everything is gray

JAMES BARCLAY
DEVELOPER & DESIGNER

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Summary

Specialties: Software development, security, research, authentication, automation, applied cryptography, Apple platforms, breaking software, reverse engineering, mobile, web, UI/UX design, WebAuthn, Zero Trust, LLDB
Languages: Python, Objective-C, Golang, Swift, Shell, C, Java, JavaScript
Databases: MySQL, PostgreSQL, SQLite, Redis

Experience

Senior R&D Engineer, Duo Security, Inc. (now part of Cisco Systems, Inc.) Ann Arbor, MI Dec 2015 -

- I'm a Senior Research and Development Engineer at Duo Security, now a part of Cisco. As a senior member of the research team, I help drive product direction and design, architect, and develop products on the 12-24 month horizon. I also perform technical research, break software, consult with product and engineering teams, participate in technical working groups, mentor other team members, present at conferences, and publish my research on duo.com/labs. Some of my selected achievements are listed below:
  - Designed, architected, and developed initial support for WebAuthn in our product.
  - Wrote and maintain one of the most popular WebAuthn libraries, PyWebAuthn, which is available on PyPI.
  - Started an internal "Open-Source Day," designed to facilitate regular contributions to open-source software and sharing of our knowledge with the world.
  - Helped design, architect, and develop flagship features of our Duo Beyond product offering, including:
    - Duo Network Gateway
    - Trusted Endpoints
  - Prototyped support for Android Protected Confirmation in Duo Mobile for Android, which was presented on stage at Google I/O 2018 during the "What's new in Android security" session.
  - Designed and developed the server-side portion of SSH support in the Duo Network Gateway, and contributed to the client-side portion.
  - Designed and developed support for the Google Verified Access Remote Attestation API in Duo.
  - Helped design and develop the initial version of Duo Two-Factor Authentication for macOS.

- Identified an authentication weakness in Apple's Device Enrollment Program. [Published the research on the Duo Labs website](#) and presented at both [ekoparty](#) and an internal Cisco conference.
- Wrote and contributed to various blog posts on [duo.com/labs](#).
- Was quoted in dozens of technical and business publications on my research and as an expert in various topics, including Forbes, Ars Technica, CNET, Politico, The Register, and many others.

Invited Expert, Web Authentication, W3C Cambridge, MA Dec 2018 -
- I'm a W3C Invited Expert for the Web Authentication Working Group. Web Authentication is an API for creating and accessing public-key credentials on the web, and can provide strong authentication without the use of passwords using commodity hardware. As a member of the Working Group, I attend weekly meetings, face-to-face meetings, and contribute to the specification. I'm also [acknowledged in the specification itself](#).

Tools Engineer, Pinterest, Inc. San Francisco, CA Oct 2014 - Dec 2015
- Wrote software in Python to automate our employee on-boarding and off-boarding process. This reduced the amount of time required to onboard a single employee from days to minutes.
- Wrote multiple Web applications in Python with the Flask framework. Examples include an internal tool that employees use to request an identity certificate without ever transmitting the private key, a digital signage tool that allows employees to control Mac minis through a browser, and a Web hook that processes offer acceptances from our applicant tracking system.
- Wrote software to automate our engineering promotion process cycle. Previously, this was done manually by HR aggregating hundreds of documents into single PDF "packets."
- Added SAML support to several internal tools to improve security posture.
- Wrote an internal URL shortener with a user system and SAML authentication.
- Wrote software to map IP addresses to LDAP users and forward to Splunk.
- Improved how employees are automatically granted employee level access to the Pinterest admin tool.
- Support and administer an OpenLDAP system used by tens of thousands of clients.
- Participate in an on-call rotation for both IT systems and security.

Senior IT Consultant, The Linde Group, Inc. Berkeley, CA 2012 - 2014
- Designed and developed a Mac application in Objective-C/Cocoa used by thousands of remote employees to migrate to new laptops without intervention from IT staff.
- Designed and developed a virtual machine testing environment used by hundreds of developers to schedule virtual machine reservations. Written in Python with Twisted and Django. Also developed a custom installer and associated shell scripts for enrolling new VM hosts with the system.
- Updated and customized an open source Mac application for an organization that enabled them to migrate hundreds of Open Directory user accounts to Active Directory user accounts on OS X clients.
- Designed and developed a command-line utility in Python for dynamically generating Google groups based on LDAP queries.
- Developed a system for keeping employee records synchronized between an HRIS system and an LDAP directory.
- Designed and developed a command-line utility that enabled a large government agency to migrate users from Windows to OS X.
- Developed a process for automatically alerting key security personnel by email if a non-encrypted SSH key is found on a server or client machine.
- Wrote a multi-domain Active Directory authentication backend for Django.

Engineer, Macprofessionals, Inc. Novi, MI 2010 - 2012
- Co-developed an internal web-based reporting tool with the Twisted Python framework and Nevow Web application framework.
- Designed and developed an iPad "Getting Started" web app for a top 10 University on behalf of Apple that was deployed as a Web clip on every iPad that was issued to incoming freshmen.
- Improved numerous business processes through automation, including shipment notifications and new account information for thousands of remote employees.
- Worked with a small team to migrate a legacy PHP and static site to a modern WordPress site.
- Maintained and deployed infrastructure with Puppet.

Systems Administrator, University of Michigan-Flint Flint, MI 2010 - 2011
- Designed and supported a computer lab and related infrastructure in the Communication and Visual Arts department.
- Architected a directory system for authentication and management.
- Configured network accounts on client workstations.

- Designed and configured an imaging system and deployment workflow for new workstations.

Mac Genius, Apple Inc. Novi, MI 2007 - 2010
- Designed and developed an internal communications site in PHP/Drupal.
- Worked under extreme amounts of pressure to resolve technical problems quickly and efficiently for Apple customers.
- Performed repairs on desktops, notebooks, and portable devices.

Freelance Web Designer/Developer Flint, MI 2005 - 2012
- Built multiple WordPress and Drupal sites for clients and personal use.
- Designed and developed a WordPress theme that has been downloaded more than 10,000 times, (see wordpress.org/extend/themes/simplixity).

Open-Source/Commercial Software

PyWebAuthn (Python) - Lead Developer - github.com/duo-labs/py_webauthn - Open-Source
DuoAPISwift (Swift) - Lead Developer - github.com/duosecurity/duo_api_swift - Open-Source
EFIgy (Python) - Maintainer - github.com/duo-labs/EFIgy - Open-Source
EFIgy-GUI (Objective-C) - Lead Developer - github.com/duo-labs/EFIgy-GUI - Open-Source
TMNotifier (Objective-C) - Lead Developer - tmnotifier.com - Commercial
AutoPkgr (Objective-C) - Original Developer - lindegroup.com/autopkgr - Open-Source

Patents

Systems and Methods for Endpoint Management Classification - [US20180007046A1](US20180007046A1)

Publications

Passwordless Authentication - No Starch Press - (Book, In-Progress)
MDM Me Maybe: Device Enrollment Program Security - duo.com/labs/research/mdm-me-maybe

Podcasts

April 2019 - **Risky Business Soap Box** - *All About WebAuthn with Duo Security*
February 2019 - **La French Connection 0x092** - *WebAuthn (Anglais)*
December 2018 - **The CyberWire Episode 66 (Research Saturday)** - *Apple Device Enrollment vulnerabilities explored*
August 2018 - **Risky Business #494** - *Cisco customers have a bad week, plus a deep dive on WebAuthn*
August 2013 - **5by5 Systematic Podcast** - *James Barclay, the IT in Creativity*

Public Speaking

April 2019 - **Cisco Offensive Summit** - Knoxville, TN - MDM Me Maybe: Device Enrollment Program Security

October 2018 - **Triangle InfoSeCon** - Raleigh, NC - Get Rid of Passwords With This One Weird Trick

September 2018 - **ekoparty** - Buenos Aires, Argentina - MDM Me Maybe: Device Enrollment Program Security

March 2018 - **Source Mesa** - Mesa, AZ - Get Rid of Passwords With This One Weird Trick

October 2017 - **LASCON** - Austin, TX - From Zero to Zero Trust

September 2017 - **ToorCon** - San Diego, CA - From Zero to Zero Trust

February 2016 - **MacAD UK** - London, United Kingdom - Cocoa Development with Objective-C and Python

September 2015 - **Macbrained at Square** - San Francisco, CA - Working with System Frameworks in Python and Objective-C

July 2015 - **PSU MacAdmins** - State College, PA - Working with System Frameworks in Python and Objective-C

August 2014 - **Macbrained at Zendesk** - San Francisco, CA - Creating GUIs for Command-Line Utilities With Objective-C/Cocoa

January 2014 - **Macbrained at The Linde Group** - Berkeley, CA - *Command-Line Productivity for Mac Admins*

October 2013 - **JAMF Nation User Conference** - Minneapolis, MN - *Ghost in the Cloud: Deploying the JSS on Amazon EC2*

Education

University of Michigan-Flint — BFA in Visual Communications, 2008-2011

Awards

March 2015 - Winner (1 of 7) - Pinterest "App-a-Thon" presented at Pinterest in San Francisco, CA

July 2014 - 1st Place - Macbrained "Hack the Mac" Hackathon presented at Square in San Francisco, CA