



OpenID Connect Working Group and OpenID Certification

May 21, 2020

Michael B. Jones

Identity Standards Architect – Microsoft

You're Almost Certainly Using OpenID Connect!



- Android, Apple, AOL, Deutsche Telekom, Google, GSMA Mobile Connect, Microsoft, NEC, NTT, Salesforce, Softbank, Symantec, Verizon, Yahoo! Japan all use OpenID Connect
 - Many other sites and apps large and small use OpenID Connect

Open Letters to Apple



- OpenID Foundation wrote open letter to Apple about problems with Sign In with Apple in June
 - <https://openid.net/2019/06/27/open-letter-from-the-openid-foundation-to-apple-regarding-sign-in-with-apple/>
- Apple has since fixed security and interop problems identified!
 - Standard OpenID Connect libraries can now be used in many cases
- Posted a second open letter commending them on the improvements made

Session Management / Logout (work in progress)



- Three approaches specified by the working group:
 - Session Management
 - https://openid.net/specs/openid-connect-session-1_0.html
 - Uses HTML5 postMessage to communicate state change messages between OP and RP iframes
 - Front-Channel Logout
 - https://openid.net/specs/openid-connect-frontchannel-1_0.html
 - Uses HTTP GET to load image or iframe, triggering logout (similar to SAML, WS-Federation)
 - Back-Channel Logout
 - https://openid.net/specs/openid-connect-backchannel-1_0.html
 - Server-to-communication not using the browser
 - Can be used by native applications, which have no active browser
- Unfortunately, no one approach best for all use cases
- All support multiple logged in sessions from OP at RP
- Recent WG decision to split RP-Initiated Logout into its own spec
 - Is used with all three OP-Initiated Logout mechanisms
- Logout certification tests now in pilot phase
 - WG is testing multiple implementations before making logout specs Final

Native SSO Specification (work in progress)



- OpenID Connect Native SSO for Mobile Apps specification
 - https://openid.net/specs/openid-connect-native-sso-1_0.html
- Enables Single Sign-On across apps by the same vendor
- Assigns a device secret issued by the AS
- New specification written by George Fletcher
 - *Please review!*

unmet_authentication_requirements Specification (work in progress)



- Defines new error code unmet_authentication_requirements
 - https://openid.net/specs/openid-connect-unmet-authentication-requirements-1_0.html
- Enables OP to signal that it failed to authenticate the End-User per the RP's requirements
- New specification written by Torsten Lodderstedt
 - *Please review!*

prompt=create Specification (work in progress)



- Initiating User Registration via OpenID Connect specification
 - https://openid.net/specs/openid-connect-prompt-create-1_0.html
- Requests enabling account creation during authentication
- Active discussion of relationships between account creation and use of existing accounts
- New specification written by George Fletcher
 - *Please review!*

Second Errata Set



- Errata process corrects typos, etc. discovered
 - Makes no normative changes
- Edits under way for second errata set
- https://openid.net/specs/openid-connect-core-1_0-25.html is current Core errata draft

Use of Self-Issued OpenID Provider



- OpenID Connect defines Self-Issued OpenID Provider
 - https://openid.net/specs/openid-connect-core-1_0.html#SelfIssued
- Lets you be your own identity provider
 - Rather than a third party
- Identity represented as asymmetric key pair controlled by you
- Self-Issued OpenID Provider being used to achieve DID auth
 - Described at <https://self-issued.info/?p=2013>

Related Working Groups



- eKYC and Identity Assurance WG
 - JWT format for verified claims with identity assurance information
- International Government Profile (iGov) WG
 - OpenID Connect profile for government & high-value commercial applications
- Enhanced Authentication Profile (EAP) WG
 - Enables integration with FIDO and other phishing-resistant authentication solutions
- **Mobile Operator Discovery, Registration & autheNticAtion (MODRNA) WG**
 - Mobile operator profiles for OpenID Connect
- Financial-grade API (FAPI) WG
 - Enables secure API access to high-value services
 - Used for Open Banking APIs in many jurisdictions, including the UK
- Research and Education (R&E) WG
 - Profiles OpenID Connect to ease adoption in the Research and Education (R&E) sector

Federation Specification (work in progress)



- OpenID Connect Federation specification
 - https://openid.net/specs/openid-connect-federation-1_0.html
- Enables establishment and maintenance of multi-party federations using OpenID Connect
- Defines hierarchical JSON-based metadata structures for federation participants
- Second Implementer's Draft status reached
- Multiple interop events to occur this year
- *Please review and implement!*

OpenID Connect Resources



- OpenID Connect
 - <https://openid.net/connect/>
- Frequently Asked Questions
 - <https://openid.net/connect/faq/>
- Working Group Mailing List
 - <https://lists.openid.net/mailman/listinfo/openid-specs-ab>
- OpenID Certification Program
 - <https://openid.net/certification/>
- Certified OpenID Connect Implementations Featured for Developers
 - <https://openid.net/developers/certified/>
- Mike Jones' Blog
 - <https://self-issued.info/>
- Nat Sakimura's Blog
 - <https://nat.sakimura.org/>
- John Bradley's Blog
 - <https://www.thread-safe.com/>

What is OpenID Certification?



- Enables OpenID Connect and FAPI implementations to be certified as meeting the requirements of defined conformance profiles
 - Goal is to make high-quality, secure, interoperable OpenID Connect implementations the norm
- An OpenID Certification has two components:
 - Technical evidence of conformance resulting from testing
 - Legal statement of conformance
- Certified implementations can use the “OpenID Certified” logo



What value does certification provide?



- Technical:
 - Certification testing gives confidence that things will “just work”
 - No custom code required to integrate with implementation
 - Better for all parties
 - Relying parties explicitly asking identity providers to get certified
- Business:
 - Enhances reputation of organization and implementation
 - Shows that organization is taking interop seriously
 - Customers may choose certified implementations over others

Use of Self-Certification



- OpenID Certification uses self-certification
 - Party seeking certification does the testing
 - (rather than paying a 3rd party to do the testing)
- Simpler, quicker, less expensive, more scalable than 3rd party certification
- Results are nonetheless trustworthy because
 - Testing logs are made available for public scrutiny
 - Organization puts its reputation on the line by making a public declaration that its implementation conforms to the profile being certified to

How does OpenID Certification work?



- Organization decides what profiles it wants to certify to
 - For instance, “Basic OP”, “Config OP”, and “Dynamic OP”
- Runs conformance tests publicly available at
<https://op.certification.openid.net/> or <https://rp.certification.openid.net/> or <https://www.certification.openid.net/>
- Once all tests for a profile pass, organization submits certification request to OpenID Foundation containing:
 - Logs from all tests for the profile
 - Signed legal declaration that implementation conforms to the profile
- Organization pays certification fee (for profiles not in pilot mode)
 - See <https://openid.net/certification/fees/>
- OpenID Foundation verifies application is complete and grants certification
- OIDF lists certification at <https://openid.net/certification/>

Can I use the certification sites for interop testing?



- Yes – please do!
- The OpenID Foundation is committed to keeping the conformance test sites up and available for free to all
- Many projects using conformance testing for regression testing
 - Once everything passes, you're ready for certification!
- Test software is open source using Apache 2.0 license
 - Some projects have deployed private instances for internal testing
 - Available as a Docker container

OpenID Connect Certification Profiles



- Now OpenID Connect certification profiles for:
 - Basic OP and Basic RP
 - Implicit OP and Implicit RP
 - Hybrid OP and Hybrid RP
 - OP Publishing and RP Using Configuration Information
 - Dynamic OP and Dynamic RP
 - Form Post Response Mode for OP and RP
 - Third party-initiated login for OP and RP
 - ***New: Logout OP and RP tests in pilot mode***

New Connect Certification Profiles



- Four logout profiles for OPs and RPs in pilot mode
 - RP-Initiated Logout
 - Session Management Logout
 - Front-Channel Logout
 - Back-Channel Logout

Connect OP Certifications



- OpenID Provider certifications at <https://openid.net/certification/#OPs>
 - 374 profiles certified for 112 implementations by 91 organizations
- Recent additions:
 - Bitkey, Chinese Academy of Sciences, Ergon Informatik, Gluu, Ilex International, Samsung Electronics
- Each entry link to zip file with test logs and signed legal statement
 - *Test results available for public inspection*

Certified OpenID Providers

These deployments have been granted certifications for these OpenID Provider conformance profiles:

Organization	Implementation	Basic OP	Implicit OP	Hybrid OP	Config OP	Dynamic OP	Form Post	3rd Party Init OP	Front-Channel OP	Back-Channel OP
Abrasai	identity:Cloud	12-Sep-2019			12-Sep-2019					
Arizona Regional Multiple Listing Service	ARMLIS Identity 2.0.2	21-Feb-2019								
Astro	Astro	24-May-2016	15-Feb-2017	15-Feb-2017	24-May-2016			15-Aug-2016		
Athenae	Athenae 1.1	12-Jul-2017	12-Jul-2017	12-Jul-2017	12-Jul-2017					
Athenae	Athenae 2.1	5-Aug-2018	5-Aug-2018	5-Aug-2018	5-Aug-2018	5-Aug-2018	5-Aug-2018			
Administratne	Administratne 4.0.7	19-Jun-2018	19-Jun-2018	19-Jun-2018	19-Jun-2018	19-Jun-2018	19-Jun-2018			
Dominic Baker & Brock Allen	IdentityServer 4 v.6	8-Apr-2015	9-Mar-2016	14-Apr-2015	8-May-2015					
Dominic Baker & Brock Allen	IdentityServer	12-Dec-2016	12-Dec-2016	12-Dec-2016	12-Dec-2016					
City of Beaverton Hills	COBIn Identity	12-Mar-2019	12-Mar-2019	12-Mar-2019	12-Mar-2019	12-Mar-2019	12-Mar-2019			
Bitkey	Bitkey platform 1.0.0	16-Jan-2020								
CA	CA API Gateway/CA Mobile API/Gateway	23-Jul-2017	14-Nov-2017	14-Nov-2017	22-Jun-2017					
CA	CA Single Sign-On 12.5.2	4-Feb-2018	4-Feb-2018	4-Feb-2018	4-Feb-2018					
Chinese Academy of Sciences	DACAS UA Gateway/v1.0	24-Apr-2019	26-Apr-2019	27-Apr-2019	27-Apr-2019					
Chinese Academy of Sciences	DACAS Mobile ISO v.0	6-Apr-2020	6-Apr-2020	6-Apr-2020	6-Apr-2020					
Cloud Security	Identity Provider v.3.4	4-Apr-2016	23-Jul-2016	23-Jul-2016	23-Jul-2016					
Classmate	Classmate OneClick 2015	3-Nov-2015			3-Nov-2015					
ClassmateHQ	Barista v1.15.2	5-Nov-2017			5-Nov-2017					
Cloudentity	Cloudentity IDC services 1.3	15-Aug-2017			15-Aug-2017	15-Aug-2017				
Cloudentity	CAAM Net	24-Oct-2019	24-Oct-2019	24-Oct-2019	24-Oct-2019	24-Oct-2019	24-Oct-2019			
Cloud Foundry	UAA 4.0	25-Aug-2018								
Connexio	Connexio Server 6.1.2s	1-Jan-2017	1-Jan-2017	1-Jan-2017	1-Jan-2017	1-Jan-2017	1-Jan-2017			
Curly	Curly Identity Server 2.1.1	20-Dec-2017	20-Dec-2017	20-Dec-2017	20-Dec-2017					
Curly	Curly Identity Server 4.0.0	20-Sep-2019	20-Sep-2019	20-Sep-2019	20-Sep-2019	20-Sep-2019	20-Sep-2019			
CT-NIC	MyID	7-Jul-2016	21-Jul-2016	7-Jul-2016	7-Jul-2016					
Deutsche Telekom	Telekom Login	29-Sep-2015			22-Sep-2016					
Ergon Informatik	Amico IAM 7.1	13-Feb-2020								
Argofox	OpenAAA 1.2	14-Apr-2016	14-Apr-2016	14-Apr-2016	14-Apr-2016					
GRANT Association	GRANT OGC-Plugin for Shibboleth ISP 1.0	29-Oct-2019	29-Oct-2019	29-Oct-2019	25-Oct-2019	29-Oct-2019	29-Oct-2019			
Gluu	Gluu Server 3.1.3	19-Jul-2018	18-Oct-2018	18-Jul-2018	18-Jul-2018	18-Jul-2018	18-Jul-2018			
Gluu	Gluu Server 4.0.0	19-Oct-2018	15-Oct-2019	19-Oct-2018	15-Oct-2019	15-Oct-2019	15-Oct-2019	22-Oct-2018		
Google	Google Federated Identity	20-Apr-2015	21-Apr-2015	21-Apr-2015	15-Apr-2015					
GrabTaxi Holdings	Grab ID 1.0	6-Feb-2019	7-Feb-2019							
GravitateSource	Gravitate Access Management 2.1.x	6-Nov-2018	6-Nov-2018	6-Nov-2018	6-Nov-2018					
GMEA	Mobile Connect Reference Implementation v.2.0	15-May-2018								
Thierry Habart	SimpleIdentityServer V1.0	9-Dec-2015			11-Dec-2015					
Thierry Habart	SimpleIdentityServer V2.0.0	19-Jan-2016	19-Jan-2016	19-Jan-2016	19-Jan-2016	19-Jan-2016				
Hanalic	BioSyncology OpenID Identity Server 1.2.1	21-May-2017	21-May-2017	21-May-2017	21-May-2017					
Roland Hergert	go2id 0.7.7	26-Sep-2015	26-Sep-2015	26-Sep-2015	26-Sep-2015	26-Sep-2015				
On Herosphere	Span Platform	2-Oct-2015	2-Oct-2015	2-Oct-2015	2-Oct-2015					
IBM	IBM Cloud Identity	11-Sep-2019	11-Sep-2019	11-Sep-2019	11-Sep-2019	11-Sep-2019				
IBM	IBM Security Access Manager V9.0.7	27-Aug-2019	27-Aug-2019	27-Aug-2019	27-Aug-2019	27-Aug-2019				
Identity Automation	Reidentify Federation	12-Jan-2018			12-Jan-2018					
SAI International	Signage 8.0	10-Mar-2020	10-Mar-2020	10-Mar-2020	10-Mar-2020		10-Mar-2020			
Asymptote Innovations	AccessControl UAM	23-Aug-2018	23-Aug-2018	23-Aug-2018	23-Aug-2018					
KION	K!sign Access 4.0	11-May-2017								
The Library of Congress	Authentication, Authorization, and Accounting System, version 1.0	12-May-2017								
LINE	LINE Login	15-Jun-2010								
Mitro Fokus	Mitro Focus Access Manager 4.4 Service	15-May-2018	15-May-2018	15-May-2018	15-May-2018					
Microsoft	ADFS on Windows Server 2018	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019					
Microsoft	Azure Active Directory V1	15-Mar-2019			8-Apr-2019		15-Apr-2019			

Certified OpenID Providers for Logout Profiles

These deployments have been granted certifications for these OpenID Provider logout conformance profiles:

Organization	Implementation	RP-initiated OP	Session OP	Front-Channel OP	Back-Channel OP
ConnectedID	ConnectedID 1.5.1	15-Dec-2019	15-Dec-2019	15-Dec-2019	15-Dec-2019
Fido Alliance	node-oido-provider	11-Nov-2019	11-Nov-2019	11-Nov-2019	11-Nov-2019

Connect RP Certifications



- Relying Party certifications at <https://openid.net/certification/#RPs>
 - 77 profiles certified for 30 implementations by 18 organizations
- Recent additions:
 - Ilex International, Roland Hedberg

Certified Relying Parties

These deployments have been granted certifications for these Relying Party conformance profiles:

Organization	Implementation	Basic RP	RP Implicit	Hybrid RP	Config RP	Dynamic RP	Form Post RP	3rd Party-Init RP
Brock Allen	oidc-client-js 1.3		4-Feb-2017		7-Feb-2017			
Dominick Baier	IdentityModel.OidcClient 2.0	27-Jan-2017			6-Feb-2017			
Damien Bowden	angular-auth-oidc-client 1.0.2		21-Jun-2017		11-Aug-2017			
F5 Networks	BIG-IP 13.1.0 Evergreen	7-Jul-2017						
Thierry Habart	SimplidentityServer V1.0.1	17-Jan-2017	17-Jan-2017	17-Jan-2017	17-Jan-2017	17-Jan-2017	17-Jan-2017	
Ilex International	Sign&go 8.0	10-Mar-2020						
Janrain	IDPD 2.6.0	7-Feb-2017						
Roland Hedberg	pyoidc 0.9.4	20-Dec-2016	20-Dec-2016	20-Dec-2016	20-Dec-2016	20-Dec-2016	20-Dec-2016	
Roland Hedberg	oidcpr 0.4.0	16-Apr-2018	16-Apr-2018	16-Apr-2018	16-Apr-2018	16-Apr-2018	16-Apr-2018	
IBM	Open Liberty 18.0.0.4	26-Oct-2018						
IBM	WebSphere Liberty 18.0.0.4	26-Oct-2018						
Tom Jones	TC.AUTHENTICATION 1.0	30-Jun-2017						
Karlsruher Institut für Technologie, SCC	oidcc 1.0.1	2-Feb-2017			2-Feb-2017			
KSIGN	KSign Trust Thing 1.0	2-Jan-2018						
KSIGN	KSign Trust Thing 1.1		3-Oct-2018					
KSIGN	KSign Trust Thing 1.2				10-Oct-2019			
Nomura Research Institute	phpOIDC 2016 Winter	7-Feb-2017	7-Feb-2017	7-Feb-2017	7-Feb-2017	7-Feb-2017	7-Feb-2017	
Nov Matake	openid_connect rubygem v1.0.3	20-Jan-2017						
Ping Identity	PingAccess 4.2.2	26-Jan-2017						
Ping Identity	PingFederate 8.3.1	17-Jan-2017			31-Jan-2017			
Ping Identity	PingFederate 9.2.1	4-Feb-2019			4-Feb-2019		4-Feb-2019	
Filip Skokan	node openid-client ^1.3.0	15-Dec-2016	15-Dec-2016	15-Dec-2016	15-Dec-2016	15-Dec-2016		
Filip Skokan	node openid-client ^2.0.0	12-Apr-2018	12-Apr-2018	12-Apr-2018	12-Apr-2018	12-Apr-2018	29-Jun-2018	
Filip Skokan	node openid-client ^3.0.0	11-May-2019	11-May-2019	11-May-2019	11-May-2019	11-May-2019	11-May-2019	
Manfred Steyer	angular-oauth2-oidc 2.0.5		16-Aug-2017					
ZmartZone IAM	lua-resty-openidc 1.5.1	17-Nov-2017			17-Nov-2017			
ZmartZone IAM	mod_auth_openidc 2.3.1	21-Jul-2017	21-Jul-2017	21-Jul-2017	21-Jul-2017	21-Jul-2017	21-Jul-2017	

Certified OpenID Relying Parties for Logout Profiles

These deployments have been granted certifications for these OpenID Relying Party logout conformance profiles:

Organization	Implementation	RP-Initiated RP	Session RP	Front-Channel RP	Back-Channel RP
Roland Hedberg	OIDCrp v0.6.6	20-Mar-2020	20-Mar-2020	20-Mar-2020	20-Mar-2020

FAPI Certification Status



- Financial-grade API (FAPI) implementations being certified
- FAPI Part 2 OP certification launched in April 2019
 - 18 implementations certified to date
- Financial-grade API Client Initiated Backchannel Authentication Profile (FAPI-CIBA) launched in September 2019
 - One implementation certified to date
- FAPI Part 2 RP certification tests launched in December 2019
 - One implementation certified to date

What's next for OpenID Certification? OpenID

- Connect Certification code being reimplemented in Java
 - Current implementation in Python
 - Moving to the same code base as FAPI certification
 - Expect migration to Java implementation later this year
 - **News:** Many Java OpenID Connect tests now ready for you to test!
- Additional FAPI profiles being developed:
 - FAPI-CIBA RP
- Certification for additional specifications is possible:
 - E.g., eKYC-IDA, HEART, MODRNA, iGov, EAP, R&E, etc.

OpenID Certification Call to Action



- Certify your OpenID Connect and FAPI implementations
- Help us test the Java OpenID Connect tests
 - Joseph Heenan will tell you how