



demon**saw**

Saving Cyberspace by Reinventing File Sharing

Eijah





The Modern Internet

The Price of Convenience

“...One can easily remain free of even the most intense political oppression simply by placing one’s faith and trust in institutions of authority.”

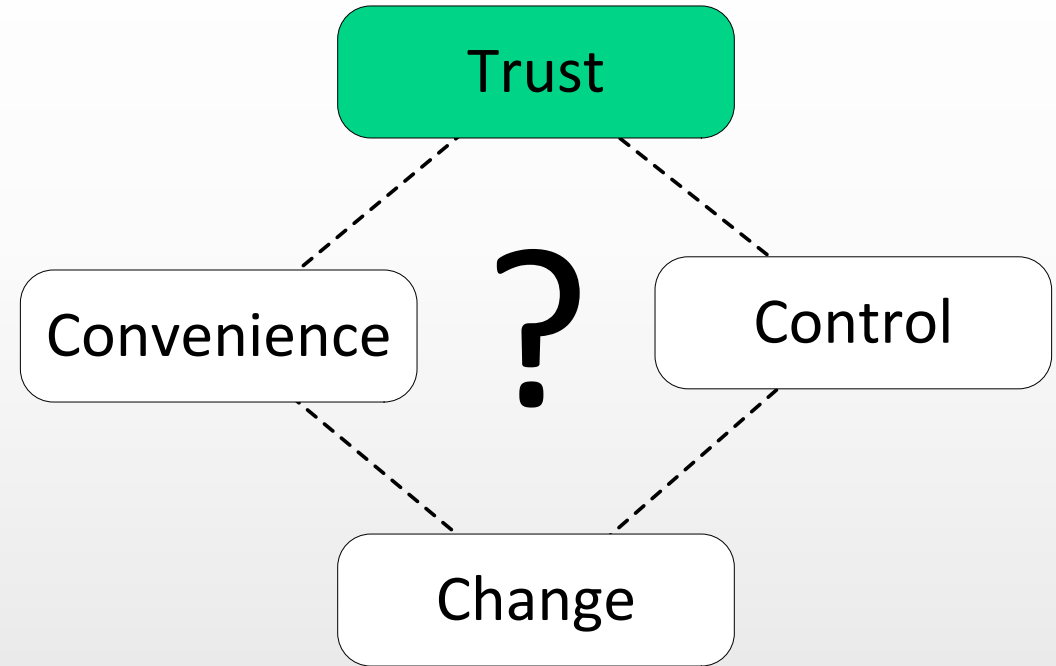
– *Glenn Greenwald*

“When I am afraid, I put my trust in you.”

– *Psalm 56:3*

A State of Trust

- Technological Innovation
 - Open source
 - Web and data standards
 - Shared protocols
 - Interoperability
- Benefits
 - Cost effective applications
 - Faster time-to-market
 - Cross-domain content
 - Convenience



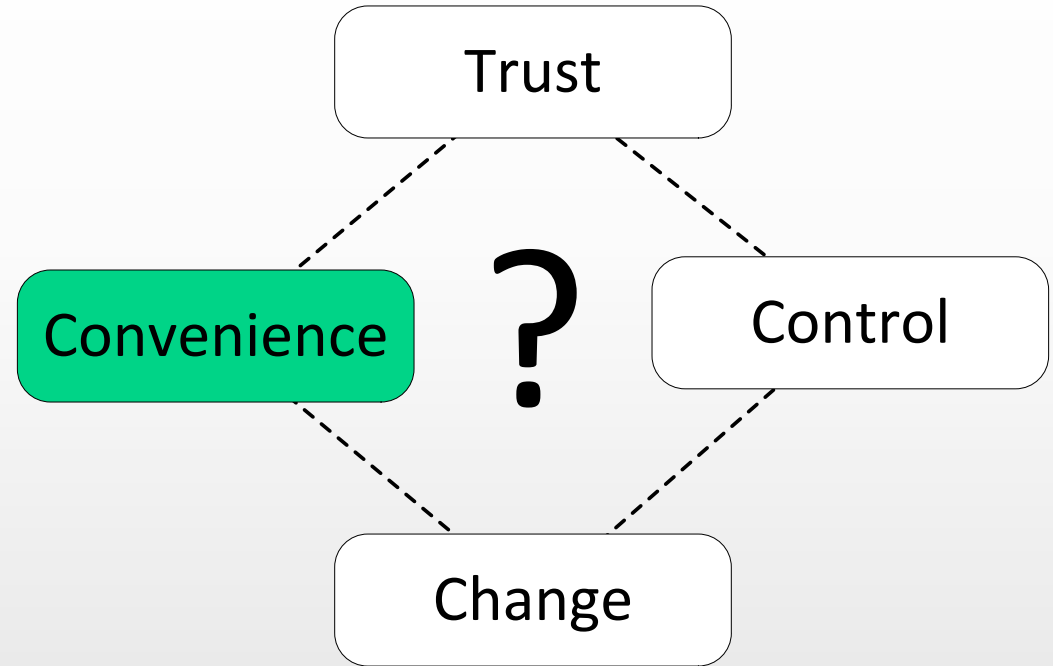
A State of Convenience

- Benefits

- Improved application usability
 - Google/FB login
- Everything at our fingertips
 - Multiple devices linked to accounts
- Simplification
 - Ease of cross-domain navigation

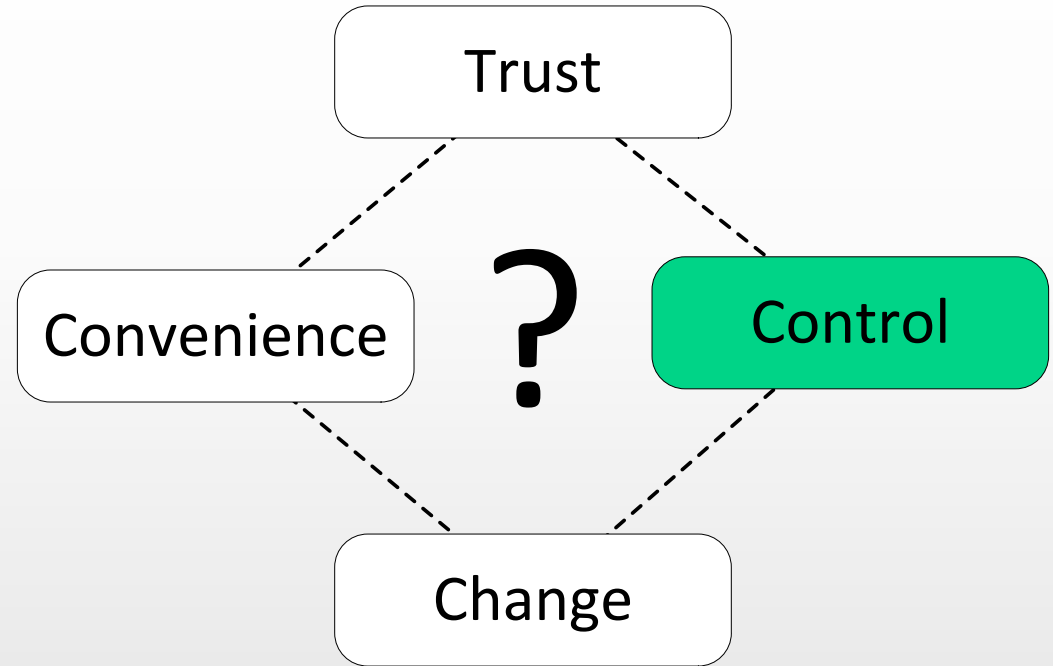
- Concerns

- Privacy
- Anonymity
- Potential for abuse
- Loss of control



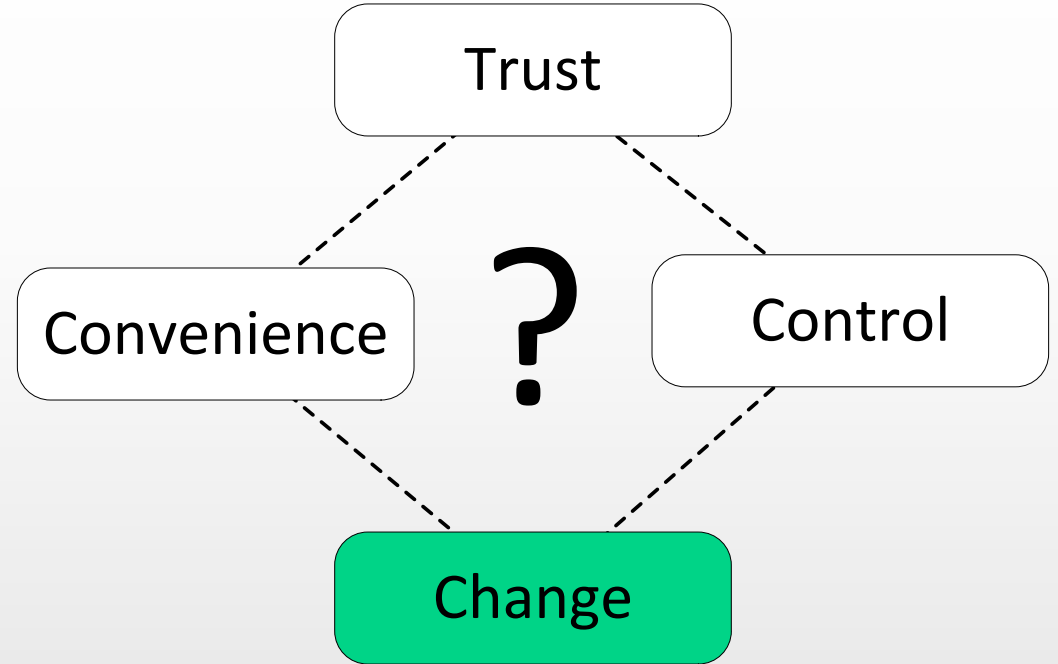
A State of Control

- Questions
 - Who owns our data?
 - Are we simply a source?
 - Are we greater than the sum?
- Loss of Control
 - Data retention and oversight
 - Legal compliance
 - Security breaches
 - Overall transparency
 - The bottom line



A State of Change

- The Truth
 - Convenience doesn't require trust
 - No need to give up control
 - The power to change the world
- The Path Forward
 - Become advocates for distrust
 - Break the mold of old and stale thinking
 - Create something secure and beautiful
 - Open up the Internet for Digital Self Expression





A Brief History

From FTP to μ Torrent

“The increase of disorder or entropy is what distinguishes the past from the future, giving a direction to time.”

– *Stephen Hawking, A Brief History of Time*

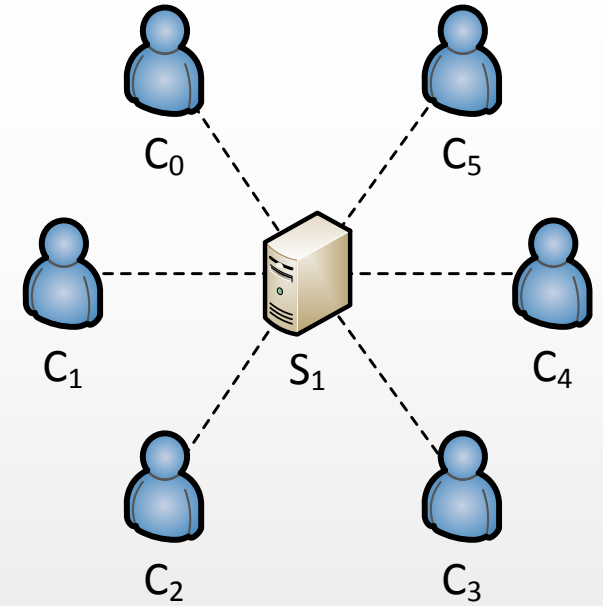
“Information is power. But like all power, there are those who want to keep it for themselves.”

– *Aaron Swartz*

Centralized Model

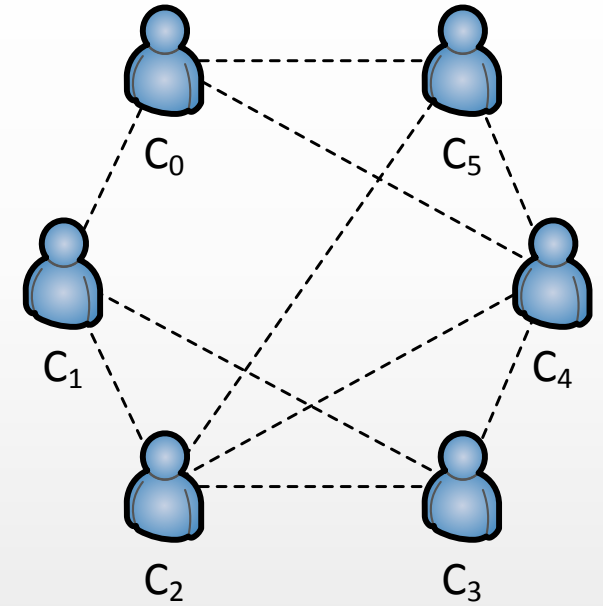
- Client-Server
 - S/FTP
 - Usenet
 - IRC
- File Systems
 - NTFS
 - Samba
 - NFS
- Web-Based
 - MediaFire
 - Mega(upload)
 - RapidShare

- Streaming
 - Netflix
 - Amazon Prime
 - HBO Go
 - Revision 3
 - Crackle
 - Hulu (+)
 - Aereo (RIP)
- Cloud Computing
 - Microsoft Azure, OneDrive
 - Amazon Web Services
 - Google Drive
 - Dropbox



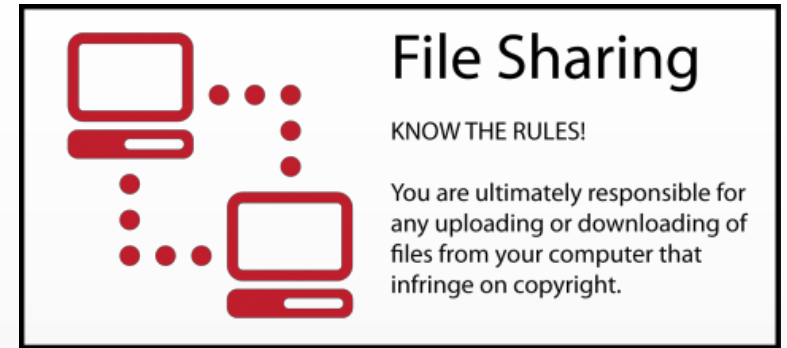
Decentralized Model

- Peer-to-Peer
 - BitTorrent
 - Instant Messenger
 - IRC (DCC)
 - Napster
- Content Distribution
 - Rsync
 - Plex
- Streaming
 - XBMC
 - Chromecast
 - DLNA



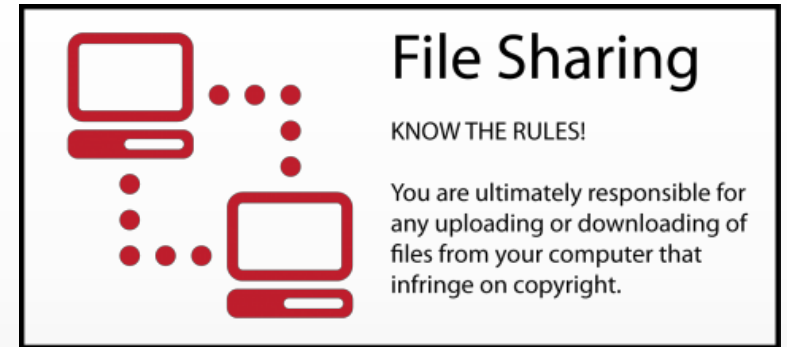
File Sharing Problems

- Insecure
 - Trust a 3rd party source
 - Reveal your identity
 - Legality issues
- Inflexible
 - Available everywhere at all times?
 - Force-sync content across all devices?
 - What if I'm offline?
- Inconvenient
 - Watch the show that I am paying for
 - Ads are an antiquated revenue model



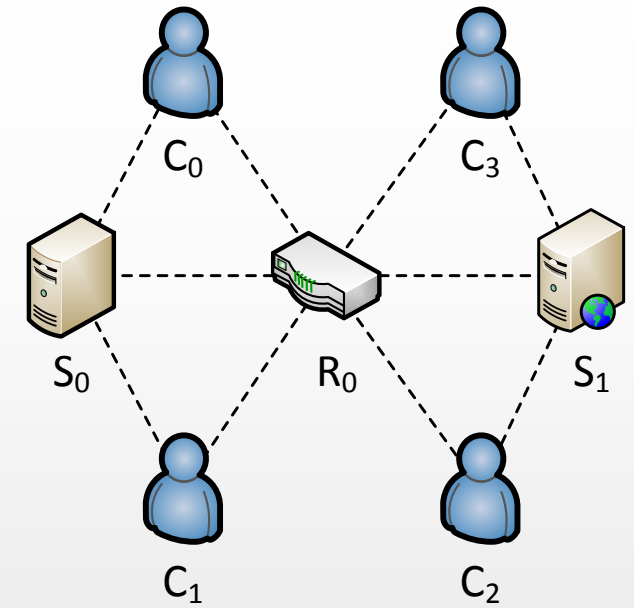
File Sharing Problems

- Unreliable
 - Exclusive content and licensing disputes
 - Network outages
 - Not enough seeds
- Expensive
 - Dropbox
 - The Cloud
 - Netflix, Amazon Prime
 - HBO Go
- Unfair
 - Not all usage patterns are the same
 - Acquisition vs. Aggregation



Hybrid Model

- Inadequacy Breeds Innovation
 - Created a niche market for solutions
 - VPN's, proxies, firewalls
 - Darknet, PeerBlock, Tor
 - Local AP's
 - Cure the symptoms, not the problem
- Reinventing File Sharing
 - Leverage the power of our Internet access
 - Create a hybrid model
 - The best of the Centralized and Decentralized models
 - Secure, anonymous, free, everywhere





A Recipe for Change

From Lemons to Fruity Juice

“If you want to achieve something, you build the basis for it.”

– Noam Chomsky

“The only way to keep a secret is to never have one.”

– *Julian Assange*

1) Authoritative Source

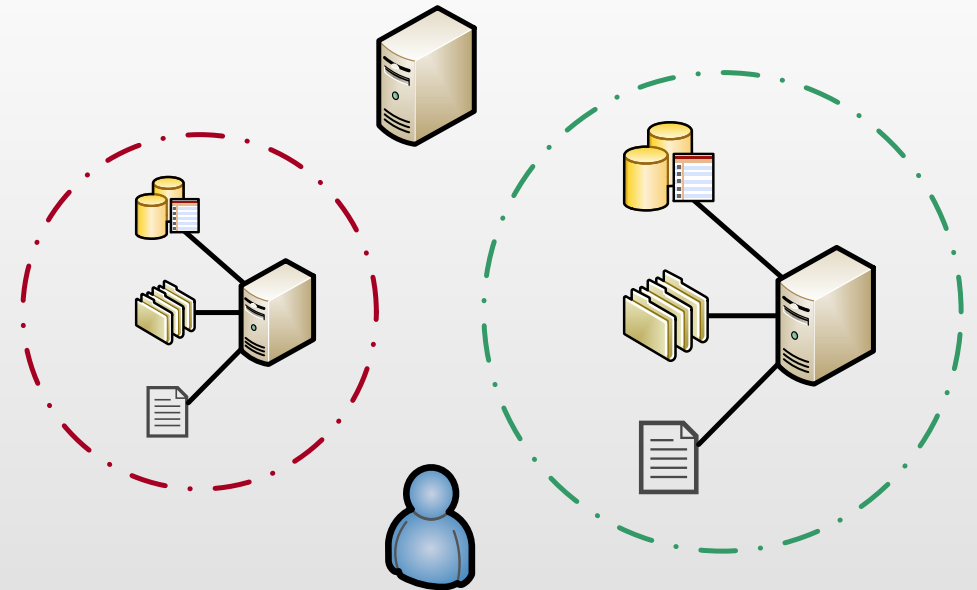
Saving Cyberspace means that we need to reclaim the Authoritative Source

- Overview

- Primary repository of trusted data
- Give away the Authoritative Source...
 - Give away the control of our sensitive data

- Data

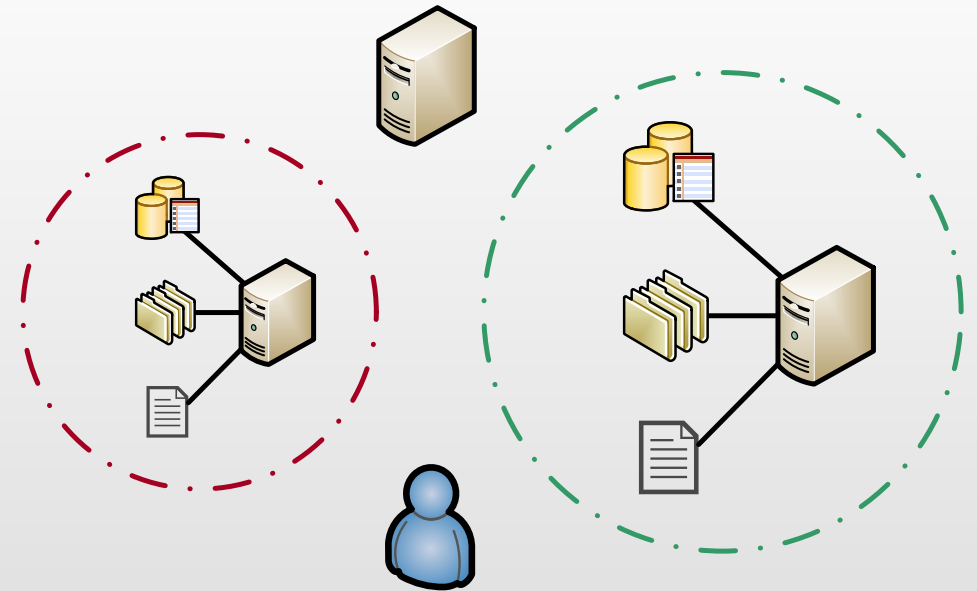
- The foundation of file sharing
 - First to be secured
 - Last to be compromised
- The price of online data storage
- Should never leave our control



1) Authoritative Source

Saving Cyberspace means that we need to reclaim the Authoritative Source

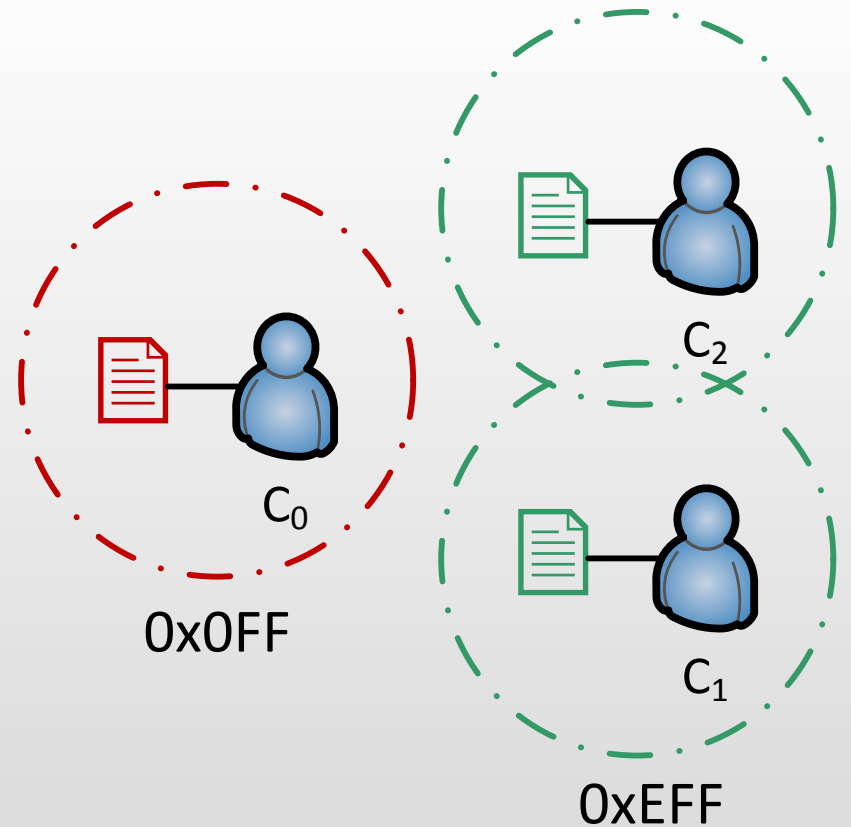
- Including...
 - The power to protect what's ours
 - The certainty that our data is protected
 - The choice to respond to attacks
 - The ability to remain anonymous
- The Solution
 - Take responsibility
 - Reclaim the Authoritative Source
 - Do what companies continue to fail at
 - Secure our data



2) Stateless Authentication

Saving Cyberspace means that we will need to redefine authentication

- Overview
 - What does it mean to authenticate?
- Stateful
 - Data storage
 - Antiquated and unnecessary
 - Rely on trusted 3rd parties
- Stateless
 - Form of shared secret authentication
 - Mutual coexistence by shared knowledge
 - Shared secret is obvious to a very specific group
 - No registration process or data storage
 - Dynamic encryption algorithms can be used
 - Benefits

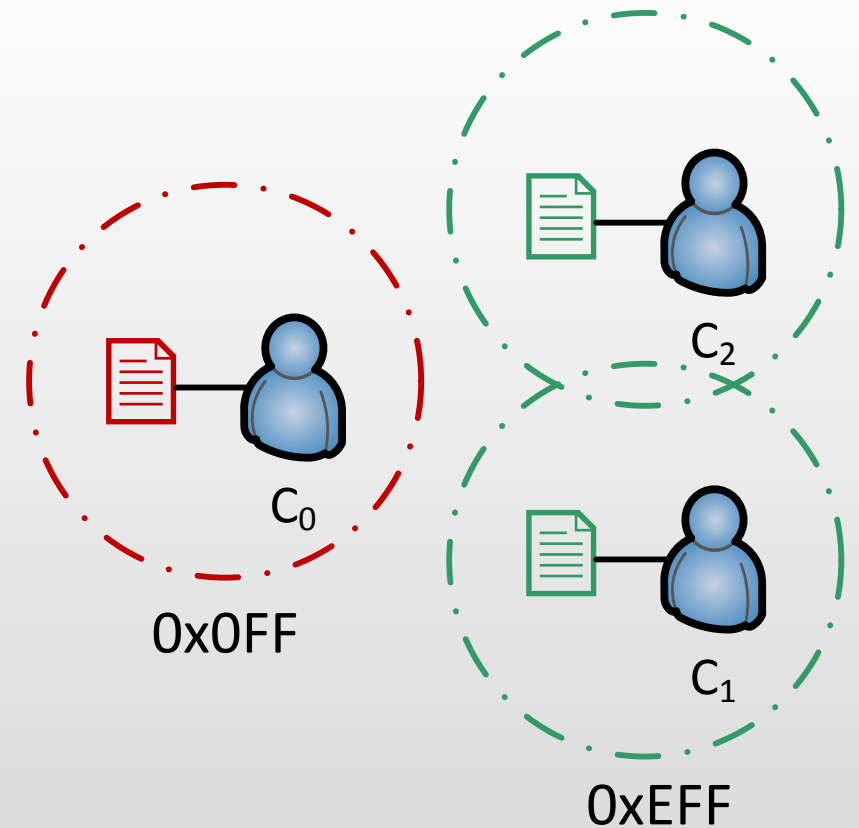


2) Stateless Authentication

Saving Cyberspace means that we will need to redefine authentication

- The Solution

- Redefine what it means to authenticate
- Create temporary trust
- Social network shared secrets
- No data is stored
- Loss of security becomes insignificant
 - Transitory nature of stateless authentication
 - Ability to quickly alter dynamic encryption scheme



3) Modular Security

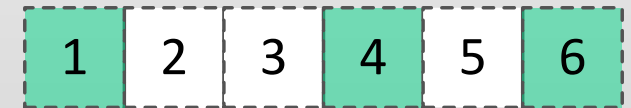
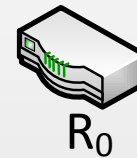
Saving Cyberspace means that we will need to implement a modular approach to security

- Overview

- Based on Layered Security
- Division of authority and separation of duties
- Double-blind
- Inability to store complete secrets

- Existing Applications

- Tempting targets for takedown
- Too many single points of failure
- Reveal too much information



3) Modular Security

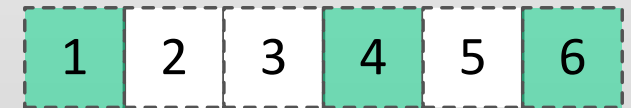
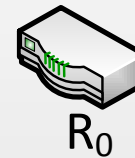
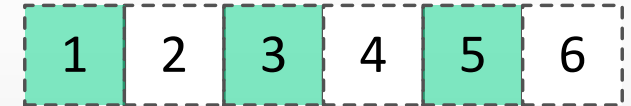
Saving Cyberspace means that we will need to implement a modular approach to security

- Plausible Deniability

- Always assume somebody is listening
- It's better to be paranoid than to be caught
- What they don't know won't hurt you
- They can't audit what you don't have

- The Solution

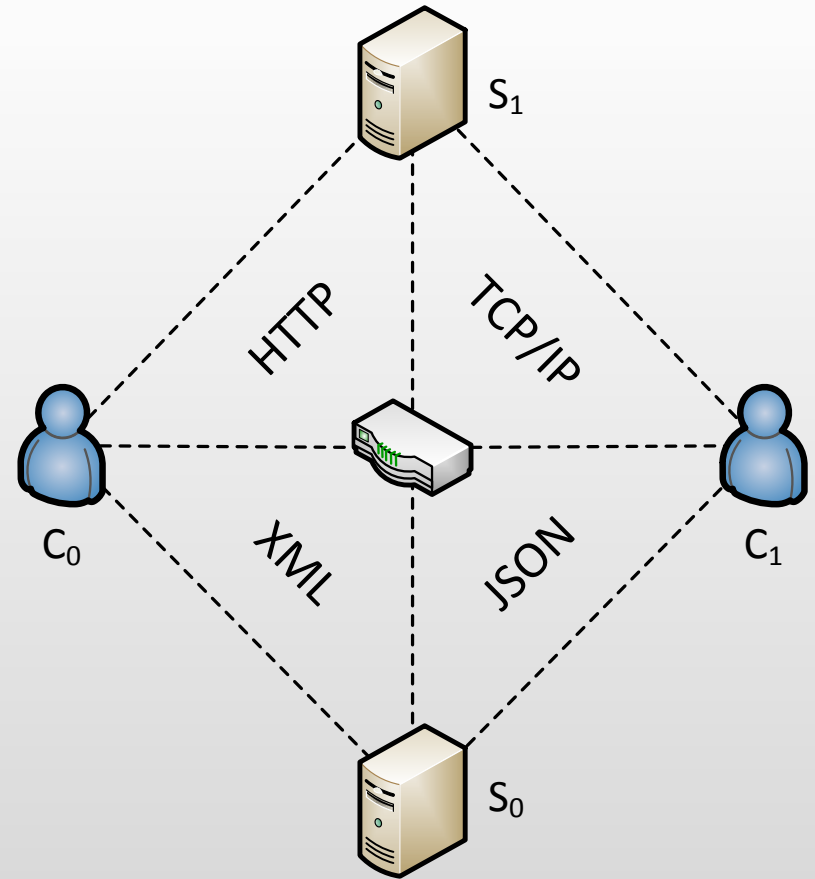
- Multiple modules of defense resist penetration
- Messages increase strength as they propagate
- Each module is...
 - Isolated
 - Autonomous
 - Self-sufficient
 - Resistant to attacks



4) Standard Protocols

Saving Cyberspace means that we need to leverage existing protocols

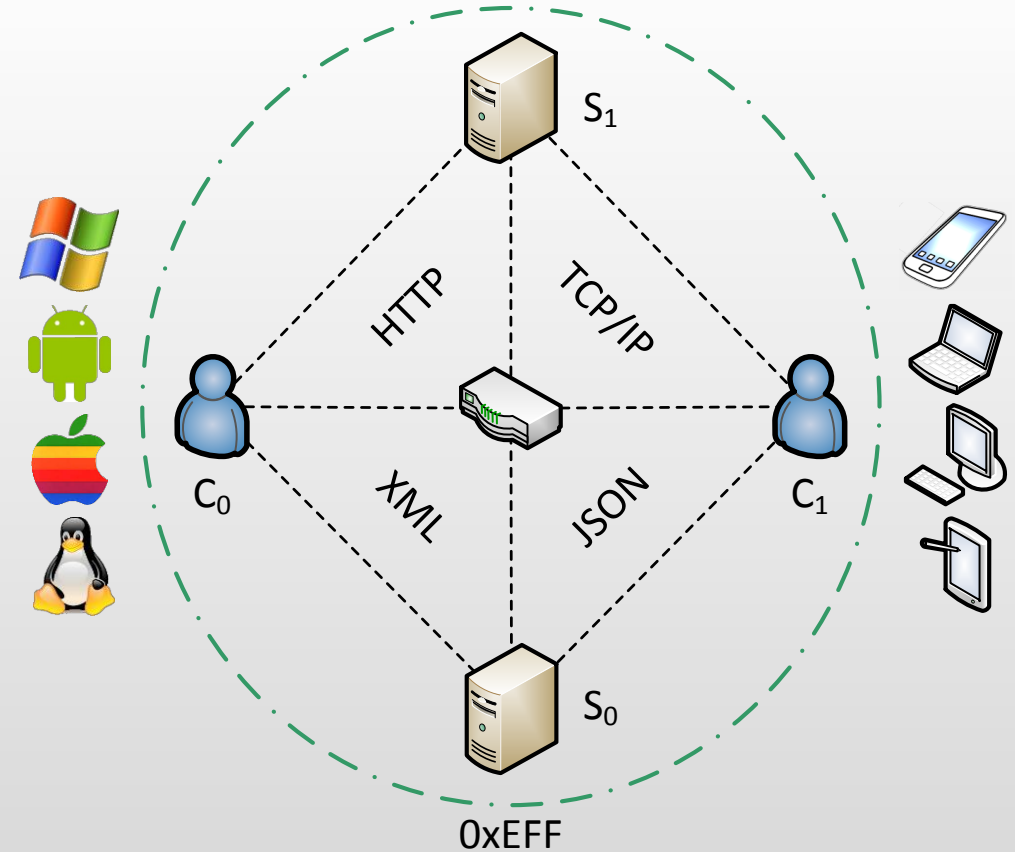
- Overview
 - Our choice of protocol does not define us
 - Creating a file sharing app is art and science
 - Creating a message protocol is wizardry
- Benefits
 - Obfuscation
 - Interoperability
 - Undetectable transfers
- The Solution
 - Keep a low profile
 - Use pre-existing protocols and standards
 - HTTP, XML, JSON, etc.



5) Distributed Endpoints

Saving Cyberspace means that we will need to support a more flexible and adaptive model for file sharing

- Overview
 - Simple and effective
 - Individuals, families, and organizations
- Devices
 - Phones, tablets
 - Workstations, Servers, and Laptops
 - Low-power devices
 - Raspberry Pi
 - Ouya
- Operating Systems
 - Windows, Linux, Mac
 - Android, iOS

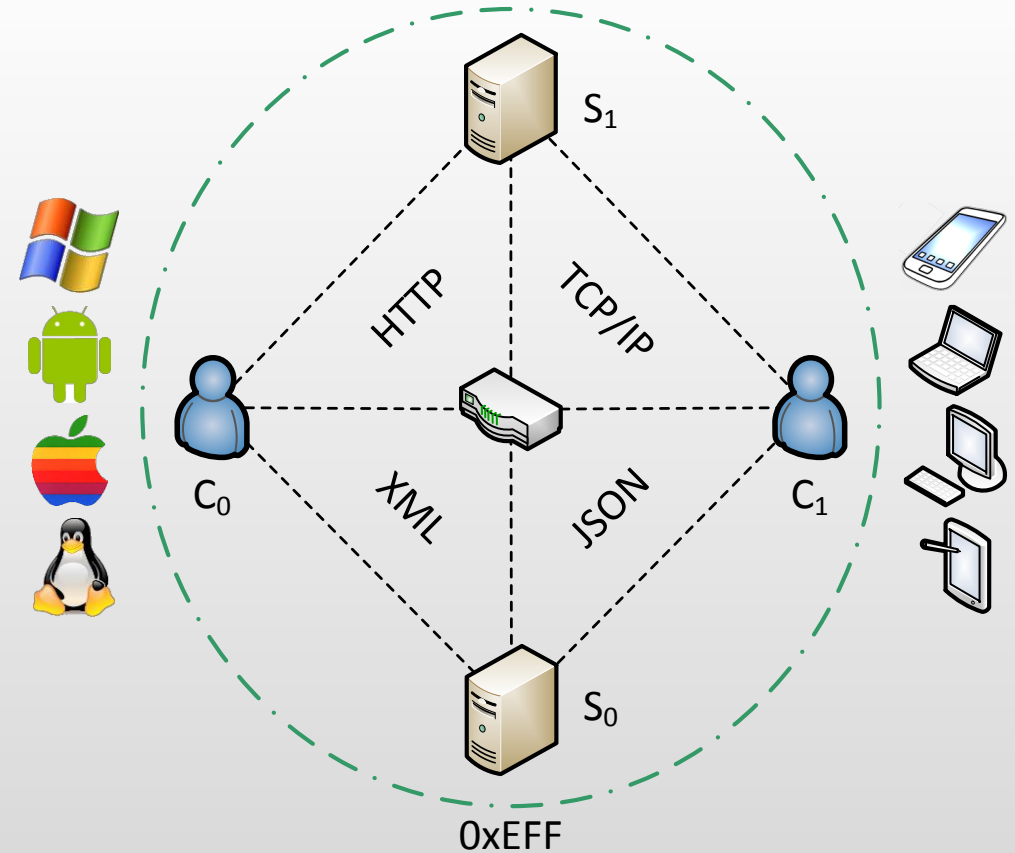


5) Distributed Endpoints

Saving Cyberspace means that we will need to support a more flexible and adaptive model for file sharing

- The Solution

- Hybrid Model
- Based on network routing technologies
- Abstract content from transfer
 - No fixed servers
 - No client communication
- Pervasive and ubiquitous
- Secure, anonymous, free, everywhere





demonsaw

Believe in the Right to Share

“I don’t want to live in a world where there’s no privacy, and therefore no room for intellectual exploration and creativity.”

– *Edward Snowden*

“People who think they know everything really annoy those of us who know we don't.”

– Bjarne Stroustrup

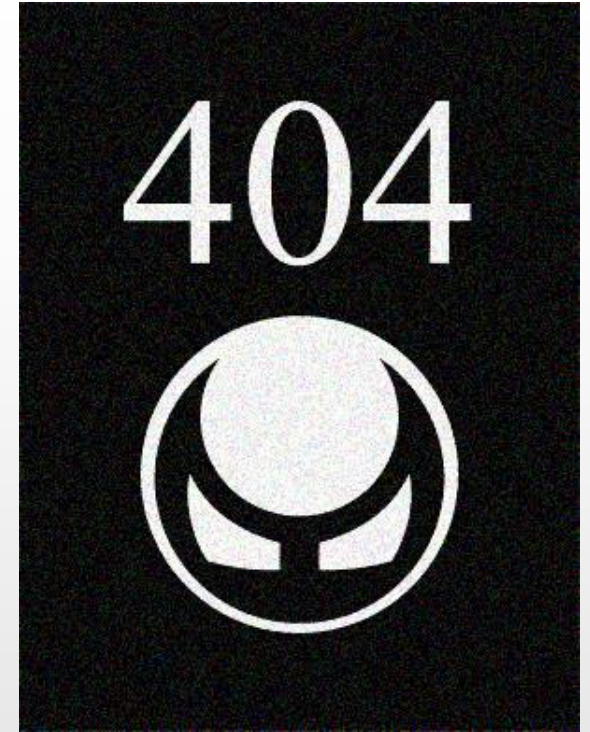
The Missing Link

- Another File Sharing App?
 - Casual Dropbox user with an addiction to torrents
 - Not happy with the current state of file sharing apps
 - Share with friends, family, and/or strangers
 - Access to all my content from anywhere in the world
 - Convenience and control
 - Why doesn't a solution for me already exist?
 - This is a problem that we can solve



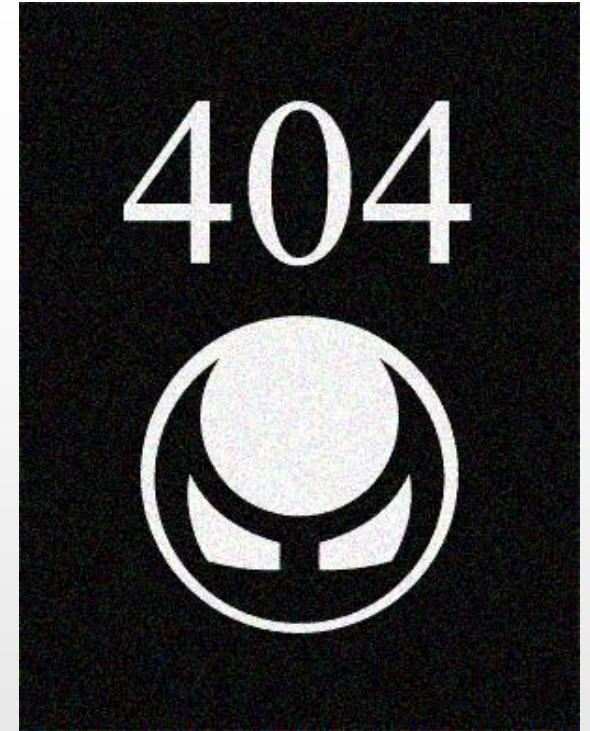
Demonsaw

- Client
 - Join a group
 - Search, browse
 - Share, transfer files
- Router
 - Groups clients
 - Controls program flow
 - Data transfer
- Server
 - Data transfer through a (web) hosting provider
- [Demo](#)



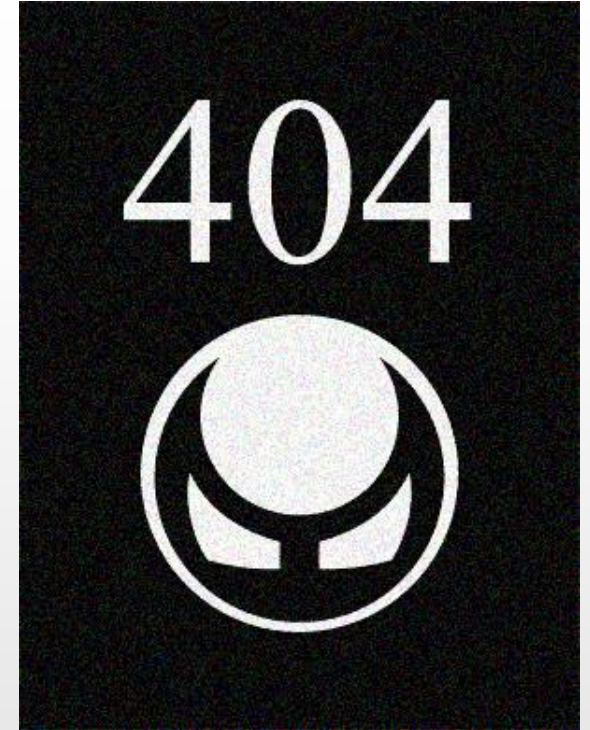
Demonsaw

- Secure
 - No P2P
 - No centralized servers
- Encrypted
 - Everything is encrypted
 - Leverage encryption standards
 - Varying encryption types and algorithms
 - Mutating, Automatic, Isolated, Data-Driven, and Stateless
 - Diffie Hellman, AES, etc.
 - Varying encryption techniques
 - Messages and data are always encrypted differently
 - Authentication, authorization



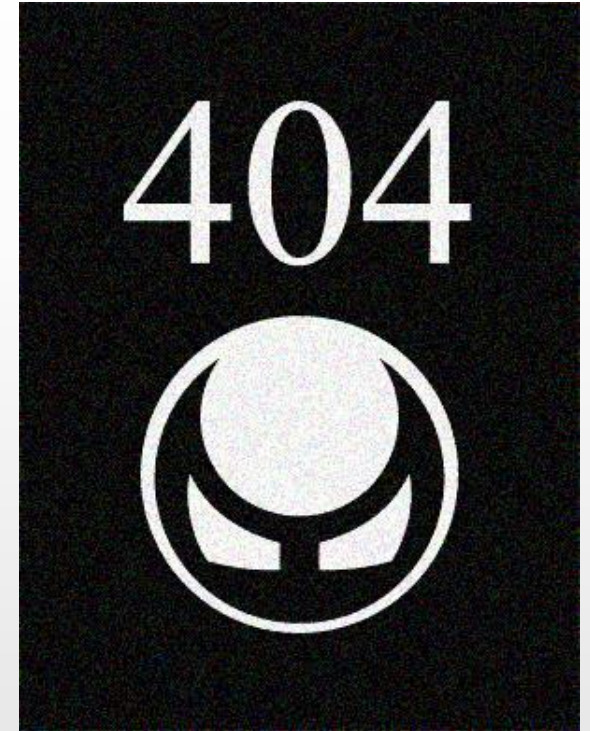
Demonsaw

- Anonymous
 - No logging
 - No registration
 - No data retention
 - No loss of control
- Modular
 - Separation of messages and content
 - Unable to deduce the type of content exchange
 - Need-to-know basis
- Free
 - No ads



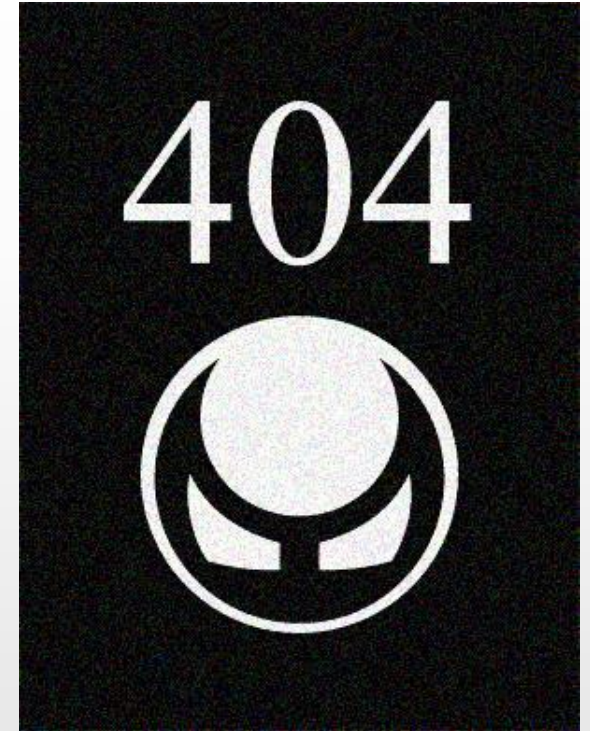
Demonsaw

- Simple
 - Share, Search, Browse, Transfer
 - Use at home, work, or while traveling
- Everywhere
 - Windows, Linux, Mac
 - Android, iOS
 - Web
- Design Patterns
 - Entity Component System (ECS)
 - Faster, more flexible, and easier to extend

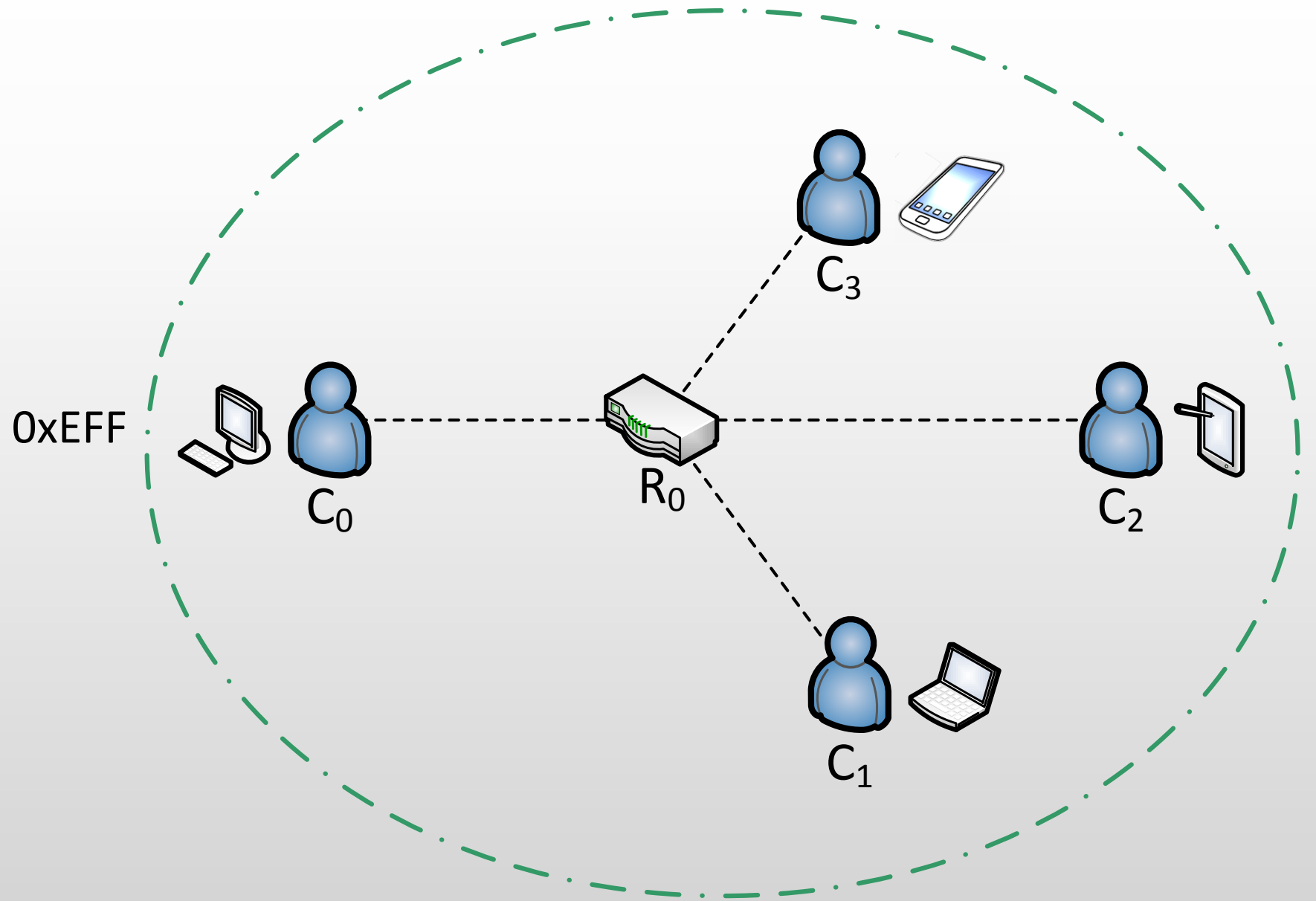


Demonsaw

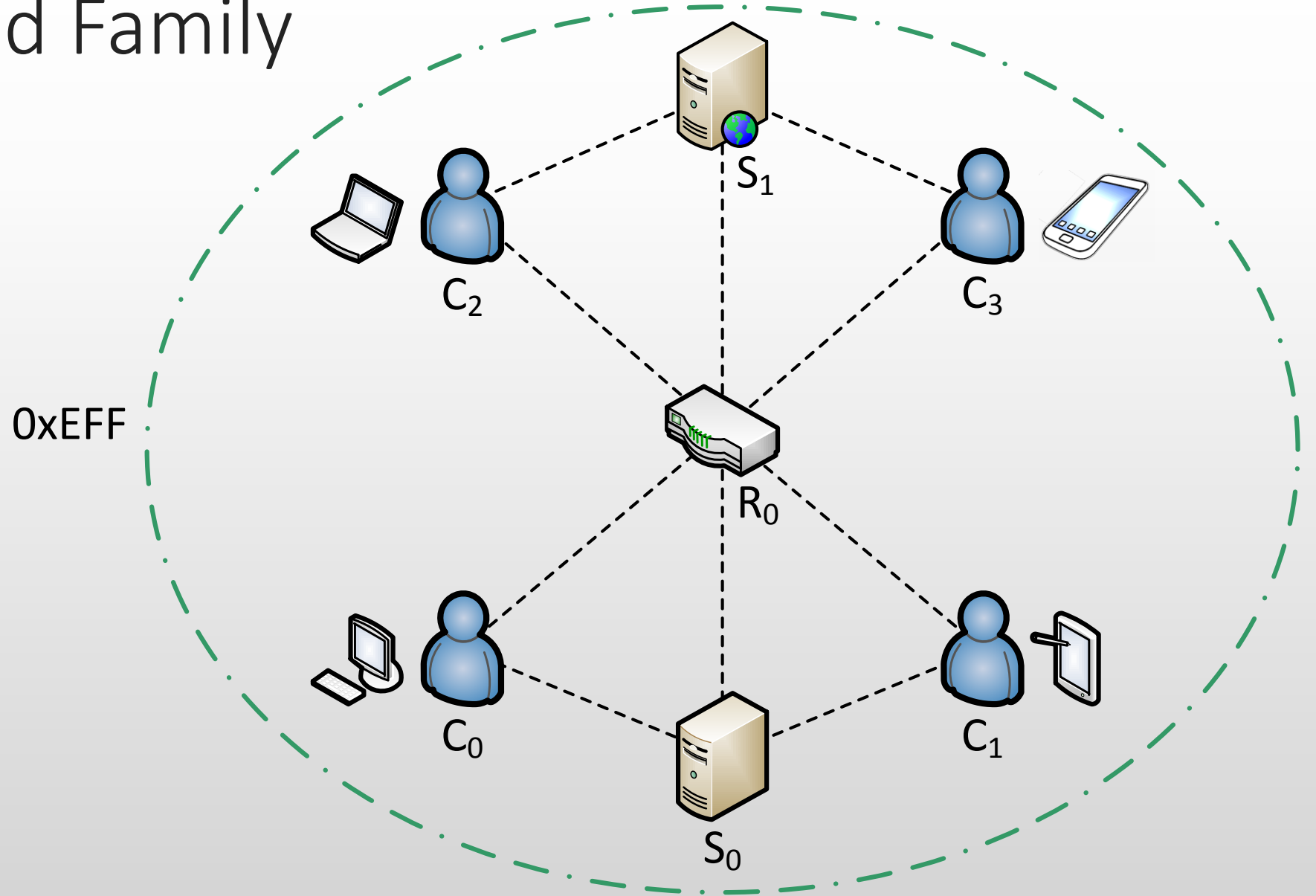
- Silent and Unseen
 - Leverage standards
 - Avoid suspicion
 - Remain undetectable
- Flexible and Adaptive
 - A million file sharing networks
 - Share files with yourself
 - Share files with family and friends
 - Share files with an organization



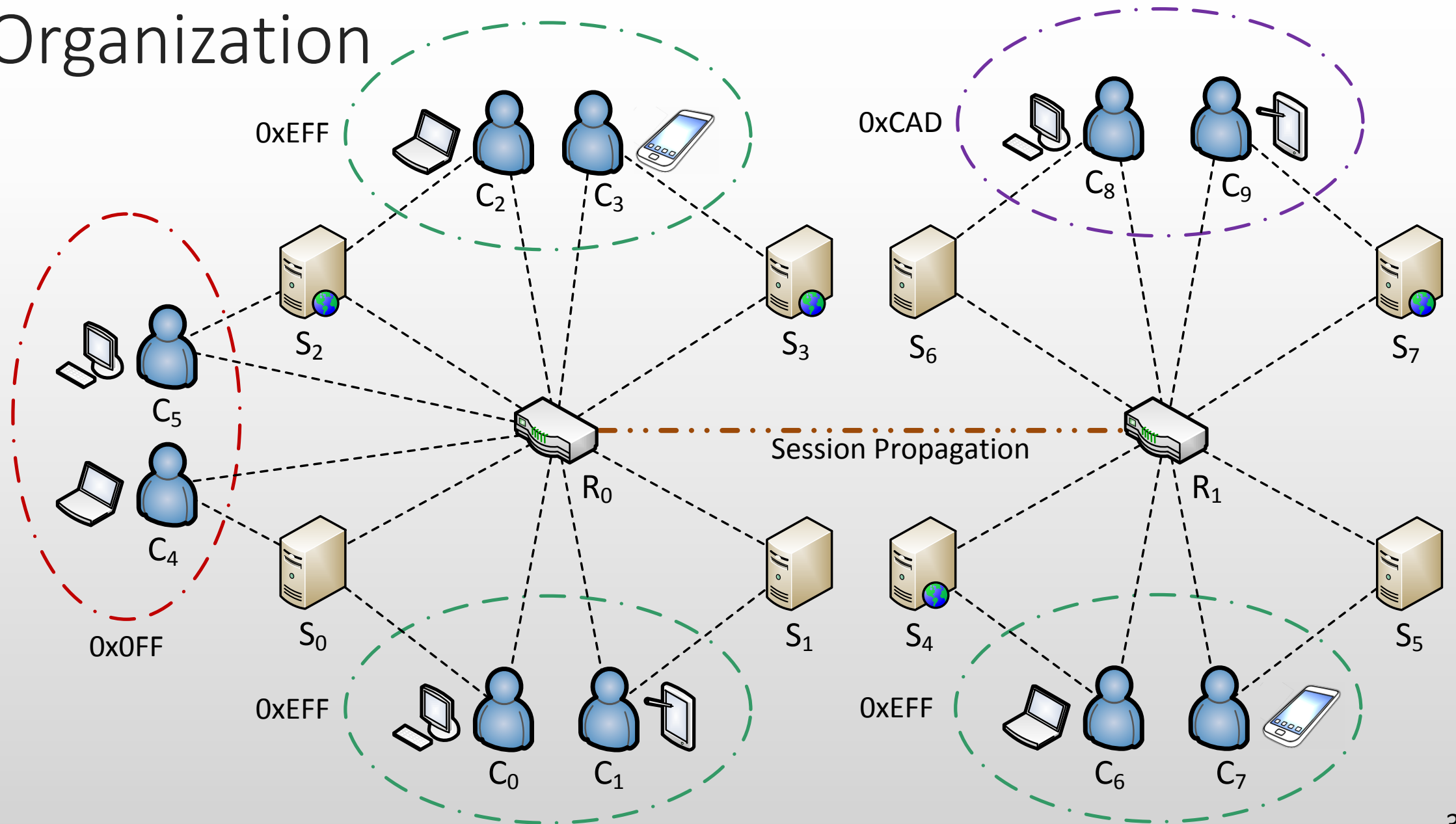
Individual



Friends and Family



Organization





Summary

The Path Forward

“Only a life lived for others is a life worthwhile.”

– *Albert Einstein*

“And one more thing.”

– *Steve Jobs*

Changing the World

- Unbounded Potential
 - Possess a tremendous amount of talent
 - Good at what we do and we enjoy what we're good at
 - We can create something new and beautiful
 - Together we can change the world
- Enacting Change
 - Demonsaw is a tool
 - Deviate from the insecure models of file-sharing
 - New way to share our content without fear
 - Secure, Anonymous, Free, Everywhere



Thank you



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Eijah





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Appendix

Standing on the Shoulders of Giants

“Freedom is never more than one generation away from extinction. We didn't pass it to our children in the bloodstream. It must be fought for, protected, and handed on for them to do the same.”

– *Ronald Reagan*

“Then Jesus asked him, What is your name? My name is Legion, he replied, for we are many.”

– *Mark 5:9*

References



- Wikipedia
 - http://en.wikipedia.org/wiki/File_sharing
 - http://en.wikipedia.org/wiki/Client_server
 - http://en.wikipedia.org/wiki/Peer_to_peer
- Images
 - http://studentaffairs.duke.edu/sites/default/files/u7/dos_RIAA.png
 - <https://www.flickr.com/photos/hughelectronic/sets/72157603862426534>
 - <http://www.timeshighereducation.co.uk/news/academy-and-business-aim-to-reforge-language-supply-chain/2007785.article>
- Network Models
 - <http://www.ianswer4u.com/2011/05/client-server-network-advantages-and.html#axzz3681DuDJP>
 - <http://www.ianswer4u.com/2011/05/peer-to-peer-network-p2p-advantages-and.html#axzz3681DuDJP>
 - <http://www.cmswire.com/cms/document-management/the-business-benefits-of-hybrid-online-file-sharing-024182.php>
 - <http://www.workshare.com/workshare/esg-report-the-demand-for-hybrid-online-file-sharing-solutions>



Quotes



“When I am afraid, I put my trust in you.”
– Psalm 56:3

“If you want to achieve something, you build the basis for it.”
– Noam Chomsky

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“The increase of disorder or entropy is what distinguishes the past from the future, giving a direction to time.”
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“Information is power. But like all power, there are those who want to keep it for themselves.”
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“I don't want to live in a world where there's no privacy, and therefore no room for intellectual exploration and creativity.”
– Edward Snowden

“People who think they know everything really annoy those of us who know we don't.”
– Bjarne Stroustrup

“If life gives you lemons, make some kind of fruity juice.”
– Conan O'Brien



Quotes

“The only way to keep a secret is to never have one.”
– Julian Assange

“You can now be a master of your own destiny.”
– Sean Parker

“Only a life lived for others is a life worthwhile.”
– Albert Einstein

“And one more thing.”
– Steve Jobs

“Non-conformity is the only real passion worth being ruled by.”
– Julian Assange

“...One can easily remain free of even the most intense political oppression simply by placing one’s faith and trust in institutions of authority.”
– Glenn Greenwald

“When the man with the *demon* saw Jesus a long way off, he ran and worshiped Him.”
– Mark 5:6

“Then Jesus asked him, What is your name? My name is Legion, he replied, for we are many.”
– Mark 5:9





Demo

Demonsaw 1.0

“Non-conformity is the only real passion worth being ruled by.”

– *Julian Assange*

“You can now be a master of your own destiny.”

– *Sean Parker*

Search

demonsaw client - v1.0

File Help

Share Search Browse Download Upload

Keywords: "daft punk" Type: Any Search

36 Files

Name	Size	Type
06 - Daft Punk - C.L.U. (Paul Oakenfold Remix).mp3	10.61 MB	MPEG Layer 3 Audio File
07 - Daft Punk - The Son of Flynn (Moby Remix).mp3	15.08 MB	MPEG Layer 3 Audio File
08 - Daft Punk - End of Line (Boys Noize Remix).mp3	13.09 MB	MPEG Layer 3 Audio File
09 - Daft Punk - Rinzler (Kaskade Remix).mp3	15.85 MB	MPEG Layer 3 Audio File
10 - Daft Punk - Encom Part 2 (Com Truise Remix).mp3	11.26 MB	MPEG Layer 3 Audio File
11 - Daft Punk - End of Line (Photek Remix).mp3	12.27 MB	MPEG Layer 3 Audio File
12 - Daft Punk - Arena (The Japanese Popstars Remix).mp3	14.14 MB	MPEG Layer 3 Audio File
13 - Daft Punk - Derezzed (Avicii Remix).mp3	11.71 MB	MPEG Layer 3 Audio File
14 - Daft Punk - Solar Sailor (Pretty Lights Remix).mp3	10.52 MB	MPEG Layer 3 Audio File
15 - Daft Punk - Tron Legacy (End Titles) (Sander Kleinenberg Remix).mp3	11.73 MB	MPEG Layer 3 Audio File
01 Daft Punk - Give Life Back to Music.mp3	10.52 MB	MPEG Layer 3 Audio File
02 Daft Punk - The Game of Love.mp3	12.34 MB	MPEG Layer 3 Audio File
03 Daft Punk - Giorgio by Moroder.mp3	20.82 MB	MPEG Layer 3 Audio File
04 Daft Punk - Within.mp3	8.76 MB	MPEG Layer 3 Audio File
05 Daft Punk - Instant Crush (feat. Julian Casablancas).mp3	12.92 MB	MPEG Layer 3 Audio File
06 Daft Punk - Lose Yourself to Dance (feat. Pharrell Williams).mp3	13.55 MB	MPEG Layer 3 Audio File
07 Daft Punk - Touch (feat. Paul Williams).mp3	19.08 MB	MPEG Layer 3 Audio File
08 Daft Punk - Get Lucky (feat. Pharrell Williams).mp3	14.15 MB	MPEG Layer 3 Audio File
09 Daft Punk - Beyond.mp3	11.12 MB	MPEG Layer 3 Audio File
10 Daft Punk - Motherboard.mp3	13.08 MB	MPEG Layer 3 Audio File
11 Daft Punk - Fragments of Time (feat. Todd Edwards).mp3	10.72 MB	MPEG Layer 3 Audio File
12 Daft Punk - Doin' It Right (feat. Panda Bear).mp3	9.63 MB	MPEG Layer 3 Audio File
13 Daft Punk - Contact.mp3	14.59 MB	MPEG Layer 3 Audio File
14 Daft Punk - Horizon.mp3	10.12 MB	MPEG Layer 3 Audio File



Browse

The screenshot shows the 'demonsaw client - v1.0' window. The interface includes a menu bar with 'File' and 'Help', and a toolbar with 'Share', 'Search', 'Browse', 'Download', and 'Upload' buttons. The main area displays a file tree with folders like 'demon', 'server', 'workstation', 'TV', and 'Music'. The 'Music' folder is expanded, showing a list of subfolders and files. The file list has columns for 'Name', 'Size', and 'Type'. The file '01.Man In The Box.mp3' is selected.

Name	Size	Type
demon		
server		
workstation		
TV	556.13 GB	
Music	44.32 GB	
ACDC	217.24 MB	
Aerosmith	121.82 MB	
Alanis Morissette	18.41 MB	
Alice in Chains	1.58 GB	
(1990) Facelift	124.18 MB	
(1992) Dirt	132.14 MB	
(1992) Sap	47.94 MB	
(1994) Jar Of Flies	70.83 MB	
(1995) Self-Titled	148.87 MB	
(1996) Again [Single]	38.73 MB	
(1996) Unplugged	163.98 MB	
(1999) Music Bank Box Set	505.76 MB	
(1999) Nothing Safe - Best Of The Box	5.61 MB	
(2000) Live	151.05 MB	
(2009) Black Gives Way To Blue	124.54 MB	
Greatest Hits	104.51 MB	
01.Man In The Box.mp3	11.17 MB	MPEG Layer 3 Audio File
02.Them Bones.mp3	5.94 MB	MPEG Layer 3 Audio File
03.Rooster.mp3	14.53 MB	MPEG Layer 3 Audio File
04.Angry Chair.mp3	11.21 MB	MPEG Layer 3 Audio File
05.Would.mp3	8.14 MB	MPEG Layer 3 Audio File
06.No Excuses.mp3	9.96 MB	MPEG Layer 3 Audio File
07.I Stay Away.mp3	9.90 MB	MPEG Layer 3 Audio File
08.Grind.mp3	11.13 MB	MPEG Layer 3 Audio File



Transfer

demonsaw client - v1.0

File Help

Share Search Browse Download Upload

11 Files

#	File	Size	Speed	Elapsed	Remaining	Progress
1	01.Man In The Box.mp3	11.17 MB	694.07 KB/s	00:00:16	00:00:00	100.0%
2	02.Them Bones.mp3	5.94 MB	603.37 KB/s	00:00:10	00:00:00	100.0%
3	03.Rooster.mp3	14.53 MB	695.06 KB/s	00:00:20	00:00:01	91.4%
4	04.Angry Chair.mp3	11.21 MB	649.85 KB/s	00:00:18	00:00:00	100.0%
5	05.Would.mp3	8.14 MB	661.13 KB/s	00:00:12	00:00:00	100.0%
6	06.No Excuses.mp3	9.96 MB	466.98 KB/s	00:00:19	00:00:03	85.1%
7	07.I Stay Away.mp3	9.90 MB	446.54 KB/s	00:00:19	00:00:04	81.7%
8	08.Grind.mp3	11.13 MB	91.47 KB/s	00:00:18	00:01:48	14.9%
9	09.Heaven Beside You.mp3	12.78 MB	412.73 KB/s	00:00:18	00:00:13	58.4%
10	10.Again.mp3	9.55 MB	499.26 KB/s	00:00:18	00:00:01	94.5%
11	alice in chains_greatest hits.jpg	196.82 KB	26.14 KB/s	00:00:07	00:00:00	100.0%



Share

demonsaw client - v1.0

File Help

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Music	44.32 GB	
ACDC	217.24 MB	
Black Ice	127.27 MB	
[1980] Back In Black	57.99 MB	
ACDC - Back In Black.mp3	3.89 MB	MPEG Layer 3 Audio File
ACDC - Hells Bells.mp3	4.77 MB	MPEG Layer 3 Audio File
ACDC - Highway To Hell.MP3	3.18 MB	MPEG Layer 3 Audio File
ACDC - Ride On2.mp3	8.06 MB	MPEG Layer 3 Audio File
ACDC - She Shook Me All Night Long(Remix featuring Bon Jovi, Metallica, Nirvana, Def Leppard, Van Halen, an	7.62 MB	MPEG Layer 3 Audio File
acdc-thunderstruck.mp3	4.46 MB	MPEG Layer 3 Audio File
Aerosmith	121.82 MB	
Alanis Morissette	18.41 MB	
Alice in Chains	1.58 GB	
Alter Bridge	58.85 MB	
Amy MacDonald	60.35 MB	
Audio Slave	1.19 GB	
Avenue Q Broadway Musical Soundtrack	97.46 MB	

