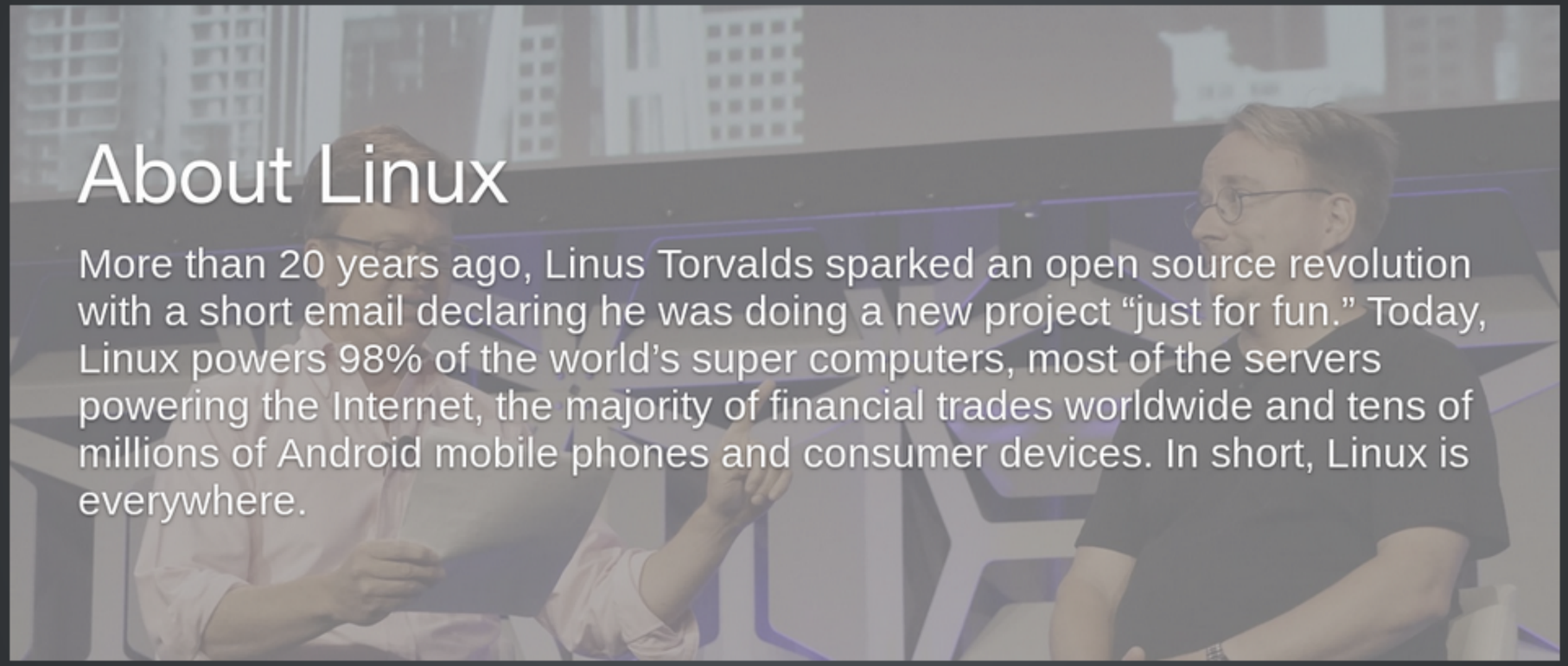
Why Supercomputers use Linux ?

Tehran SFD 2016

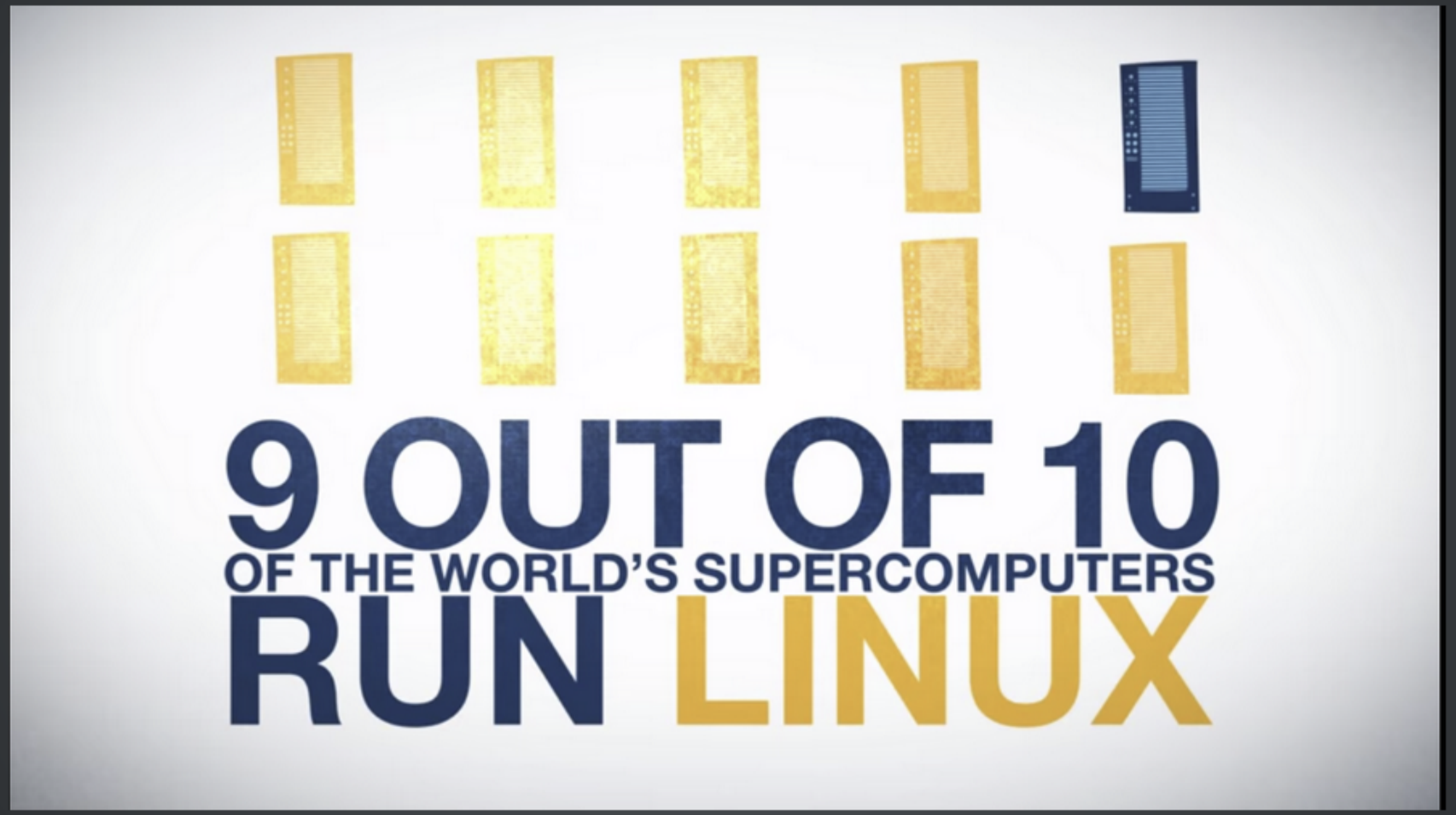
Vahid Alamfard

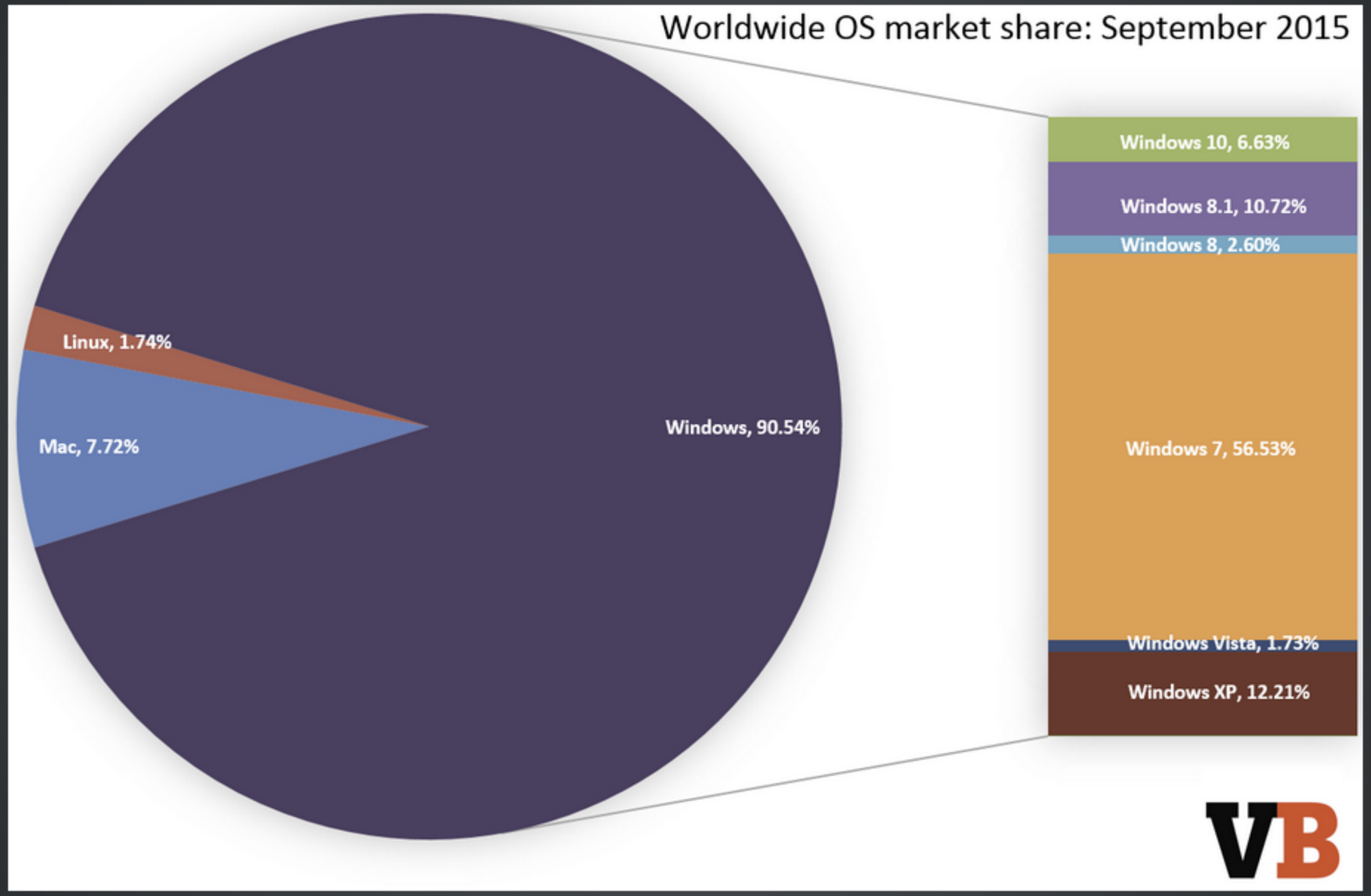
Autumn 2016



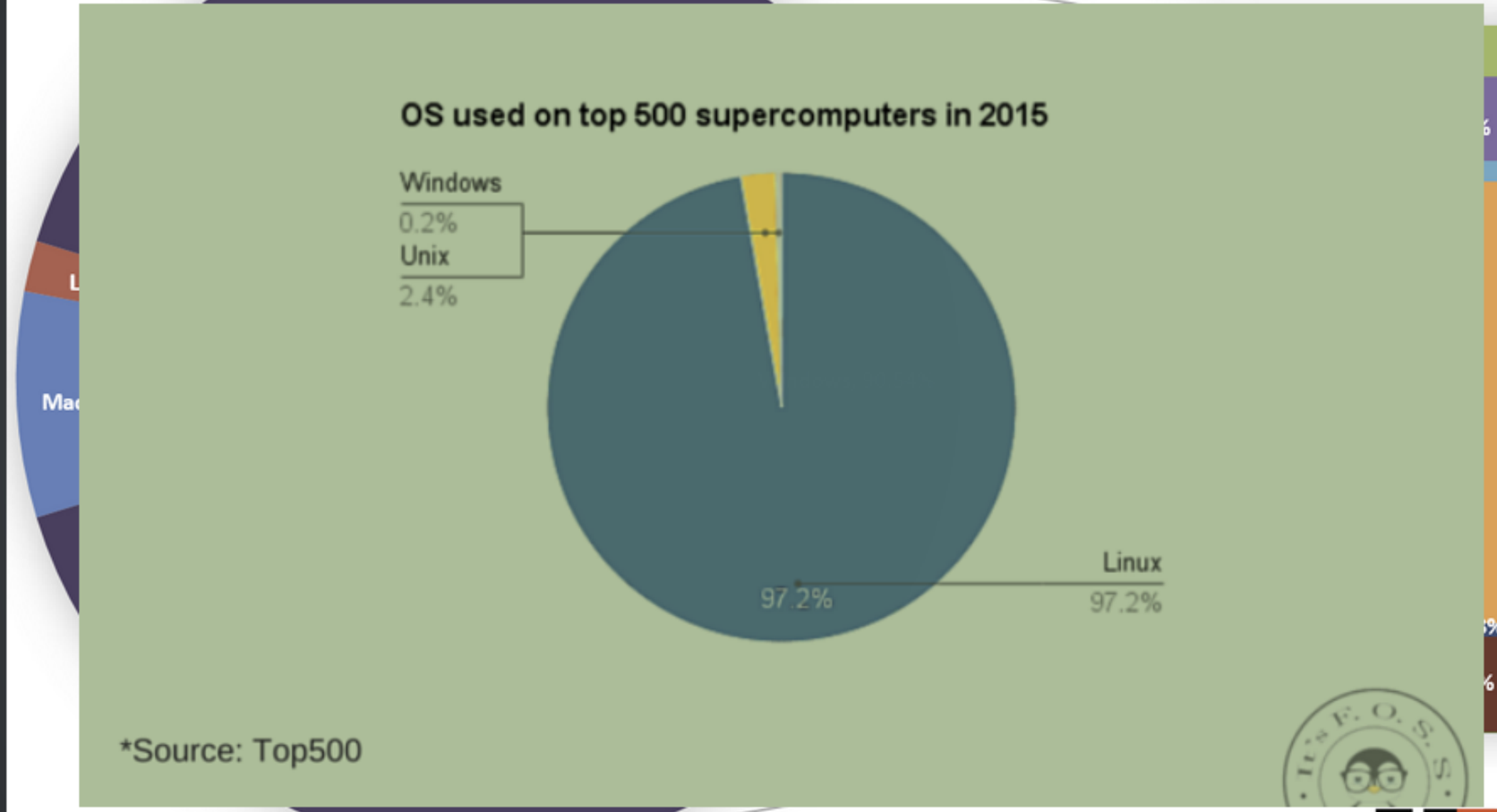
About Linux

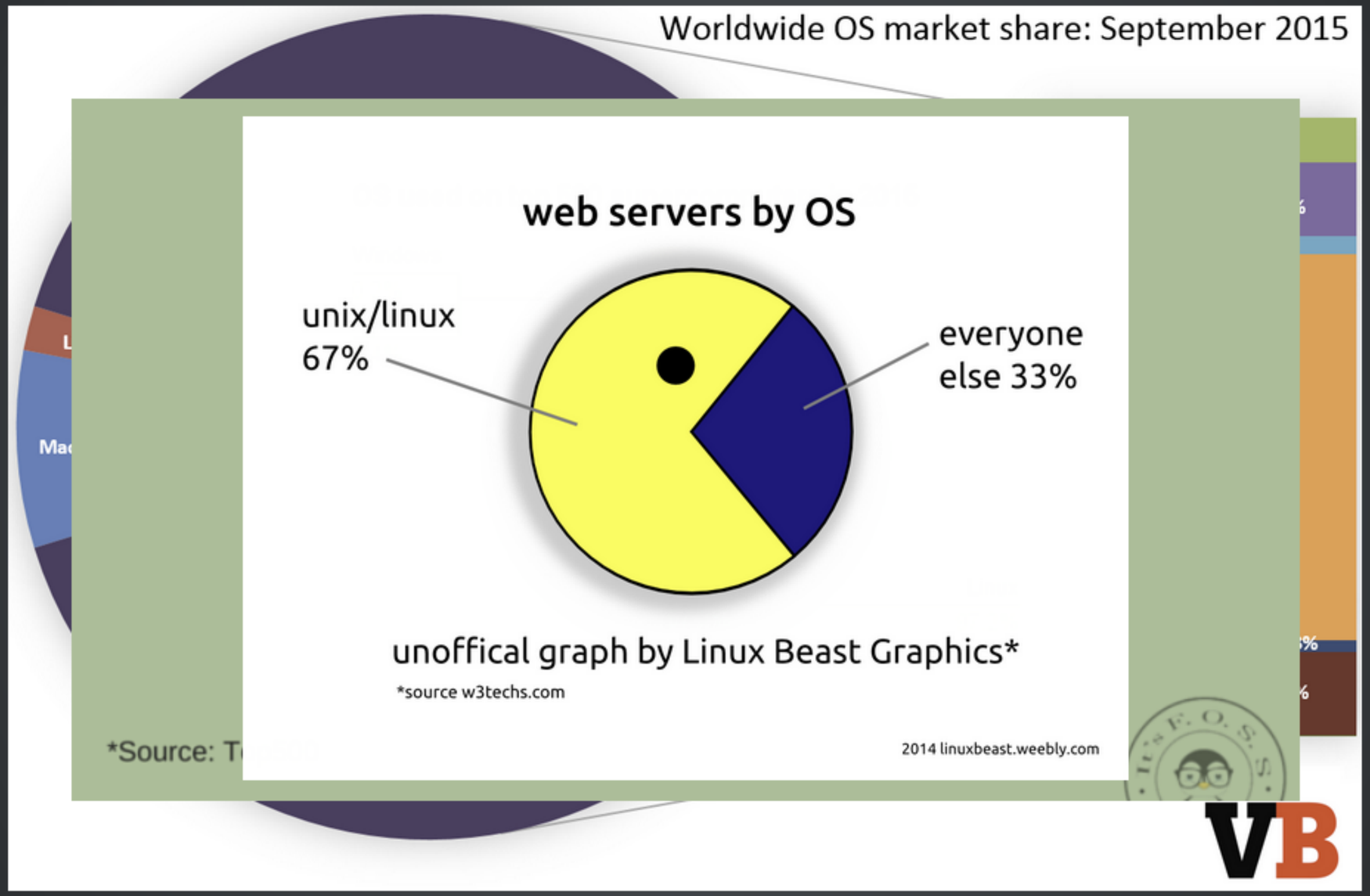
More than 20 years ago, Linus Torvalds sparked an open source revolution with a short email declaring he was doing a new project “just for fun.” Today, Linux powers 98% of the world’s super computers, most of the servers powering the Internet, the majority of financial trades worldwide and tens of millions of Android mobile phones and consumer devices. In short, Linux is everywhere.


9 OUT OF 10
OF THE WORLD'S SUPERCOMPUTERS
RUN LINUX


Worldwide OS market share: September 2015
Linux, 1.74%
Mac, 7.72%
Windows, 90.54%
Windows 10, 6.63%
Windows 8.1, 10.72%
Windows 8, 2.60%
Windows 7, 56.53%
Windows Vista, 1.73%
Windows XP, 12.21%
VB

Worldwide OS market share: September 2015




Worldwide OS market share: September 2015
web servers by OS
unix/linux
67%
everyone
else 33%
unoffical graph by Linux Beast Graphics*
*source w3techs.com
2014 linuxbeast.weebly.com
*Source: T

Top 10 positions of the 46th TOP500 in June 2016[12]

Rank	Rmax Rpeak (PFLOPS)	Name	Model	Processor	Interconnect	Vendor	Site Country, year	Operating system
1	93.015 125.436	*Sunway TaihuLight*	Sunway MPP	SW26010	Sunway[13]	NRCPC	National Supercomputing Center in Wuxi China, 2016[13]	Linux (Raise)
2	33.863 54.902	*Tianhe-2*	TH-IVB-FEP	Xeon E5-2692, Xeon Phi 31S1P	TH Express-2	NUDT	National Supercomputing Center in Guangzhou China, 2013	Linux (Kylin)
3	17.590 27.113	*Titan*	Cray XK7	Opteron 6274, Tesla K20X	Gemini	Cray Inc.	Oak Ridge National Laboratory United States, 2012	Linux (CLE, SLES based)
4	17.173 20.133	*Sequoia*	Blue Gene/Q	PowerPC A2	Custom	IBM	Lawrence Livermore National Laboratory United States, 2013	Linux (RHEL and CNK)
5	10.510 11.280	*K computer*	K computer	SPARC64 VIIIfx	Tofu	Fujitsu	RIKEN Japan, 2011	Linux
6	8.586 10.066	*Mira*	Blue Gene/Q	PowerPC A2	Custom	IBM	Argonne National Laboratory United States, 2013	Linux (RHEL and CNK)
7	8.101 11.079	*Trinity*	Cray XC40	Xeon E5-2698v3	Aries	Cray Inc.	DOE/NNSA/LANL/SNL United States, 2015	Linux (CLE)
8	6.271 7.789	*Piz Daint*	Cray XC30	Xeon E5-2670, Tesla K20X	Aries	Cray Inc.	Swiss National Supercomputing Centre Switzerland, 2013	Linux (CLE)
9	5.640 7.404	*Hazel Hen*	Cray XC40	Xeon E5-2680v3	Aries	Cray Inc.	High Performance Computing Center, Stuttgart Germany, 2015	Linux (CLE)
10	5.537 7.235	*Shaheen II*	Cray XC40	Xeon E5-2698v3	Aries	Cray Inc.	King Abdullah University of Science and Technology Saudi Arabia, 2015	Linux (CLE)

Sunway Taihulight

Tianhe-2

Titan

Sharif HPC

Sharif HPC

Sharif HPC

Almost Done