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PVx: WTL Softswitch

Simon Pearson,
Business Development Director
World Telecom Labs

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About World Telecom Labs

- Pioneer in VoIP for carriers (since 1997)
- Extensive installed base in Europe, Africa & Middle East
- Series of Industry Firsts & Patents
- Specialists in carrier solutions incl. SS7, satellite, Pre-Paid
- Loyal following in competitive carrier market
- 10+ years Audiocodes partner

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Reference Customers

- Vodafone Italia
- Vizada (ex-Telenor Satellite)
- Mobilkom Group
- Maroc Telecom
- COLT (Netherlands)
- Cable & Wireless
- ABCom (leading ISP in Albania)

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WTL Product Benefits

- NOP (Network Optimisation Protocol)
  - ✓ extra VoIP compression with no loss of voice quality
- Soft IVR:
  - ✓ ‘Hardware-less’ IVR for VoIP
- Built-in SBC (Session Border Controller)
- DMTP3:
  - ✓ Distributed MTP3 for resilient SS7 signalling
- Real time, on switch balance checking
- CDR generation & balance checking distributed – no separate Billing server

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WTL Product Benefits 2

- Many rating tricks (including calling zone)
- Intelligent callback (recover MSRN)
- RADIUS Server: Allows Pre-Paid voice and data
- LNP: Ported number database for routing & rating
- Emergency Number support: location table for non-geographic numbers
- eShop support: self-provisioning and online payments
- APIs available to control all aspects of switch

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WTL Technology Benefits

- Patented NOP VoIP bandwidth saving
- Own SS7 stack (= greater control)
- Own SIP stack (based on open source)
- Own H323 stack (= greater control)
- Sophisticated Least Cost Routing
  - ✓ Time of day, day of week, type of service, etc
- Call routing is distributed – no central database/routing server
- RADIUS server support (allows Pre-Paid data services)
- All applications are ‘media agnostic’

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PVx & Soft IVR

- PVx is WTL's IP-only platform (SIP & H323)
- High reliability platform [Solaris 10]
- Fully featured SoftSwitch
- Soft IVR real-time Pre-Paid option
- 3 models (small <30 call unit to 1000 call SoftSwitch)
- Scalable by license keys, stackable
- Busy Hour Call Completion 50K per PVx (400K if stacked)

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SoftSwitching from WTL

- All standard telecom functions supported:
  - ✓ Switching, routing, call authentication (multiple methods), rating, CDR generation, DTMF, announcements, tones, Fax
- Secure SIP registration for customers
- SBC functions
- Good SIP trunk delivery platform
- Support for SIP personal numbers
- Codec translation
- Flexible Phone Number <-> URL <-> IP Address mappings (allows inbound & outbound calling)

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WTL SIP Support

- SIP ‘Digest’ authentication allows direct connect SIP users (Broadband telephony applications)
- All calls (VoIP or TDM) treated the same in IPNx & PVx
- … therefore inherit all applications (Pre-Paid, Callback, LCR, CDR generation etc)
- SIP trace facility built-in

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WTL SIP Support 2

- Extensive RFC support
- SIP Redirect & Refer supported
- SIP-I for peer-to-peer interconnect
- LNP (Local Number Portability)
- Load Sharing between platforms
- Kamailio (former OpenSER) support

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SBC Support – Security 1

- '**Anti-spoofing' techniques**: use source IP address
- **Flood attack prevention**: limit on SIP sessions per IP address
- **NAT traversal**: use caller's source IP
- **2 levels of IP filtering**: allow only known/trusted IP addresses into network
- **DOS attacks**: rejected with minimal resource utilisation

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SBC Support – Security 2

- **CLI Spoofing**: double level of verification
- **Intelligent access lists**
- **IP address and port translation**: private-to-public IP network & port address translation
- **Topology hiding**: all ‘via lines’ removed
- **Traffic separation**: 2 Ethernets separates administration and user traffic

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SBC Support – Security 3

- **SIP signaling attacks**: 2 level IP filtering
- **Blacklisting of endpoints**: IP address / CLIs that are not allowed to call
- **Malformed SIP messages**: dealt with & discarded
- **Alarms**: recorded in switch log files

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WTL SBC Feature List 1

•Firewall Traversal	•RTP termination and regeneration	•Deep packet inspection
•Voice codec conversion*	•CDR generation	•Qos Marking, DiffServe support
•NAT Traversal	•SSL tunnels	•H.245 tunnelling support
•Built-in firewall	•G.711 / T.38 Fax relay for SIP and H.323	•SIP transaction rate limiting (limit number of SIP Invites)
•Topology hiding	•H.323 V2 & 3 (+ partial V4 support)	•H.225 RAS messages for alternative gatekeeper functionality

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WTL SBC Feature List 2

•Authenticate VoIP calls and callers	•RADIUS Support	•Detect and drop malformed packets
•IP Address Resolution/Management	•H.323 Fast Start & Slow Start	•Source and destination trunk group support
•Session Admission Control	•Simultaneous peering with multiple gatekeepers and gateways	•Per trunk bandwidth RTP policing
•SIP to H.323 conversion	•Digit matching/manipulation	•H.323 ToS support
•Prevention of DoS attacks		

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WTL's RADIUS Support

- WTL can be either:
  - ✓ RADIUS Server (we are the Pre-Paid app)
  - ✓ RADIUS Client (work with 3rd party Pre-Paid app)
- We have referencable examples of both

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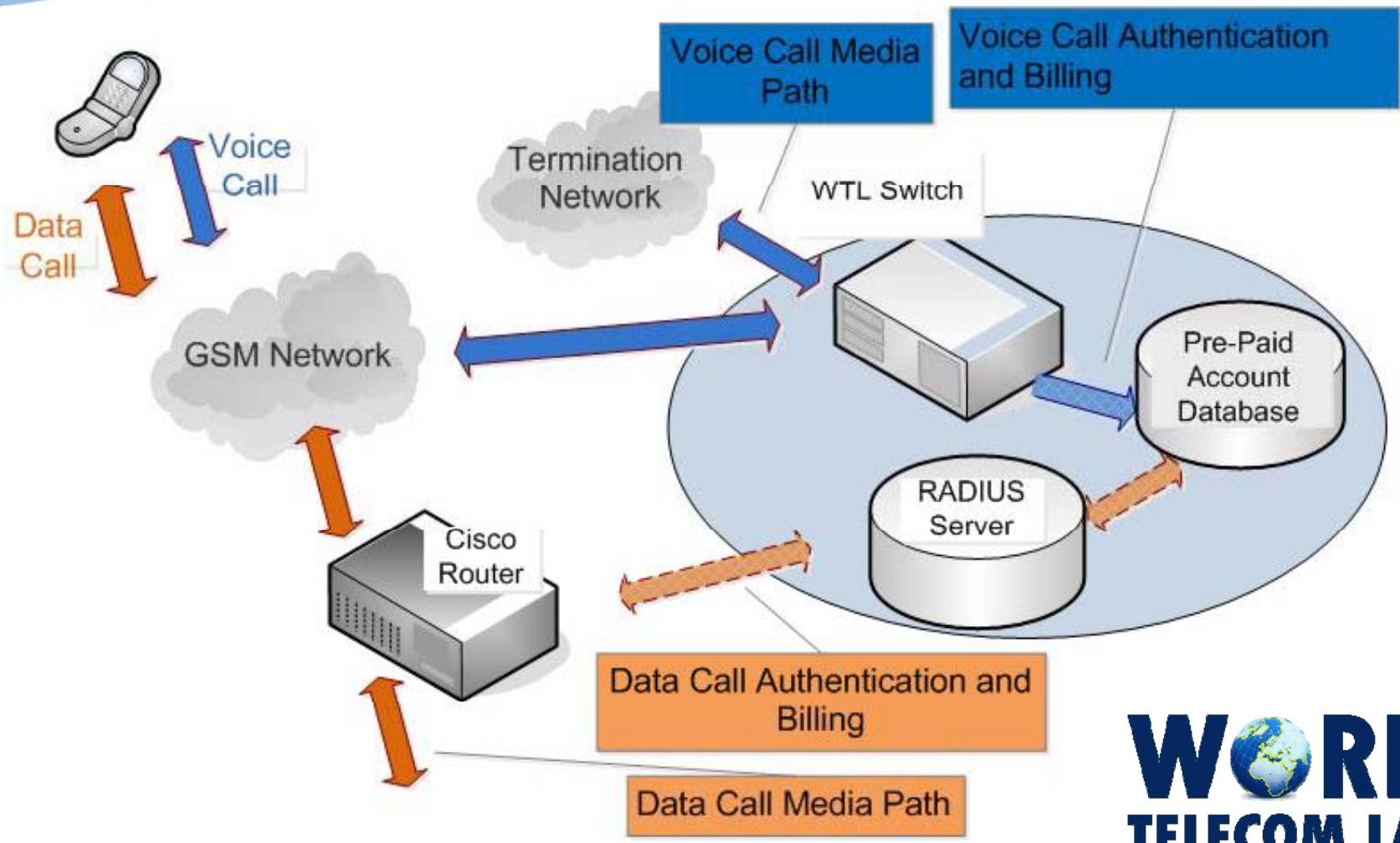
WTL As RADIUS Server



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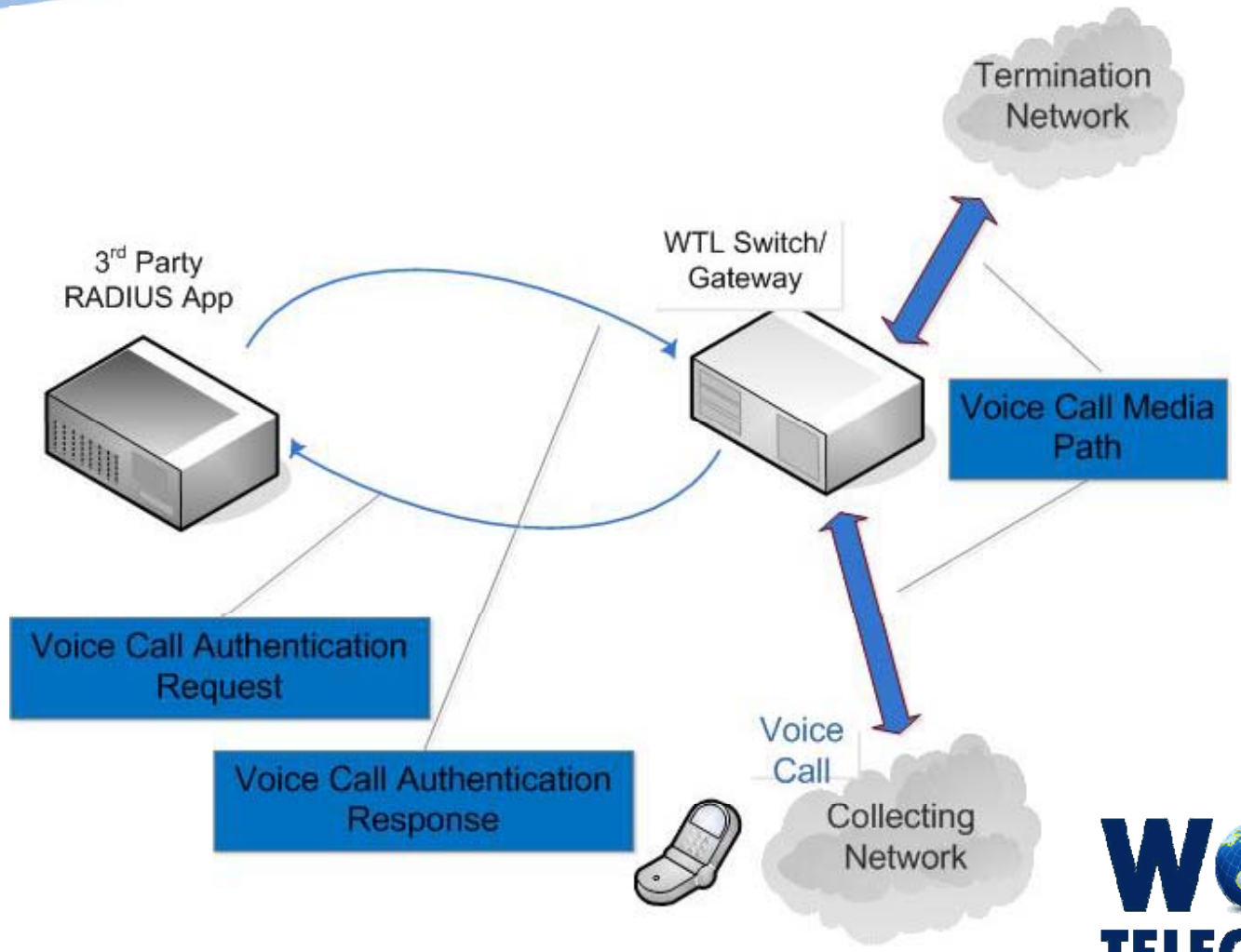
WTL RADIUS Client



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WTL RADIUS

- Available on all WTL switches
- Extra chargeable license required for Server
- Capacity-based license (No. of users per day)
- No charge for client
- V. High capacity (100s of RADIUS messages per sec)

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Management Tools

- SW Config – Web-based configuration utility
- SW Monitor - SoIP health and operation monitor
- SW Helpdesk - examination and analysis of call traffic

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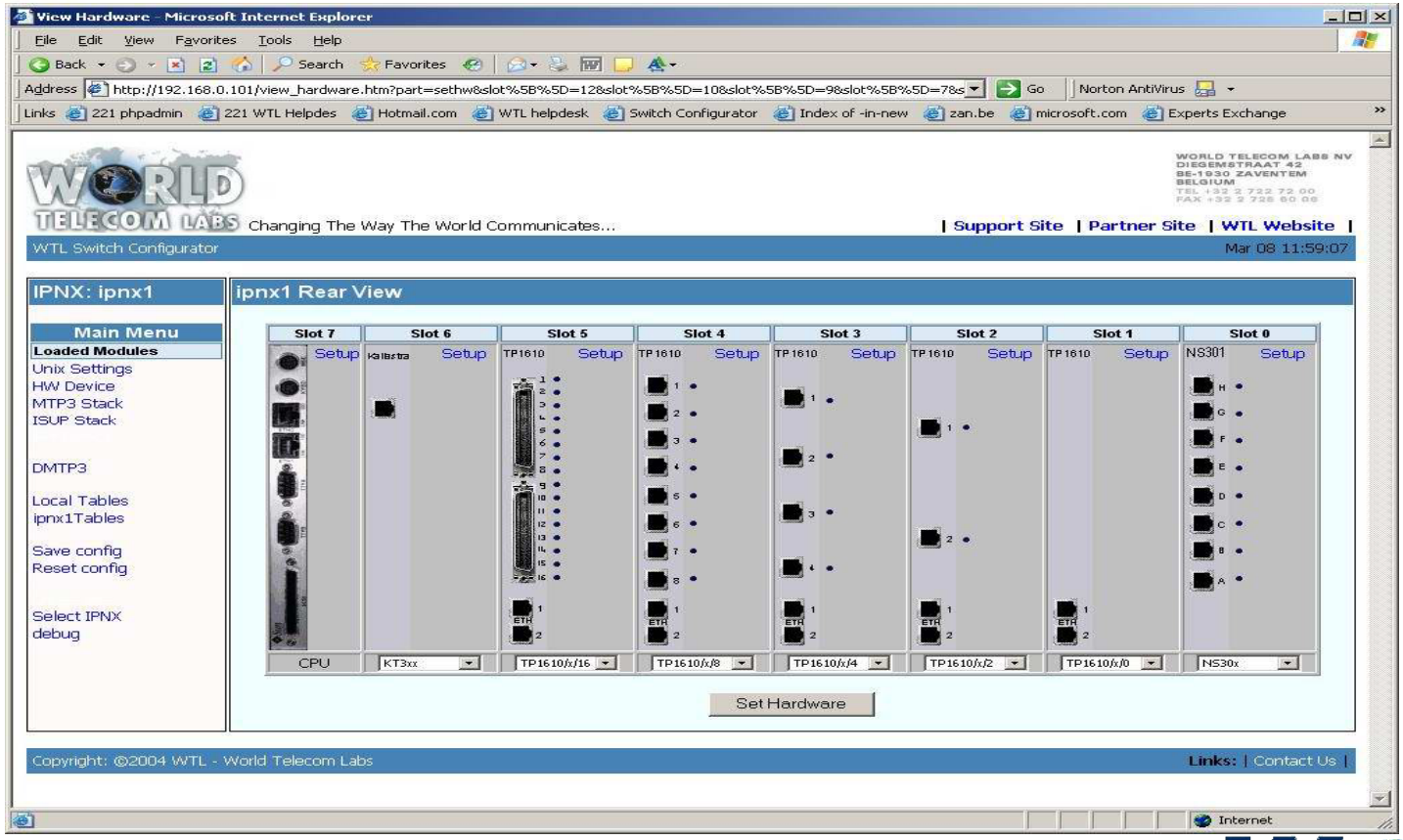
SW Config – Easy Set Up



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SW Config – Features

- Web-based
- Secure (https)
- Fully graphical, point & click
- All entries value checked
- Parameters can be changed in real time
- Supports multiple switches

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SW Config – Status Displays

Carrier Summary

Carrier	Name	Capacity	In Now ▲	Out Now	Max In	Max Out	Max Both	ACD (secs)	ASR %
25	MCI2	31	25	5	28	19	32	28	69
24	MCI1	31	24	4	29	20	32	30	65
23	BT3	31	23	4	30	18	32	30	67
22	BT2	31	19	7	29	18	32	29	70
21	BT1	31	19	4	28	19	32	29	78

- Resource Usage:

Hard Disk Usage (not updated live)

File System	Mounted On	Partition Size (Mb)	Used (Mb)	Free (Mb)	Used %	Overview
/dev/dsk/c0t0d0s0	/	2031.7	912.2	1058.6	47.0	
/dev/dsk/c0t0d0s6	/usr	4128.4	2126.9	1960.2	53.0	
/dev/dsk/c0t0d0s1	/var	385.2	246.6	100.0	72.0	
/dev/dsk/c0t0d0s4	/usr2	26046.2	12.8	25772.9	1.0	
/dev/dsk/c0t0d0s5	/usr3	5208.9	7.2	5149.6	1.0	
/dev/dsk/c0t0d0s7	/export/home	95.6	0.0	86.0	1.0	

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