the protocols specified are operational, if a Link is operational or if a call is in progress on a particular port. The rack application also displays each link and port layer 3 address.

## Unit Options: emutel™|Virtuoso

The following configurations are available on **emutel™|Virtuoso**

- System controller** (no active interfaces) in desktop case PO23
- System controller** (no active interfaces) in rackmount case PO23/RACK
- V5.1 LE simulator** PO23/V5.1  
Supplied with system controller and V5 controller
- V5.2 LE simulator** PO23/V5.2  
Supplied with system controller and V5 controller
- V5.1/V5.2 LE simulator** PO23/V5.1/2  
Supplied with system controller and V5 controller
- Each link** (maximum 8 links per Virtuoso): PO23/link

### Optional upgrades for system controller:

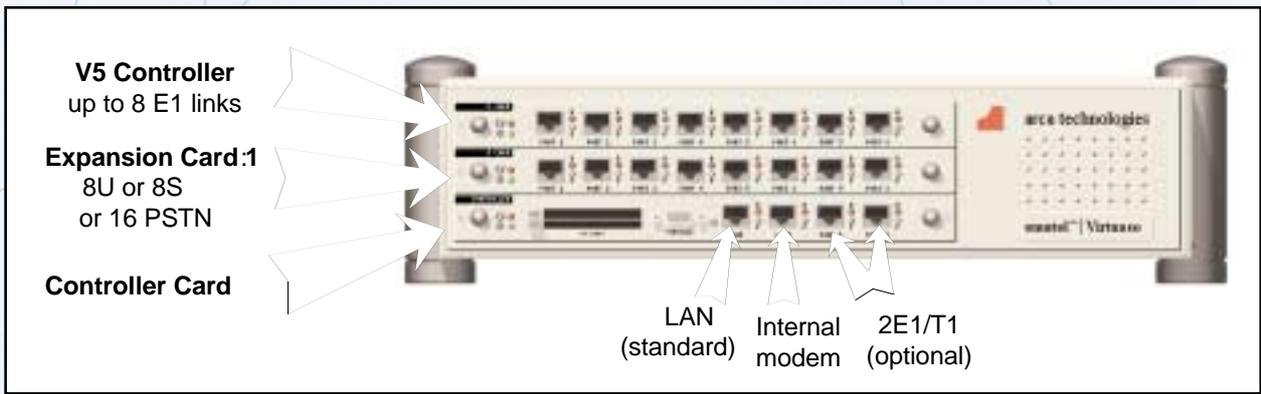
- PRI Upgrade for system controller** (2xE1) PO23/2ET

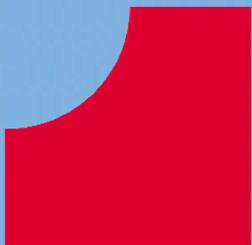
### Additional expansion cards (maximum 1 card per unit):

- BRI option** (8xBRI U interface) PO23/8U
- BRI option** (8xBRI S interface) PO23/8S
- Analogue option** (16xAnalogue interface) PO23/16A

- emutel™|Virtuoso Internal Modem** PO23/MOD
- emutel™|Virtuoso NTT Support Card** PO23/NTT

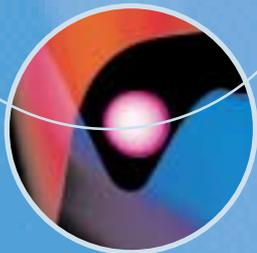
\*Euro-ISDN support supplied as standard  
\***emutel™|Virtuoso** Protocol Analyzer supplied as standard





# arca|technologies

Price and availability of emutel™|Virtuoso can be requested by contacting the arca technologies sales team.



arca technologies - a world leader in emulation since 1993. Our product portfolio includes the emutel™ range of ISDN PRI, BRI and analogue Central Office simulators, emutel™|Harmony VoIP and TDM Performance Tester, emutel™|Maestro xDSL simulator, emutel™|Virtuoso V5.1 and V5.2 simulator, arcaplex|Horizon ISDN multiplexer and arcareach|Sigma S-bus extender.

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