The Sky is Falling!

Or: Life After macOS Server

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University of Oxford

- #1 Times Higher Education World Rankings 2018
- #1 Times Higher Education World Rankings 2018 for Clinical, Pre-clinical & Health
- #1 Times Higher Education World Rankings 2018 for Social Sciences
- #1 UK Research Excellence Framework 2014
- Gold rating UK Teaching Excellence Framework 2017

This is the image you probably know of Oxford with it's dreaming spires, and it really is a beautiful historic place to work and live, but that Research Excellence rating wasn't achieved by just having ancient buildings

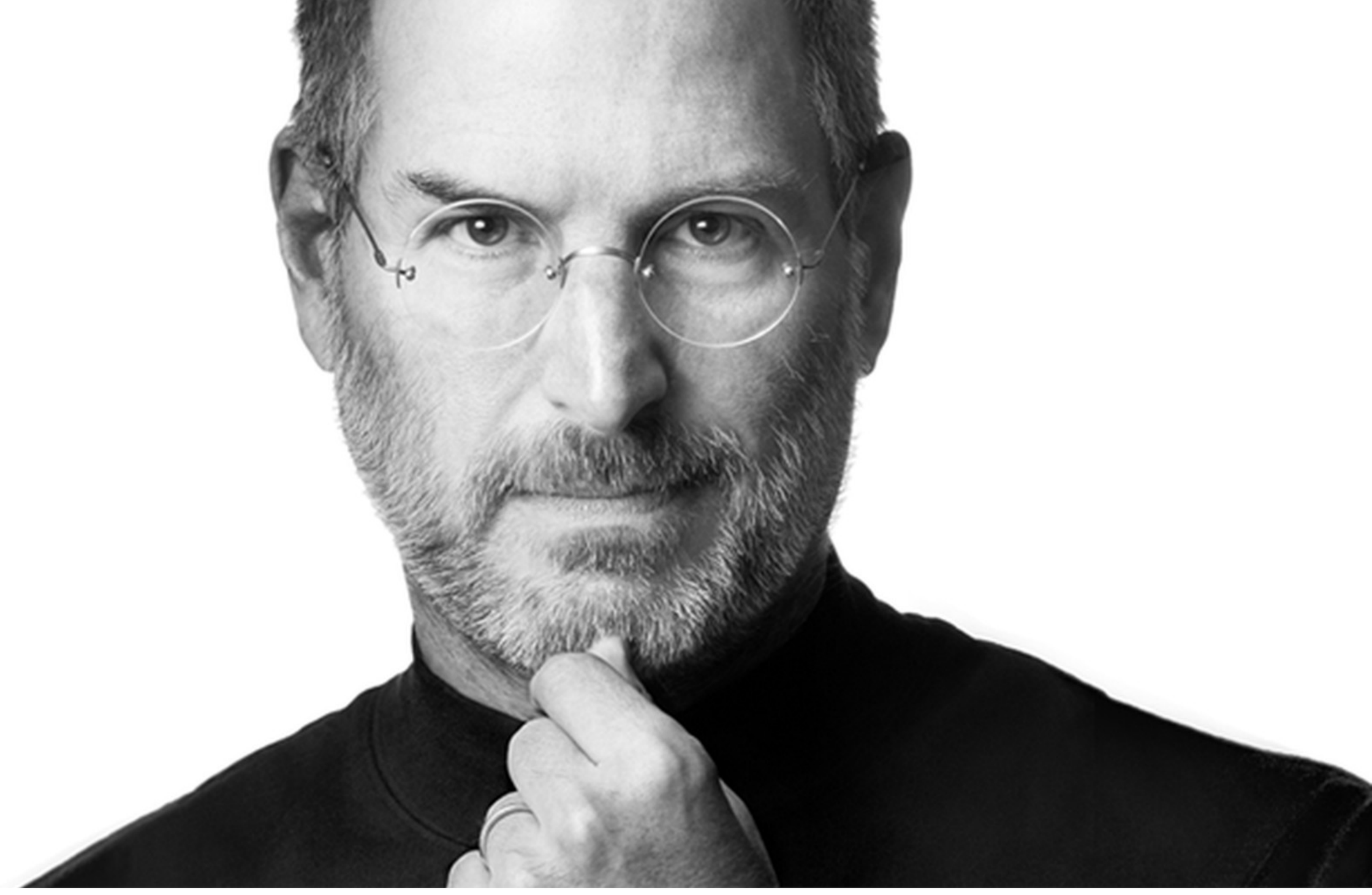
For instance we now have the Blavatnik School of Government, which promotes transparency and open forms of government from its amazing shiny new glass Herzog and de Meuron building. It's the first school of its kind in the world.

And here you can see the new Beeston building for Physics. It's been designed so that some of the labs have ultra low vibration from the surrounding city for extremely sensitive experiments.

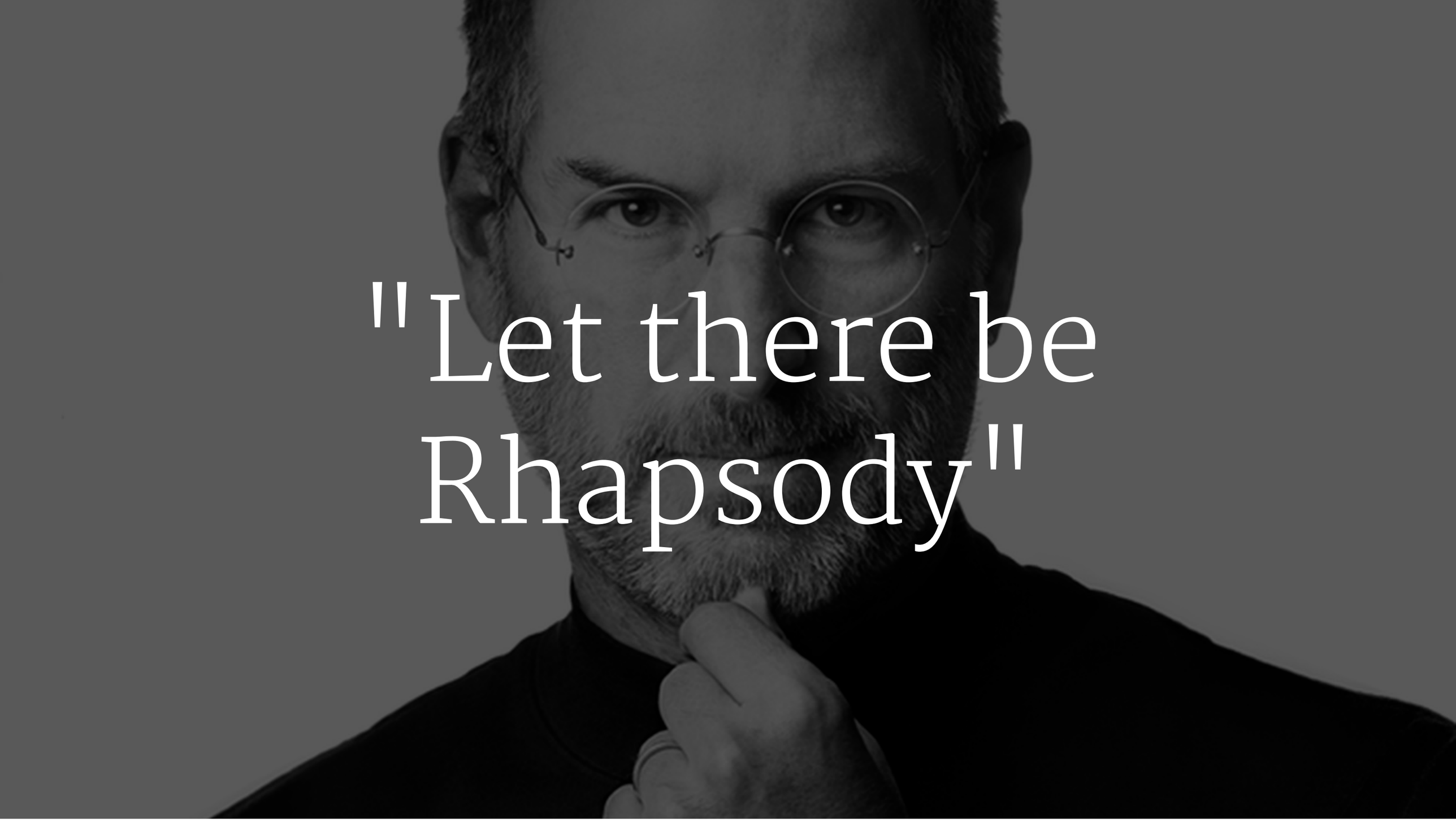
But today I'm not really here to talk about Oxford, I'm here to talk about macOS Server, and I'm going to start with a little bit of its history so if you'll bear with me, let's go back in time to the distant, misty past...of 1999.

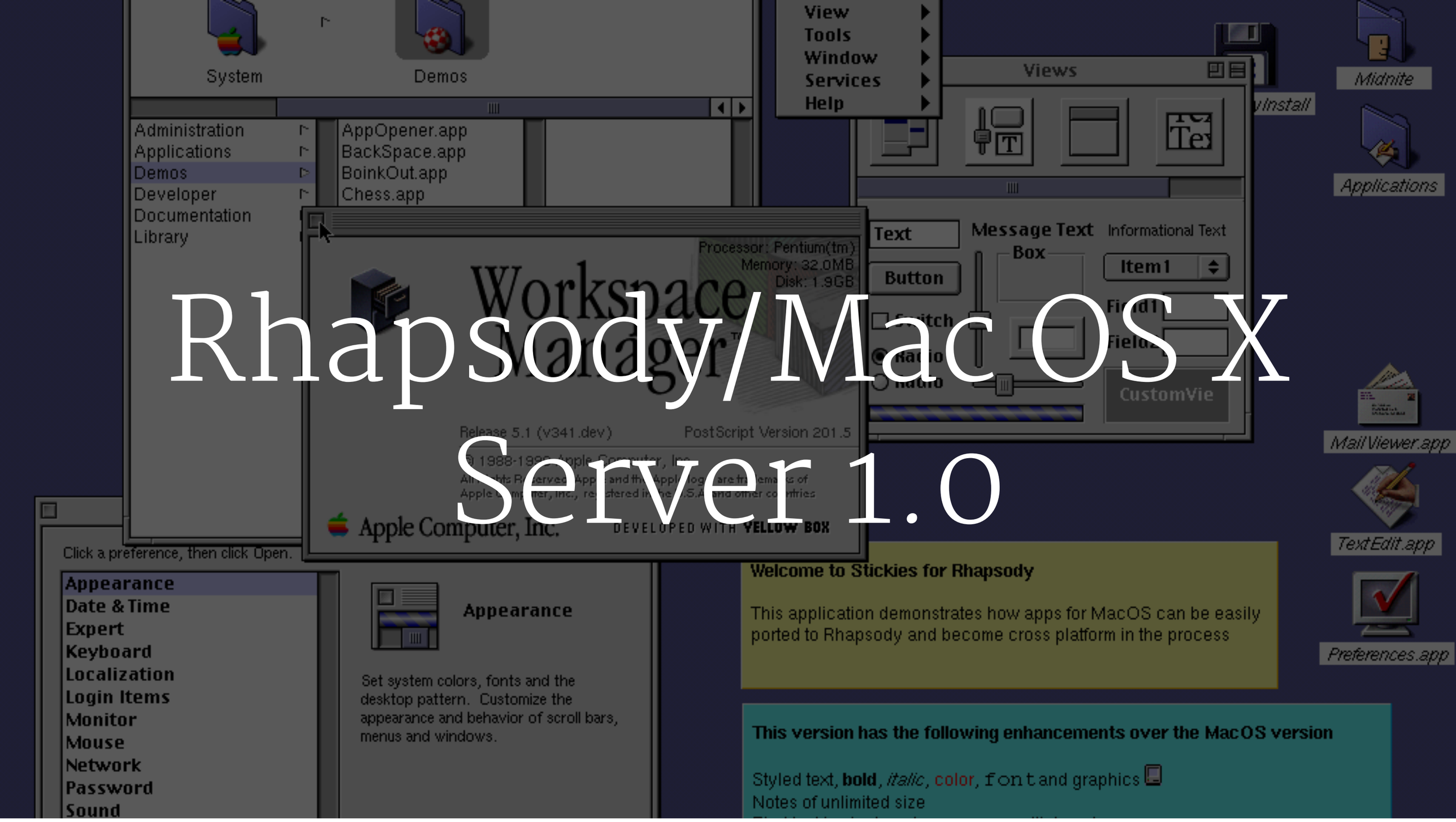
In the beginning there was nothing

(This is what nothing looks like)



And then God said...


"Let there be
Rhapsody"



Rhapsody/Mac OS X Server 1.0

1999 And there was Rhapsody

Kind of a hybrid of MacOS 8 GUI and OPENSTEP (NeXTSTEP)

Netboot introduced in an update.

Released as Mac OS X Server 1.0

10.0/10.1 Cheetah & Puma

2001 10.0 Cheetah - Aqua Interface! Apache/Mysql/PHP!

WebDAV

Netboot for real.

10.1 Puma QuickTime Streaming Server

The first XServe is sold, a G4

2002 10.2 Jaguar Open Directory based on LDAP - beginning of the end for NetInfo

NTP

SNMP Mail

Samba 3!!

10.3 Panther

2003 10.3 Panther new Workgroup manager

10.4 Tiger

2005 10.4 Tiger - ACLs, Xgrid, SpamAssassin, ClamAV, SUS, iChat XMPP, Blogs!

Universal Binary - INTEL!!

2007 10.5 Leopard RADIUS! $999! Netinfo finally removed. Podcast producer introduced

10.6 Snow Leopard

2009 10.6 Full 64 Bit, New versions of EVERYTHING, mobile access server, reverse proxy $499

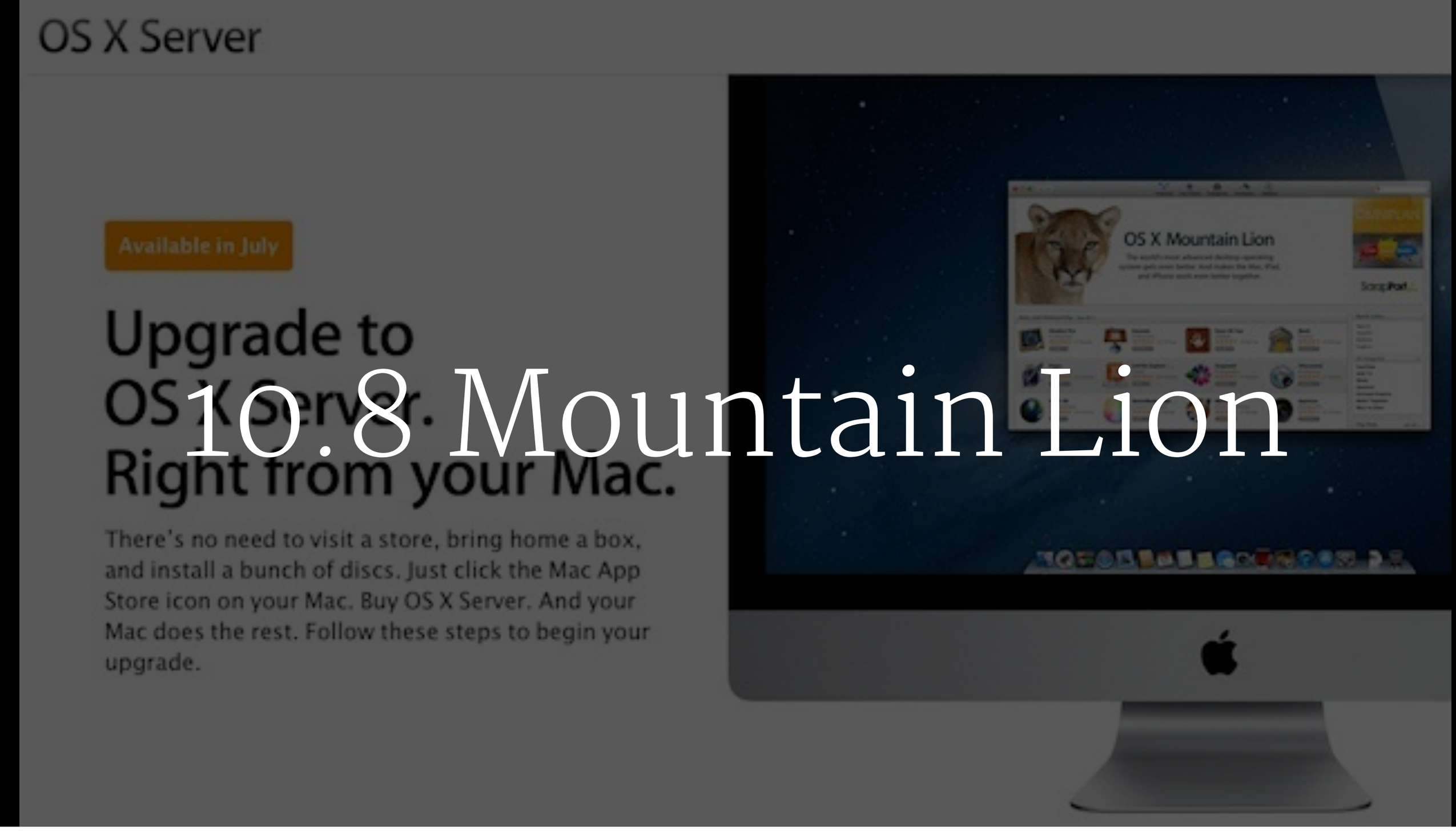
2011 10.7 End of separate OS - now just an app Server 1.0, price crashes! New versions of Calendar Server, Wiki, Mail

Server admin and Workgroup Manager still available

XSAN now included with Server

Hello to MDM!!! (profile manager)

$49.99



10.8 Mountain Lion

2012 10.8 Mountain Lion Server 2.0

Final goodbye to Server Admin, Server Assistant, Server Monitor and cheaper at $19.99

Caching server first introduced

Podcast producer gone

2013 10.9 Mavericks Server 3.0

Developers can now download it for free

nothing much exciting happens, some stuff gets hidden from newbies under "Advanced"

2014 10.10 Yosemite Server

4.0

Workgroup Manager finally dies forcing people towards MDM

10.11 El Capitan

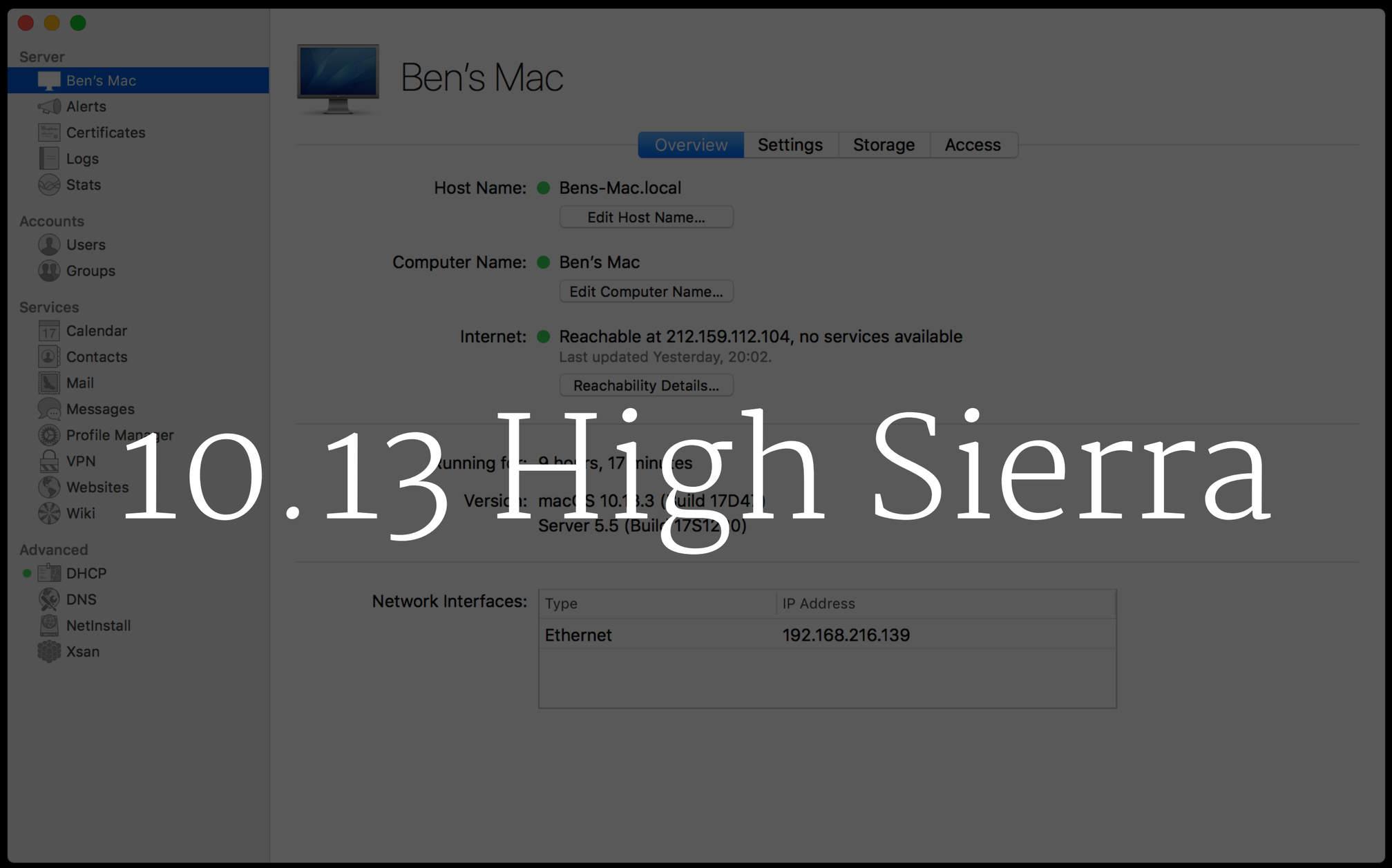
2015 10.11 Server 5.0, 5.1

Don't have to keep buying it – $19.99 covers all future releases

Last supported release for the Intel XServe

10.12 Sierra

2016 10.12 Server 5.2, 5.3



10.13 High Sierra

2017 10.13 Server 5.4, 5.5

File Sharing, Caching server & Time Machine backup destination moves to the OS

January 2018 APPLE ANNOUNCES DEPRECATION OF MUCH OF macOS SERVER AND THE WORLD ENDS

Prepare for changes to macOS Server

Learn about changes coming to macOS Server in spring 2018

macOS Server is changing to focus more on management of computers, devices, and storage on your network. As a result, some changes are coming in how Server works. A number of services will be deprecated, and will be hidden on new installations of an update to macOS Server coming in spring 2018. If you've already configured one of these services, you'll still be able to use it in the spring 2018 macOS Server update.

These deprecated services will be removed in a future release of macOS Server, so those depending on them should consider alternatives, including hosted services. Deprecated services are listed below. Links to potential replacements are provided underneath each deprecated service.

Calendar

- Calendar and Contacts Server
- DavMail
- Radicale

Contacts

- Calendar and Contacts Server
- DavMail
- Citadel

OK so what really happened is Apple posted this page to their support site talking about changes coming to macOS Server in spring 2018.

It details how macOS Server is changing to focus more on management of computers, devices and network storage.

That sounds good right? Profile manager is pretty woeful at scale, and Apple's own SMB server is the only thing that reliably talks to Mac clients over SMB

But, here's the kicker...

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Snuck in at the same time is the cheery announcement that Apple are going to deprecate pretty much everything else that macOS Server does.

Some of these are likely to be only lightly used out in the wild, like Calendar and Contacts, Mail, Messages and Wiki

But there's some quite big-ticket items deprecated too - DHCP, DNS, NetInstall (and therefore NetBoot).

So of course a lot of people's initial response was to


PANIC!

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But let's not get too ahead of ourselves just yet.

First off it's important to remember that these are going to be deprecated before they're removed. So they're not gone yet, and if you've already configured them they're still going to be there in the Server GUI for you to use.

But new installations are going to hide all the deprecated services away and you won't be able to configure them with the Server app.

And eventually they really are going away.

Some things are staying: MDM's not going anywhere, and Open Directory and File Sharing seem safe too

But this prompted quite a lot of unease on Macadmins Slack and the MacEnterprise mailing list.

“Just how many chances should businesses give Apple? They killed Apple Server. They killed the Xserve. Now they’re making Server worthless.”

OMG they killed Kenny!

“What is the compelling reason for taking away services, really? It’s not like Apple can’t afford to continue support.”

Well I'd say this was probably down to the return on investment. Let's not kid ourselves that macOS Server was a huge money-spinner for Apple.

“Maintenance will be a challenge, a lot of time, and our clients will see an increase in their billing.”

Yup, maybe, for a while. But learning new stuff is always hard - and once you've learned it sometimes you find out you can actually get things done faster than before.

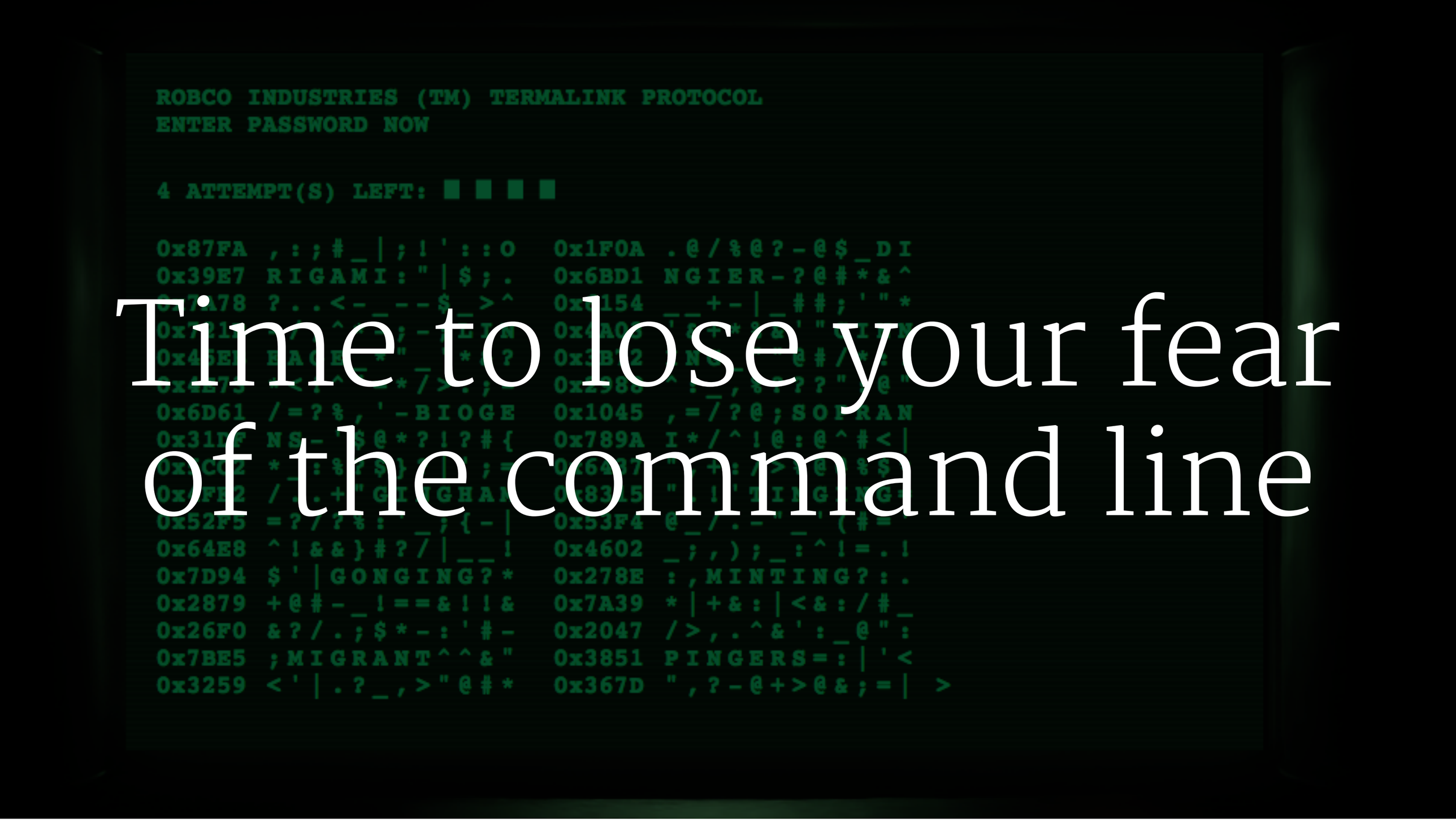
“They probably spend more resources on something trivial like what colour wood the floors in the Apple store are.”

I mean this one is probably true, depending on whether you think that's trivial.

I think an important bit of advice right now, even if you depend quite heavily on macOS Server is: Don’t Panic

Apple is giving you time to migrate away from these services, you just need to formulate your gameplan now

But if you have one it is probably…



While some of the replacements for the deprecated services I'll be talking to today have a GUI, in reality you're going to have to get used to configuring stuff from the command line i.e. in Terminal

Don't fear this! It's one of the greatest steps you can make as an administrator and often allows you a lot more fine-grained control over the services you want to run.

Often the GUI will give you limited buttons and switches to mask the complexity of configuration, but this is at the cost of flexibility and you'd find yourself having to hand edit the configuration files the GUI produced anyway to get it to do something snazzy.

Which host OS?

- macOS
- Linux/BSD
- Windows
- SaaS

So if you're looking to replace the functionality of macOS server, probably the first thing you need to do is think about what Operating System you're going to run your services on

Firstly, you could stick with macOS.

You could look into Linux/BSD, which has a lot of similarities "behind the scenes" with macOS, but has much lower hardware requirements

You could move over to the dark side and use Windows.

Or, for at least some of the services you could move to using Software as a Service Cloud apps where you don't even need to know the platform you're running on.

Incidentally, this list isn't exhaustive - Solaris is still a thing right? Over at Oracle? But I think they're basically the ones most people are going to think about.

Let's look at the advantages and disadvantages of each

macOS Advantages

» You know it already

» It's Unix!

» GUIs (for some things)

Ah friendly, cuddly, warm, comfortable macOS. Keeping your services running on a Mac has various advantages

The likelihood is, if you’re sitting here today, you already know how to use it pretty well.

Under the hood, it’s all UNIX. A BSD variant to be precise. UNIX was designed to serve multiple users. Even the client macOS is reasonably easy to get set up as a server, without Server.app.

And some of the replacements for the services in Server.app I’m going to talk about today still have nice friendly GUIs - useful for say consultancy jobs where you’ve got to talk people through getting a service back online over the phone.

macOS Disadvantages

» BSD != Linux

  » But there is homebrew

» Packages aren't all included

» Updating can be a pain

» No real server hardware

^ And of course, now there's no real server hardware.

different command line options or syntax.

sed is a case in point

But...there is homebrew!

made with developers in mind. It’s great for testing and development before you push to production

but the services all run as your user by default

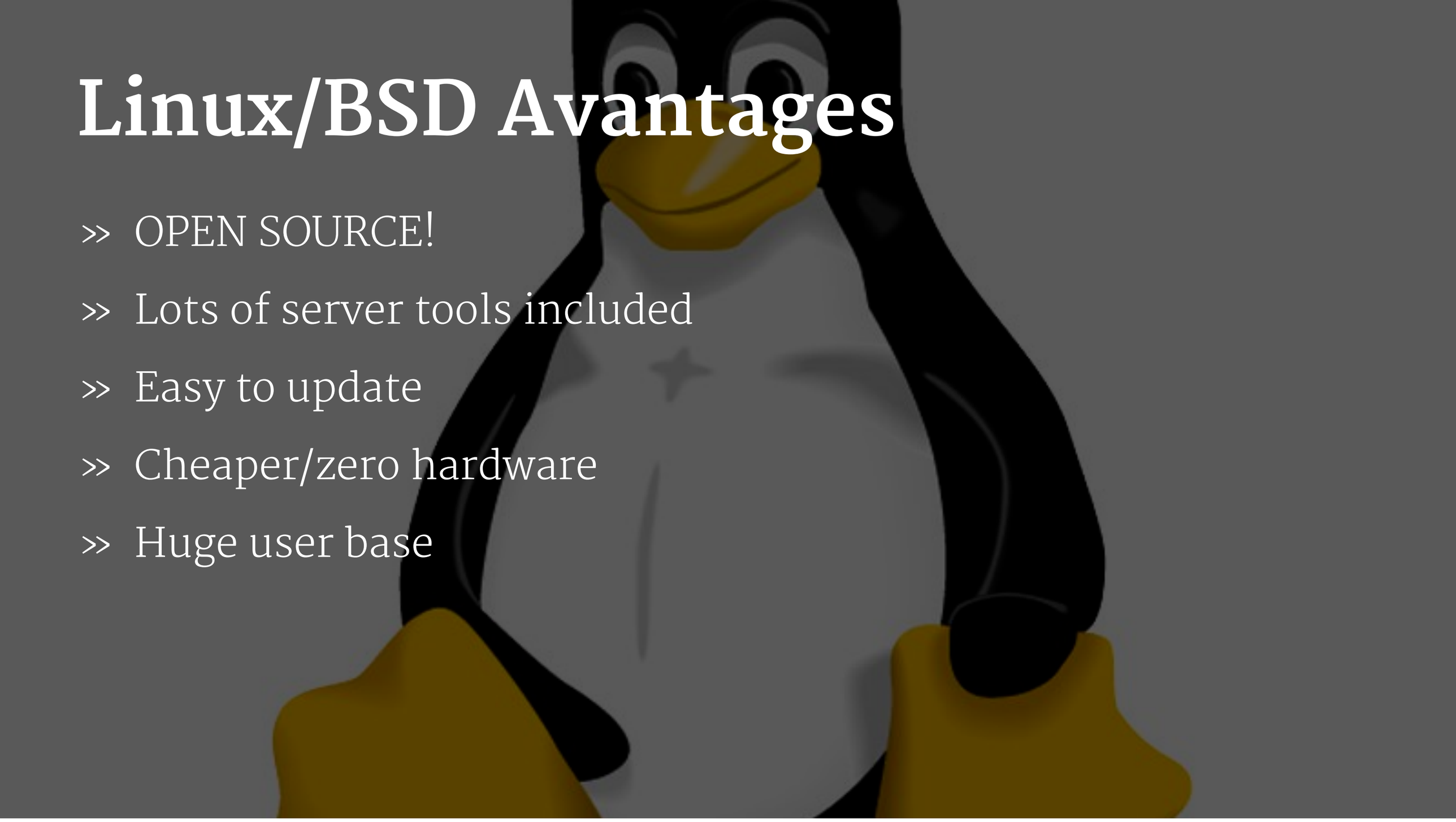
Unlike with most Linux distributions, macOS doesn’t come pre-packaged with a lot of the software you need to run an effective server.

Apache *is* included

macports, homebrew, or installing a bunch of packages from various sources to get it all, which means that...

Updating can be a pain.

Homebrew or macports but pkgs harder



Talk about open source

Linux and BSD were designed primarily for stability for server applications, so there's a ton of software included

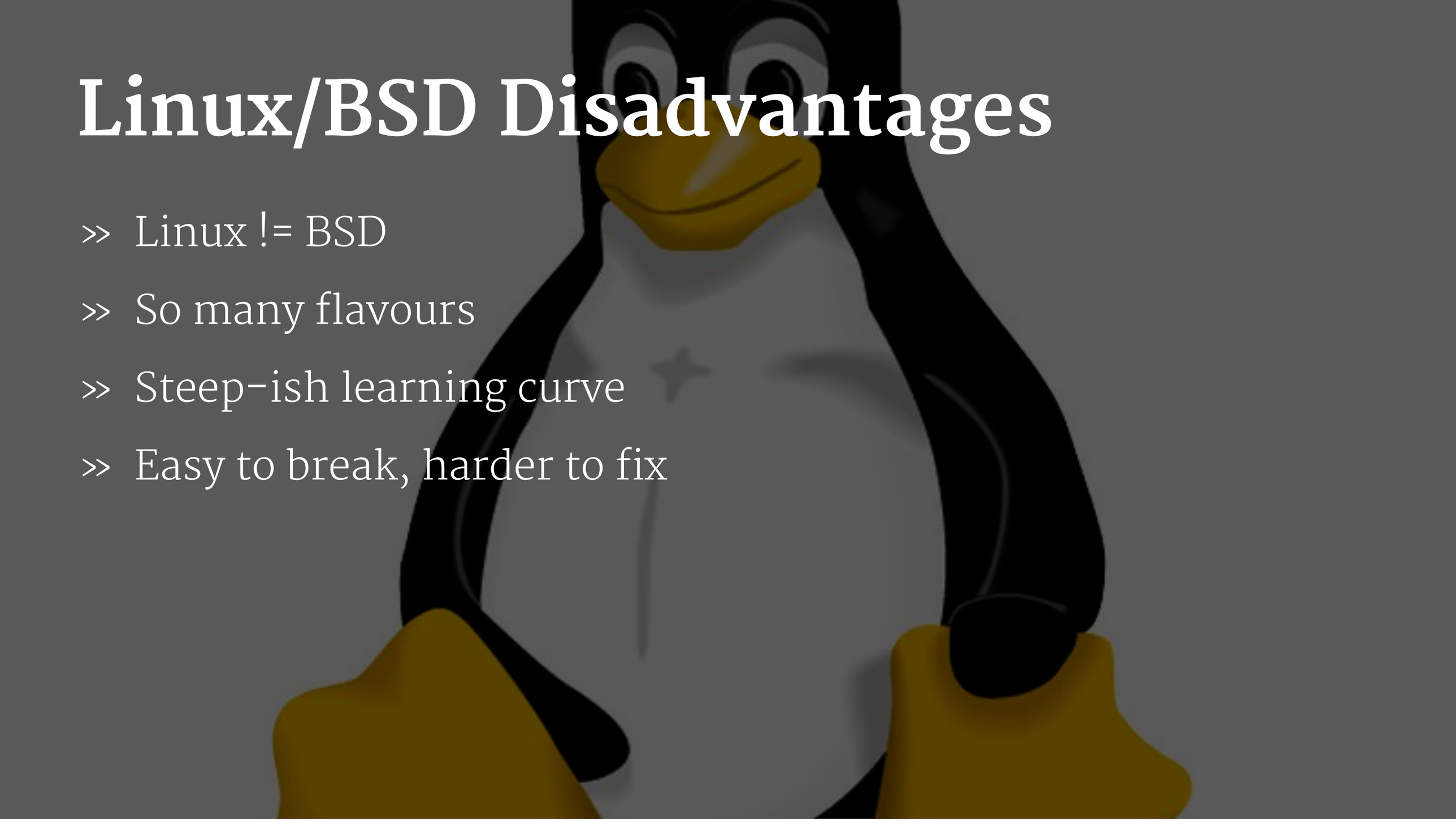
It's all going to be a lot easier to update

apt/yum/dnf

significantly lower hardware requirements. Since you don't need things like Siri or Metal to run a server, they're not included

And finally (and if you think I'm pushing this kind of setup quite heavily, you'd be right!) Linux and BSD combined have a huge userbase ServerFault.com

Linux/BSD Disadvantages



- Linux != BSD
- So many flavours
- Steep-ish learning curve
- Easy to break, harder to fix

So again we have the problem that Linux and BSD are not completely equivalent

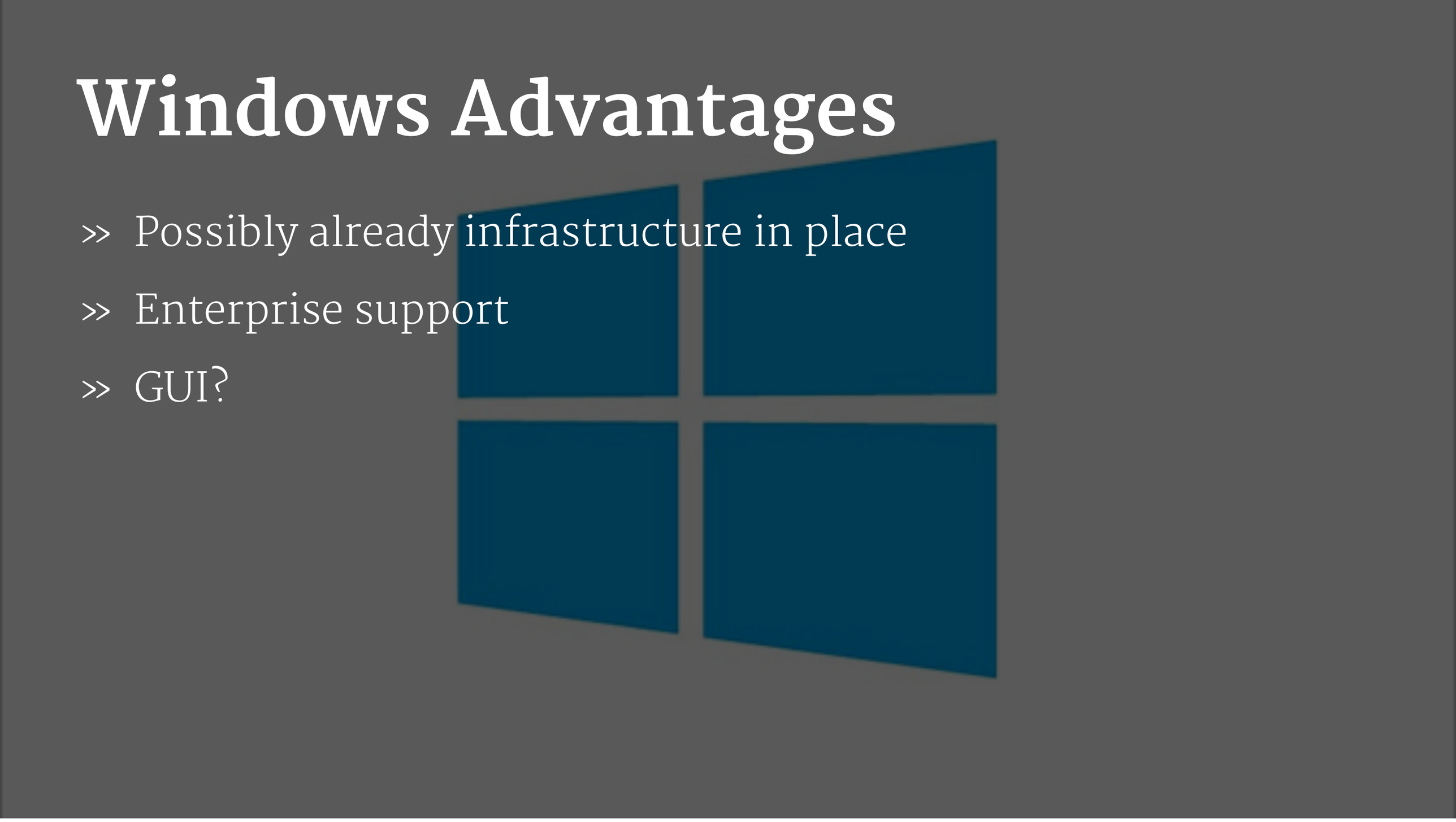
There are SO many flavours of Linux especially that it can get a bit confusing.

Mostly GUI differences - what about having no GUI!?

There's a pretty steep learning curve going to Linux or BSD from macOS

Story about breaking some important library crashing around as root

Windows Advantages



So looking at some of the advantages that moving to a Windows server might bring...

It's not unusual for these days for places of work to have one or two Windows servers controlling directory, file services, DHCP, DNS and the like. So maybe you can piggy back off that.

Windows of course is a paid product and so comes with Enterprise support

I put a question mark there cause most of the time it doesn't really feel like a GUI at all, just a graphical representation of text lists.

Windows Disadvantages

- Definitely not Unix
- Documentation for anything 'unapproved' is bad
- Pretty much closed source
- Costs money
- *It's Windows*

OK on to the disadvantages:

bash with some containerisation witchcraft on Windows

it works completely differently to Unix based platforms, which could be frustrating when transitioning from one to the other.

If you're not using the built in services on Windows to serve webpages and so on, the documentation can be pretty scant. Tinkering isn't really encouraged either.

It's pretty much all closed source of course

And it costs money - I know macOS server costs money too, but it's peanuts compared to Windows server licences.

And yeah final point. It's Windows. We're not here because we love windows, are we?

OK so you're going to need a strategy if you're going to migrate your services away from macOS Server. And you should probably start thinking about it now.

Remember all the friendly ways that macOS server would set up local DNS and find its host name and tell you if there were problems with your FQDN, reverse lookup and so on? You're probably not going to get that hand holding when Server.app goes away, so you're going to need to get it right yourself.

Remember that macOS server announces a lot of its services over Bonjour - you can do the same with open source implementations like Avahi but it's going to be down to you to set them up.

Think about what services you and the users of your servers really need. Are they really making use of that wiki? Do you have other hardware to do your VPN with? Try to whittle it down to what you

Calendar & Contacts

Apple Calendar and Contacts Server

- Is and always has been open source
- Python so runs anywhere
- Is in use at Apple
- Authors wrote Twisted/RFCs
- Not quite as simple as drag and drop of config
  - As I learned to my chagrin!

Calendar & Contacts

Radicale

- Another open source CalDAV & CardDAV server
- Python again
- Easier to set up but makes more assumptions
- Migration path unknown

Calendar & Contacts

GSuite

- Fully cloud based
- World reachable
- Not free
- Migration path unknown

Calendar & Contacts

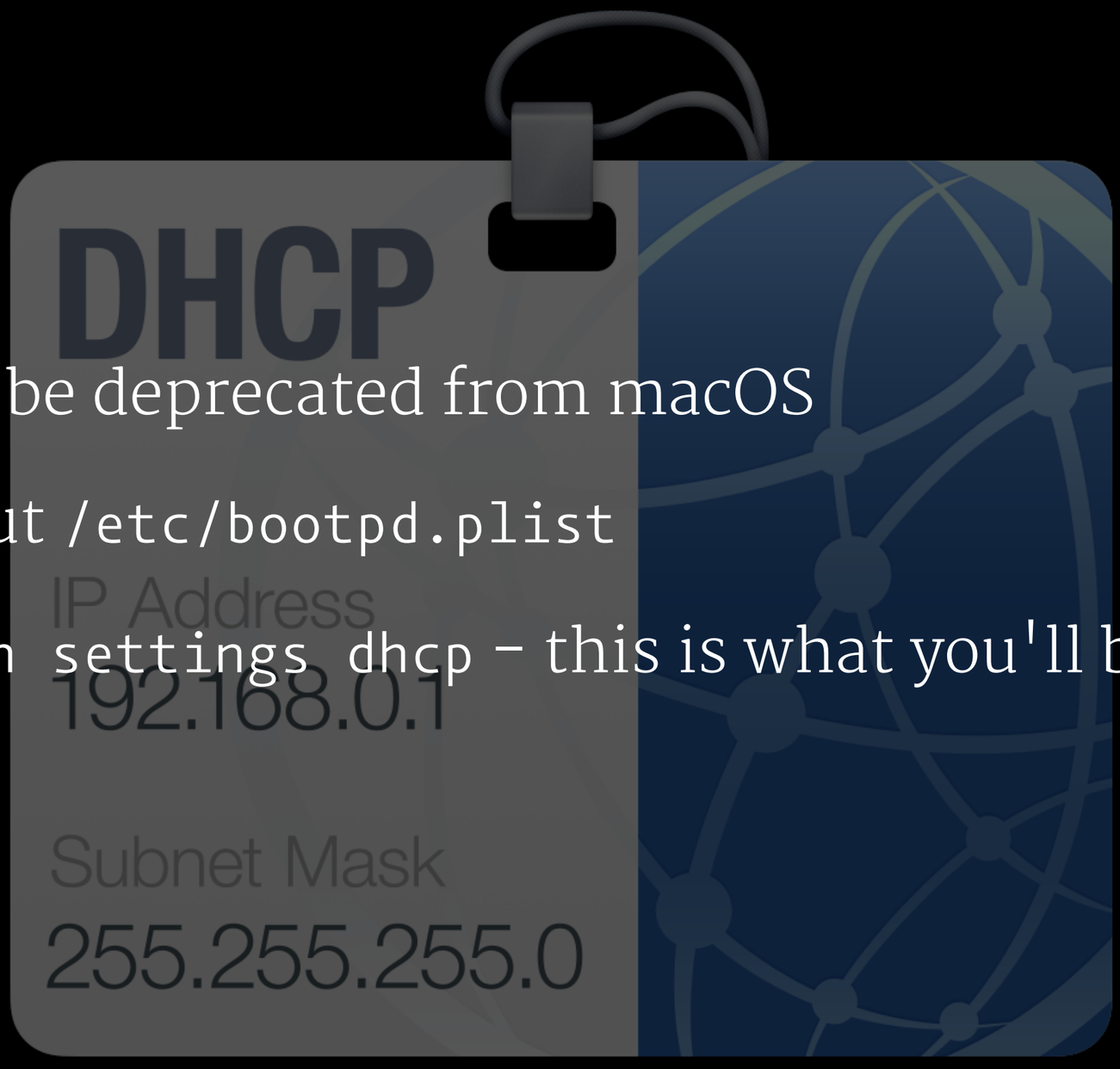
Exchange/Office 365

- Maybe with DAVmail

NetInstall

- Imaging is *not dead* it's *just pining for the fjords*
- NetBoot can be done just with DHCP/tftp
- BSDPy
- NetSUS
- imagr

DHCP
macOS



» Unlikely to be deprecated from macOS

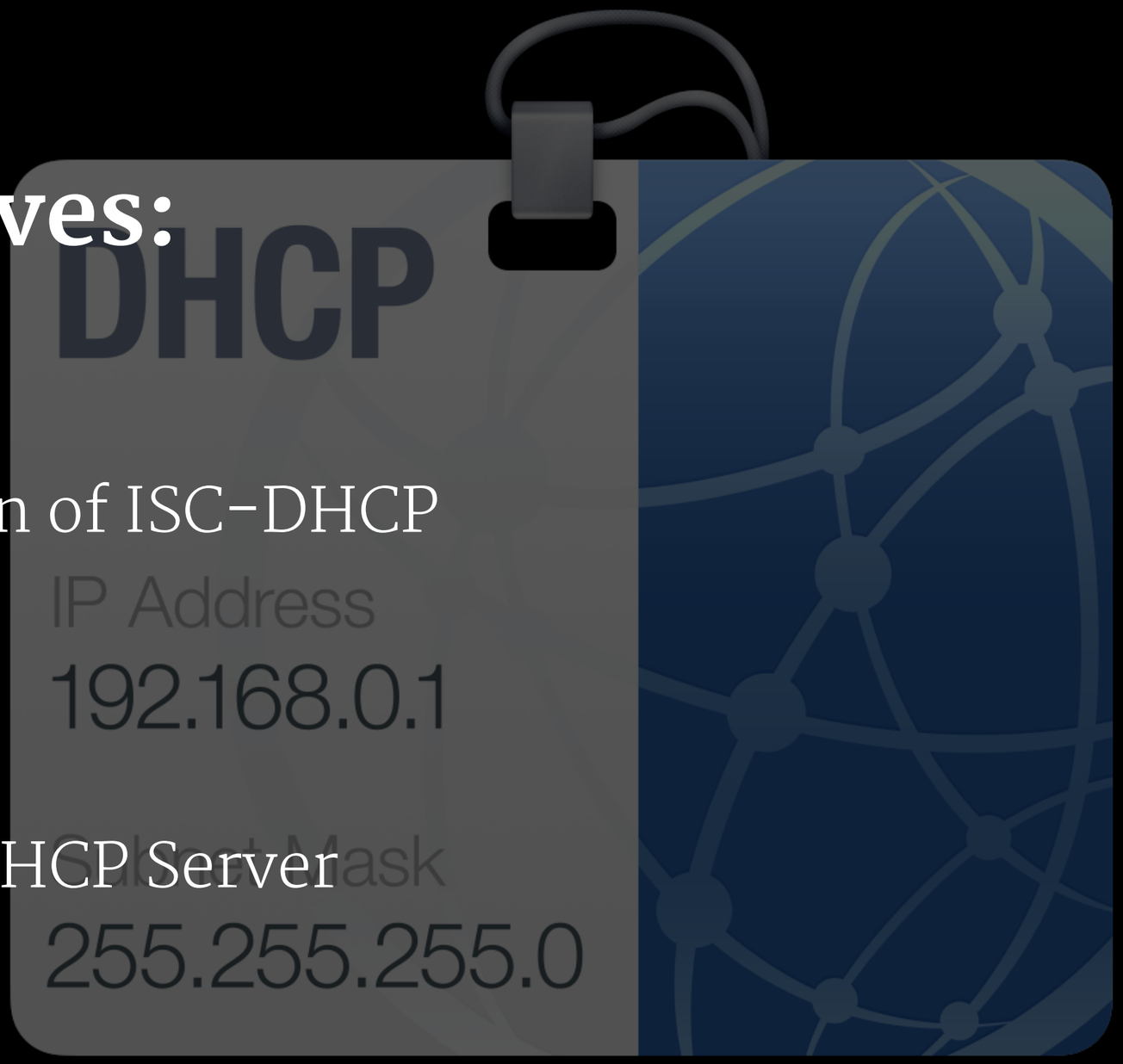
» Check out `/etc/bootpd.plist`

» `serveradmin settings dhcp` – this is what you'll be recreating

DHCP

Alternatives:

- Kea
  - evolution of ISC-DHCP
- dnsmasq
- RADIUS
- Windows DHCP Server



DNS

- dnsmasq (again!)
- BIND
- PowerDNS
- Windows DNS Server
- Managed DNS

Mail

Mail Transport Agents:

- Postfix
- Exim
- Courier
- Sendmail
- Exchange/Office 365/GSuite

Mail

Mail Delivery Agents:

- Courier
- Cyrus
- Dovecot
- Exchange/Office 365/GSuite

Messages
Self-hosted:

» ejabberd

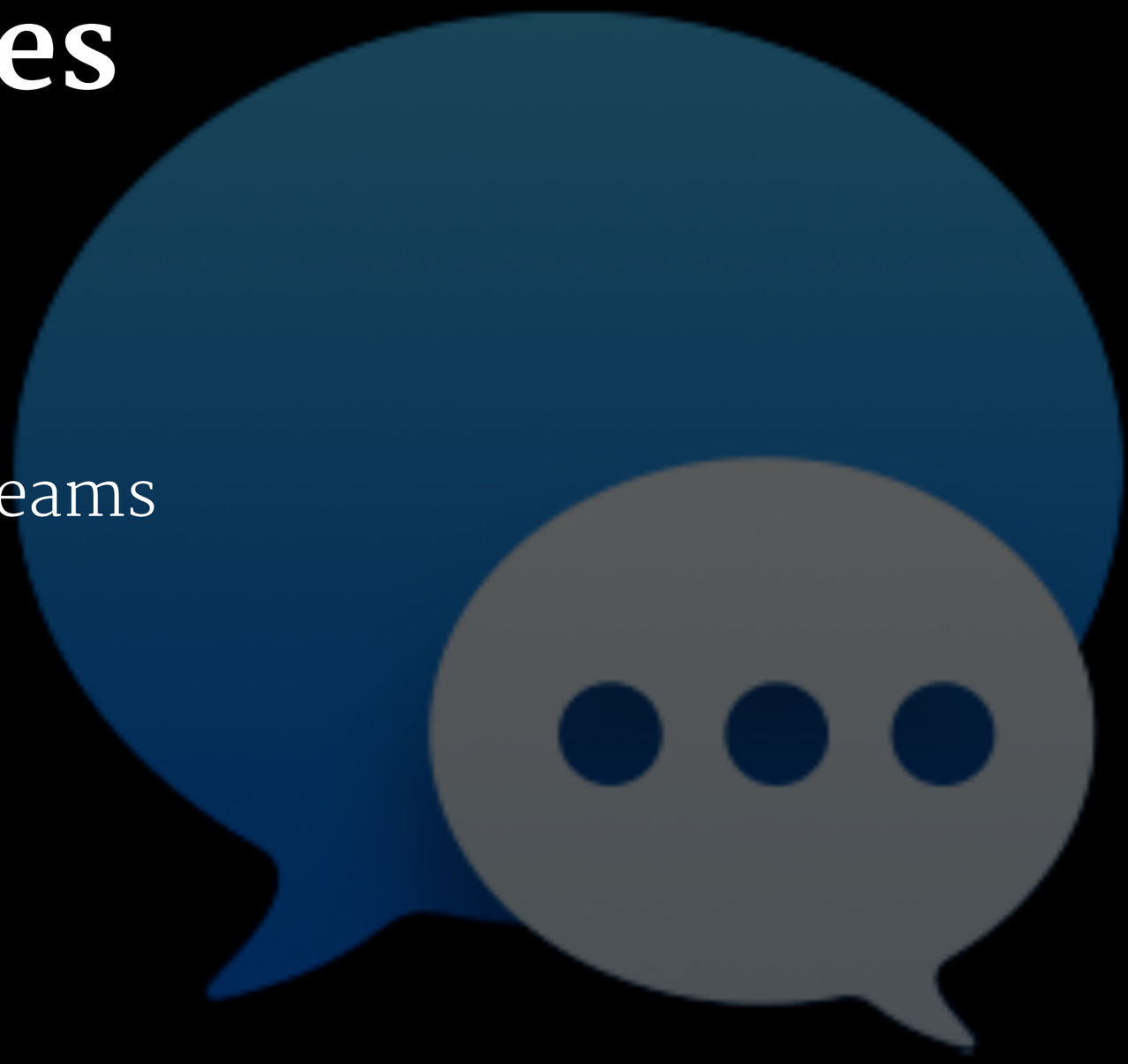
» MongooseIM

» prosody

Messages

SaaS:

- Slack
- Microsoft Teams
- GSuite



VPN Software:

» OpenVPN

» SoftEther VPN

» tcpcrypt?

OpenVPN probably is the widest used of the open source VPN servers - it requires a client on macOS, but Tunnelblick.app is pretty rock solid.

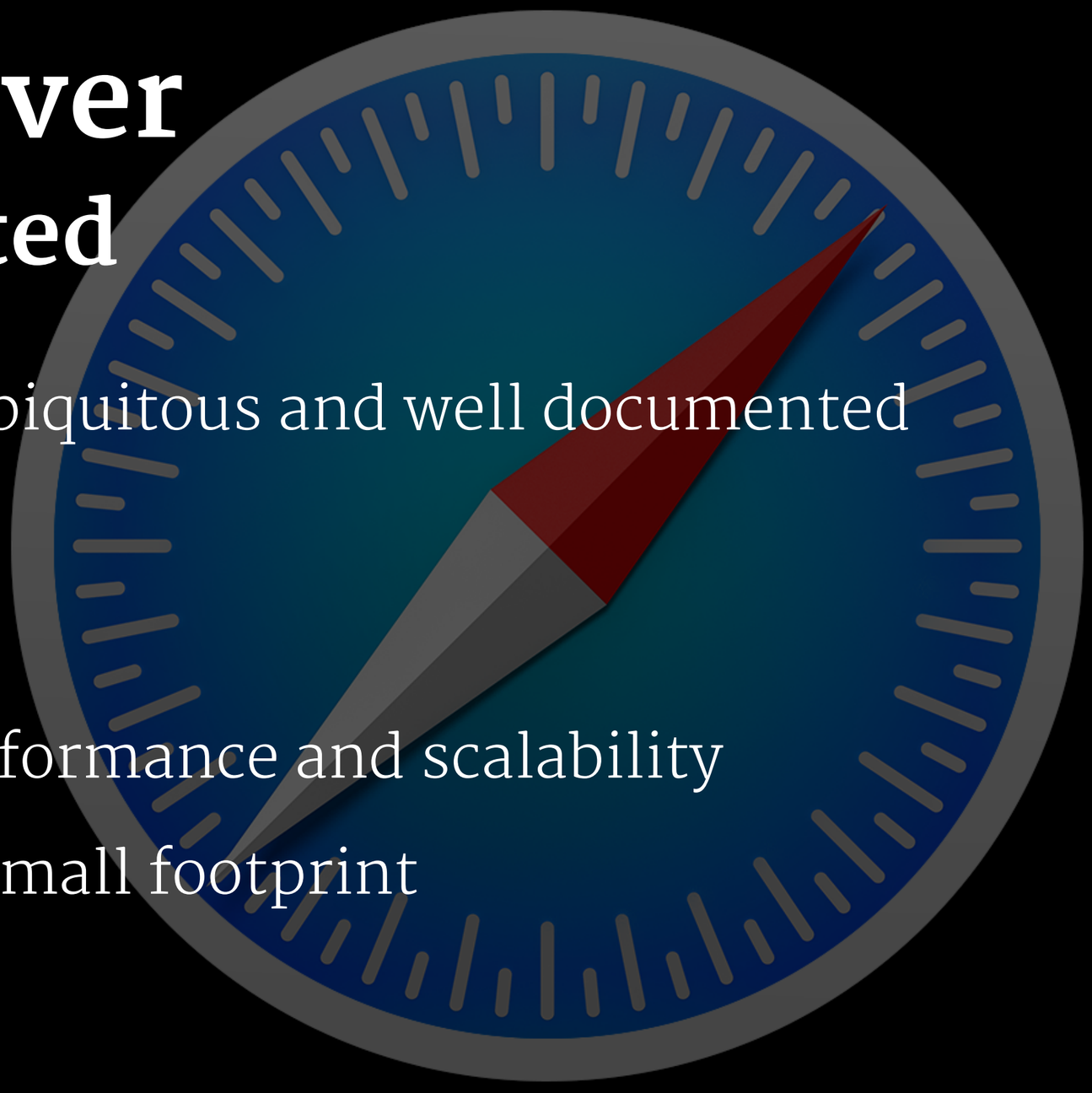
SoftEther VPN can do many different types of VPN including IPsec, LT2P and OpenVPN and works by emulating an Ethernet switch in software.

tcpcrypt - I'm not 100% sure why Apple recommended this on the support site. The clients are still considered experimental and not for production. But it provides transparent encryption of TCP connections that will fall back to unencrypted if it's not available.

VPN Hardware:

- Cisco IPsec
- Zyxel L2TP
- Juniper IPsec

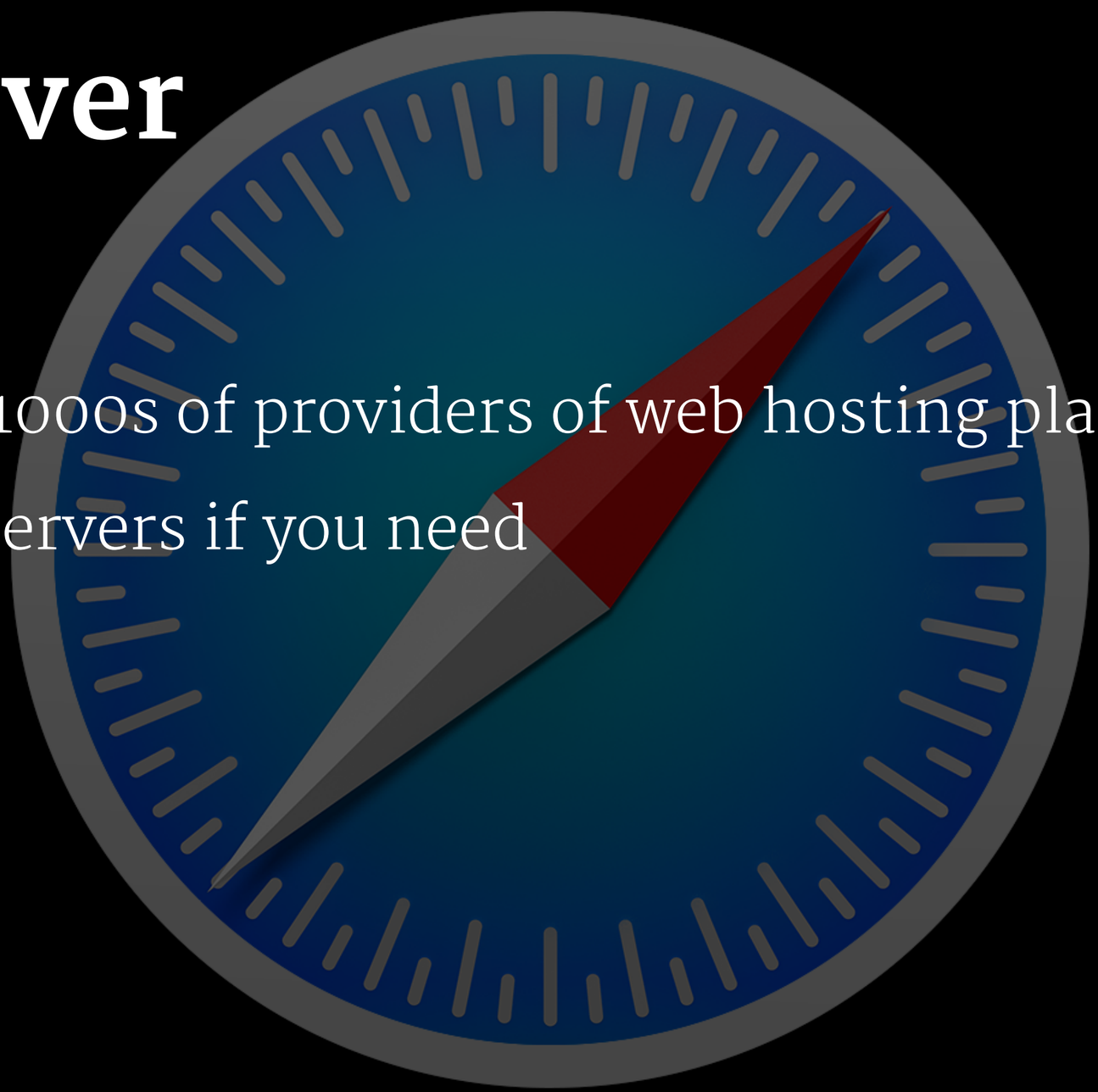
Webserver
Self-hosted



- Apache - ubiquitous and well documented
  - MAMP
  - WAMP
- nginx – performance and scalability
- lighttpd – small footprint

Webserver
Hosted

- 100s if not 1000s of providers of web hosting plans
- Dedicated servers if you need



Wiki

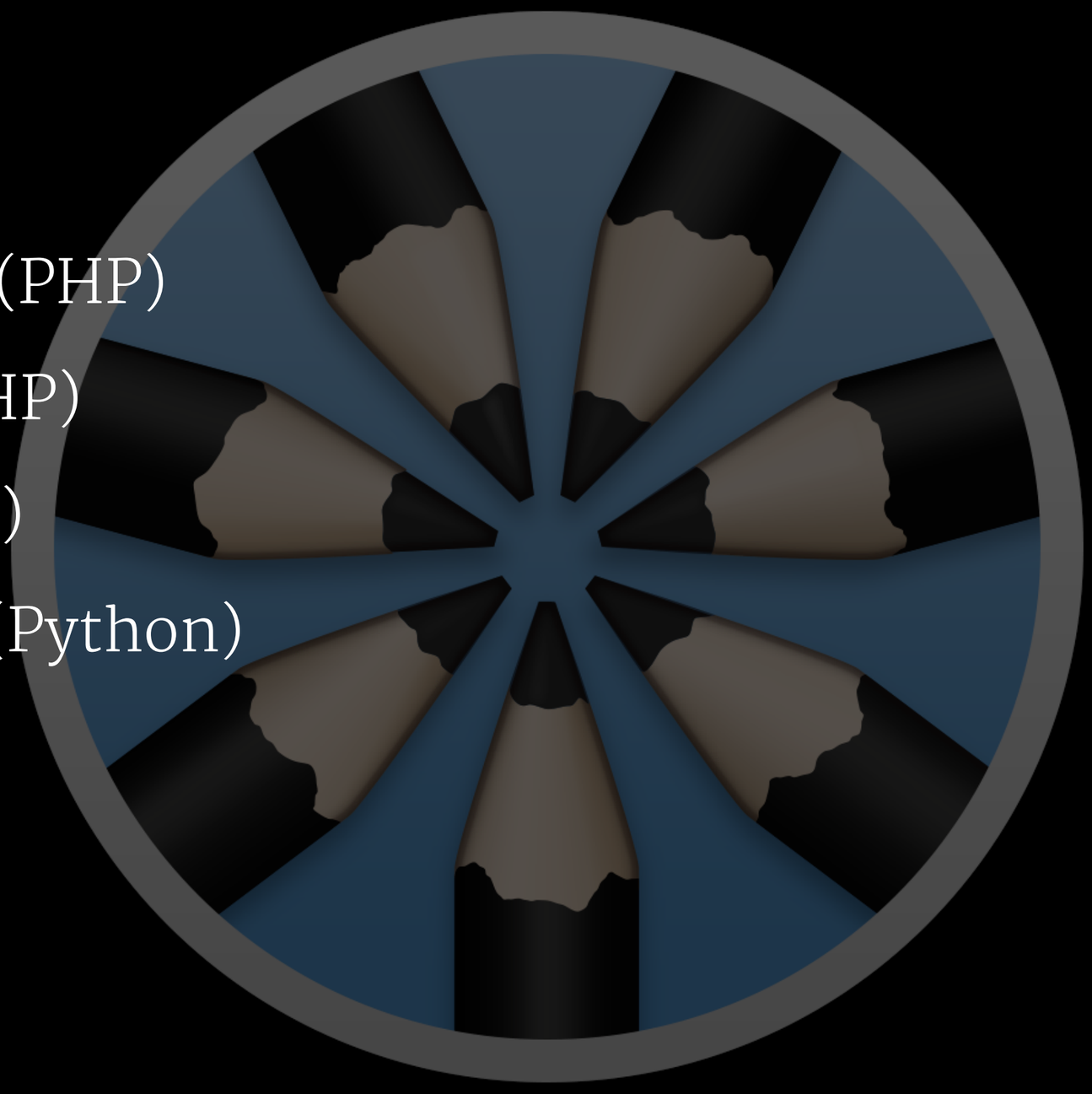
» You can export in various formats

» Check out Charles Edge's Krypted blog

» Importing's not going to be fun, sorry

Wiki

- MediaWiki (PHP)
- PMWiki (PHP)
- XWiki (Java)
- MoinMoin (Python)



I have questions

Open Directory

Certificates

Questions?

Thank you!

Links

macOS Server – Wikipedia
Prepare for changes to macOS Server – Apple Support
Linux – Wikipedia
Comparison of BSD operating systems – Wikipedia
Windows Server | Microsoft
Microsoft Office | Productivity Tools for Home & Office

Links

G Suite – Gmail, Docs, Drive, Calendar and More for Business
Homebrew
MAMP
WAMP
Migrating Data From The Apple Wiki Server – krypted.com
Migrating the Mail Service From macOS Server – krypted.com