



Reduced Costs & Better ROI

By using the Right Equipment

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About me

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+10 years of experience as a sysadmin & network admin
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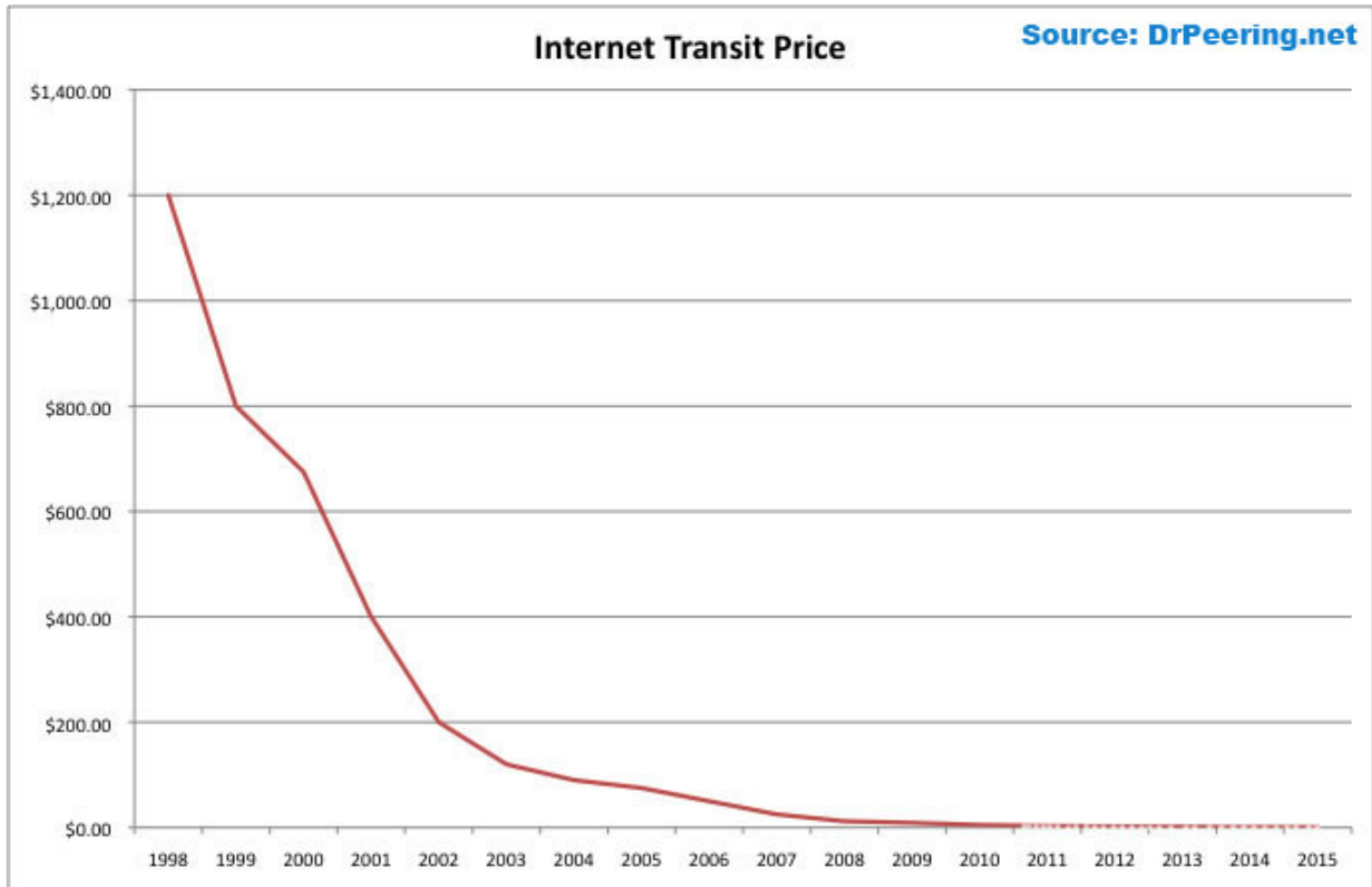
Historical transit pricing

Internet Transit Prices (1998-2014) U.S. Internet Region

Year	Internet Transit Prices (in Mbps, min commit)		% Decline
1998	\$1200	per Mbps	
1999	\$800	per Mbps	33%
2000	\$675	per Mbps	16%
2001	\$400	per Mbps	40%
2002	\$200	per Mbps	50%
2003	\$120	per Mbps	40%
2004	\$90	per Mbps	25%
2005	\$75	per Mbps	17%
2006	\$50	per Mbps	33%
2007	\$25	per Mbps	50%
2008	\$12	per Mbps	52%
2009	\$9.00	per Mbps	25%
2010	\$5.00	per Mbps	44%
2011	\$3.25	per Mbps	35%
2012	\$2.34	per Mbps	28%
2013	\$1.57	per Mbps	33%
2014	\$0.94	per Mbps	40%
2015	\$0.63	per Mbps	33%

Source: DrPeering.net

Historical transit pricing



Is there a pattern?

Customers want:

Resulting in:

More services



Increased service complexity

Better services



Increased operational costs

Lower prices



Lower margins

More bandwidth



A higher depreciation of technology

Something to think about

**EVERY
equipment
vendor will state
that their
solution will**



Decrease service complexity

Reduce operational costs

Somehow it will allow for higher sales margins

Has a lower depreciation value than other solutions



We have a new and amazing
team player



Routing the world?

They must be crazy...

How about 10G to the
„average” customer edge?



CRS210-8G-2S+IN

What was that... thing?

CPU Qualcomm Atheros 8519 400MHz

Memory DDR2 64MB

Ethernet 8x 10/100/1000 Mbit/s Gigabit Ethernet with Auto-MDI/X
SFP 2x 10G SFP+ cage (Mini-GBIC; SFP+ module not included), DDMI support.

Storage 128MB Onboard NAND with multiple OS partition support

Serial port One RJ45 serial port

Extras Reset switch; beeper; voltage and temperature monitoring,
touchscreen LCD

Power options 10-57V, 24V 0.8A PSU included, **PoE in:** 10-57V on Ether1
(802.3af/at or passive PoE)

Power consumption 13W

Case dimensions 200x144x47mm

Temperature -35C to +65C tested

OS MikroTik RouterOS v6, Level 5 license

Included CRS switch, power adapter

And what does it do?

Actually, everything.

It's a switch, a router, a traffic shaper, a layer7 firewall (and much more) or even all of them at the same time.

All ports are independent. Almost all switching technologies you can think of are supported and it can even act as multiple independent switches.

All ports can be connected in any configuration the user desires.

For wirespeed traffic switching mode (not bridging) must be used.

Anything else?

It supports all routing protocols - static, RIP, OSPF, BGP.

It supports BFD.

It supports MPLS, VPLS, BGP VPLS, Cisco BGP VPLS.

It supports VRFs.

It supports IPSec, all open source types of tunnels and a few other proprietary solutions.

It supports multi-level firewalling:

- At switch level
- At bridge level
- At VLAN level
- At tunnel level (PPPoE)
- Classic filter level
- And at Layer 7, of course

And much, much more...

Is it difficult to manage?

The screenshot displays the WinBox v3.30 interface on a MikroTik RB1000 router. The main window shows the 'Interface List' with columns for Name, Type, L2 MTU, Tx/Rx rates, and errors. Several configuration windows are open, including:

- File List:** Shows files like 'Mikrotik-25122009-2258 backup' and 'firewall.rules'.
- Address List:** Lists IP addresses under the 'Network' tab.
- Ping:** Shows a successful ping to 'seznam.cz' with a 1000ms timeout.
- Hotspot:** Displays server profiles and active hosts.
- Web Proxy:** Shows cache and connection settings.
- Route List:** Displays routing rules for destinations like 0.0.0.0 and 192.168.1.0.
- Firewall:** Shows a list of firewall rules, including '100bao', 'aim', 'aimwebo...', 'applejuice', 'ars', 'armagatron', 'battlefield...', 'battfield2', 'bcp', 'bill', 'bitconn...', 'bitconnnet', 'chikka', 'cind', 'ciscovpn', 'cns', 'counterstri...', 'cvs', 'dayofdefe...', 'dncp', 'directconn...', 'dms', 'drom3', 'edonkey', 'lasttrack', 'finger', 'freenet', 'ftp', 'gkrellm', 'gnucleusan', 'grutella', 'gobogoo', 'gopher', 'h322', 'hallife2.d...', 'hddtemp', 'hotline', 'http', 'httpstp', 'ident', 'imap', 'mesh', 'ppp', 'se', 'jabber', 'kugoo', 'live365', 'lpd', 'mohaa', 'mon-beta', 'mrmessse...', 'mute', 'napster', 'nbtns', 'npp', 'netbios', 'nntp', 'ntp', 'opernt', 'pcanywhere', 'poco', 'pop3', 'qq', 'quake-hall...', 'quake1', 'edmin', and 'rdp'.

The bottom of the screen shows the Windows taskbar with the Start button and several open applications, including WinBox and a terminal window.

I'm used to the CLI

RouterOS can be fully managed in many ways.
Actually, it's up to you to decide what you prefer.

You can manage it by:

Winbox

Browser (Webfig)

Browser-SSL

Telnet

Ssh

API

MAC address

The screenshot shows the RouterOS WebFig v5.20 configuration interface. The left sidebar contains a navigation menu with options like Quick Set, Interfaces, Wireless, Bridge, PPP, Mesh, IP, MPLS, Routing, System, Queues, Files, Log, Radius, New Terminal, Tools, Make Supout.nif, Undo, Redo, Hide Menu, Hide Passwords, Safe Mode, Design Skin, Manual, WinBox, Graphs, End-User License, and Logout. The main content area is titled 'WebFig v5.20' and 'Quick Set'. It is divided into several sections: 'Wireless' configuration, 'Configuration' (Mode: Router/Bridge), 'WAN' (Address Acquisition: Static/DHCP/PPPoE, WLAN IP Address, Gateway, MAC Address), 'LAN/WLAN' (LAN IP Address, DHCP Server, NAT), and 'System' (Router Identity, Password, Confirm Password, Upgrade). The 'Wireless' section is currently active, showing settings for SSID (MikroTik), Frequency (2412 MHz), Band (2GHz-B/G/N), Channel Width (20/40MHz HT Above), Country (no_country_set), MAC Address (D4:CA:6D:30:B9:2B), Use ACL (unchecked), Security (WPA/WPA2), Encryption (aes ccm/kip), and Pre-Shared Key. Below the 'Wireless' section is a table for 'Wireless Clients' with columns for MAC Address, In ACL, Last IP, Uptime, and Sig Str.

Or you can do it even from your phone.

How is it licensed?

Simple, you get everything
once you buy it.

Where are we at now?

2x 10G ports

8x 1G ethernet ports

1x console port

1x POE

Fully licensed for EVERYTHING

Fully managed, at customer premises

Fully compatible with my existing infrastructure

Ready to serve customers' demand and meet his expectations at reduced costs

So, how is it priced?

Get ready for this...

229\$

no, I didn't miss any trailing zeroes...

10G to your customer today
with a high ROI.

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