Case Study:
Clareity Security and The National Association of Realtors
Develop a SAML Toolkit for the Real Estate Industry

Ask any REALTOR® about the systems they use and the passwords they deploy. The word “mess” will likely come up. But thanks to Clareity Security, the work of real estate professionals is about to get a whole lot easier and more secure. As part of a program that is supported and partially funded by the National Association of REALTORS® (NAR), Clareity has developed an SAML 2.0–based toolkit designed to help real estate professionals deploy Single Sign-On (SSO). This free open-standard reference implementation can be used by real estate software vendors, brokers, and MLS systems to incorporate SSO into their products for the benefit of real estate professionals everywhere. The toolkit may even find wider application, as it is free for use by software companies and others outside of the real estate industry.

“Vendors’ cooperation on open standards is the key to industry-wide adoption,” said Mark Lesswing, NAR chief technology officer and senior vice president. “This toolkit will help software and solution vendors concentrate on features that will help REALTORS® do their jobs better, instead of spending time on the nuances of SAML 2.0.”

“With open standards, vendors have a great amount of choice. The standards can be implemented as a part of existing products or using one of the dozens of commercial products on the market, or even using open-source solutions. Again, it is not necessary for technology vendors to standardize on a single product, because a product that implements a standard can work with any other product that implements that standard.”

Gregg Larson,
CEO of Clareity Security

The State of Real Estate

Within the real estate industry, the demand for an SSO solution that works for everyone has been steadily building. In the United States, there are close to 1.3 million REALTORS®, and probably 2 million people or more who collaborate on real estate–related Web applications. Adding to this complexity are more than a thousand associations, 700-plus multiple listings services, membership management systems, and transaction management systems. That’s not to mention the software used by agents and brokers.

“When a REALTOR® gets on his computer, he is typically signing in to five or more things at a time,” said Matt Cohen, Clareity’s CTO. “I recently spoke with a group of local REALTORS® and when I explained what SSO would accomplish, they started jumping out of their seats saying, ‘When can I get this? When can I get this?’”
Leveraging Open Source for the Toolkit

When it came time to put together a toolkit for SSO that was free and open to everyone, Clareity took a careful look around to see what could be leveraged and what needed to be written. What Clareity found and used as one of the building blocks of the toolkit was the OpenSAML project (www.opensaml.org) sponsored by Internet2. As part of their Shibboleth project, the OpenSAML toolkit implements the XML objects that represent the protocol elements of SAML.

From this foundation, the toolkit puts the pieces together and shows a developer exactly how to make things work. The developer can use it at a high level without having to understand the intricacies of SAML, or they can delve as deep as their interests and needs dictate.

The SSO software toolkit is available for free on NAR’s Web site, at: http://code.crt.realtors.org/projects/websso.

SSO is a new initiative for Clareity. For the past several years, Clareity has worked with real estate industry firms and organizations on security. Much of their work focused on strong authentication as well as security assessments.

“There was a certain point at which some of our clients asked us about Single Sign-On, and we looked around out there and saw how complicated the terrain was,” said Matt Cohen. “We also knew that if the software vendors in our industry were not coordinated in some way, there would be many different versions and approaches, and true SSO among real estate applications would be limited.”

Bringing Vendors Together to Talk about Standards

In December 2005, Clareity brought together real estate software vendors, MLS vendors, transaction management/association management vendors, public records providers, franchise and other major real estate organization CTOs, as well as organizations such as the National Association of REALTORS® and CREA, the Canadian Real Estate Association.

“We put all these people together and we rented a large conference room in Las Vegas,” Matt Cohen said. “We discussed the various options for Single Sign-On.”

There were a variety of opinions, and lots of back and forth, but it was clear that most vendors had a strong bias towards the use of open standards. So the group decided to support SAML 2.0.

“The software providers that were in the room really did their homework. They wanted to know: ‘What gives us the capabilities that we need? What has the most traction? What standards don’t have any intellectual property baggage?’ And SAML 2.0 seemed to be the direction that made the most sense,” said Matt Cohen.

In March, Clareity brought the group back again after everyone had a chance to go back to their own organizations and share what was learned. The group then crafted a statement clarifying and confirming their support for SAML and intra-industry cooperation.
“At that point, basically, the room turned to us and said, ‘Hey these standards are complex and there a lot of moving parts. What we really need is a reference implementation. Something that says: Here are all the pieces and it will work with all applications,’” explained Matt Cohen.

It was then decided that Clareity should build the reference implementation. The National Association of REALTORS® (NAR) soon came onboard and supplied some development money toward the goal.

The plan was Clareity Security would create this software, but not own it—and that it would will be freely available to the real estate technology community and integrated with the RETS standard. NAR also agreed to market and promote the project.

“It’s an ideal relationship,” said Amy Geddes, Clareity Security’s Chief Operating Officer. “NAR’s role has been really to promote the adoption of the technology and to educate the community at large about what SAML is and why it’s a good thing for the real estate space. Clareity’s role includes doing those things too—as well as developing the technical implementation and helping to set initial guidelines within the real estate community.”

### Benefits to Service Providers

- Cost savings on password reset and management
- Open standards-based
- Easy integration with multiple technologies
- Freedom to concentrate on enhancements and applications versus standards issues
- Improved security

### Benefits to End Users

- Elimination of password headaches
- Less systems complexity
- Faster systems access
- Improved security of personal consumer information
Technical Issues: The Importance of Security

The free software toolkit allows software vendors to cooperate efficiently and maintain security using SAML 2.0. The SAML standard enables secure exchange of authentication and authorization information between disparate security domains, making secure Internet e-business transactions possible. With this standard, a user's information is stored on one server when he logs in and is authenticated. As the user moves to other integrated applications he does not have to authenticate himself again. This is not only more convenient for the user, but much more secure.

A great deal of study and work was needed to ensure security and meet the particular needs of the real estate industry. For example, a security flaw in the Single Sign-On integration between an MLS and a Transaction Management System could lead to private consumer information being exposed, or to competitors accessing each other's information. Clarity has seen plenty of integration specifications where a user is passed from one system to another using a link looking something like this:

http://www.example.foo/index.aspx?userid=123&password=mypassword

This example is troublesome in several ways. First, it passes the authentication information using a plain text protocol, so that it may easily be intercepted. Second, the URL parameters are not encrypted, and can be easily scripted or modified, since the security mechanism is exposed to the user for manipulation. Third, this URL can be disseminated and used by others. In the worst case, this URL may be posted in a non-secure location and even indexed by a search engine, or posted on hacking sites or newsgroups (e.g., http://johnny.ihackstuff.com/index.php?module=prodreviews).

Using “hidden” form fields to pass this information from site to site does not provide significant additional protection, and neither does trying to check the referring Web page.

SAML addressed the problem of sending passwords between applications by simply not doing it. Instead, in the SAML world, an Identity Provider (IdP) constructs an XML assertion that it digitally signs to prove to the Service Provider (SP) that the user is authenticated and trusted. By using digital signatures, trust relationships can be established between the participating entities without exposing sensitive information like passwords.

### How The SAML Toolkit Works

<table>
<thead>
<tr>
<th>Joe’s Web Browser</th>
<th>1. Initial Request</th>
<th>AcmeMLS</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>2. Redirect to IdP</td>
<td>AcmeIdP</td>
</tr>
<tr>
<td></td>
<td>3. Request to IdP</td>
<td>AcmeIdP</td>
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<td></td>
<td>4. Request Credentials</td>
<td>AcmeIdP</td>
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<td></td>
<td>5. Submit Credentials</td>
<td>AcmeIdP</td>
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<td></td>
<td>6. Respond with SAML Token</td>
<td>AcmeMLS</td>
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<td></td>
<td>7. Accept SAML Token</td>
<td>AcmeMLS</td>
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Speeding Industry Adoption of SAML 2.0

The toolkit was formally introduced in the fall of 2007 and now is quickly being adopted by leading software vendors and MLS system providers.

Metropolitan Regional Information Services (MRIS), the largest MLS in the U.S., is incorporating SSO using the toolkit and SAML in conjunction with their rollout of strong authentication. The improved security of strong authentication allowed MRIS to offer an added benefit of SSO to their users. As a result, MRIS subscribers will be able to access several real estate–related applications without having to log in multiple times.

In addition, Minneapolis-based NorthstarMLS, who provides MLS and property data services to 20,000 real estate professionals in the Twin Cities area, is implementing an Identity Provider (IdP) using the Clareity developed toolkit. This IdP will facilitate current and future SSO needs for NorthstarMLS members.

Finally, several leading MLS system vendors, including MarketLinx, Fidelity and Tarasoft, have plans to incorporate support for SSO into their existing applications using the free open-source toolkit developed by Clareity and offered by the National Association of REALTORS®.

Clareity is also hoping other vertical markets will follow real estate’s example and take this code and implement their own products.

“We’ve put many months into producing something which is going to be useful not just inside real estate, but in many other verticals,” said Mark Lesswing. “We want to help push the adoption of Single Sign-On, secure adoption of Single Sign-On, so we are releasing this with a very open license specifically to drive adoption.”

<table>
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<tr>
<th>SSO: Two Approaches</th>
<th>Open Standards</th>
<th>Proprietary Portal “central federation”</th>
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<tbody>
<tr>
<td>Enables Portals</td>
<td>● (enables)</td>
<td>● (requires)</td>
</tr>
<tr>
<td>Applies to fragmented real estate market (association, MLS, brokers, franchises, lending, title, etc.)</td>
<td>●</td>
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<tr>
<td>Leverages existing SSO Relationships</td>
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<td>No / Low Cost</td>
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<td>Free, Open Standards</td>
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<td>Being Built into RETS</td>
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<td>Cross-Vendor Support</td>
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<tr>
<td>Vulnerable to “Denial of Service” attack</td>
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Into the Future with SAML

Engineers at Clareity are continuing to look at where SAML might take the industry. “The interesting issue is not necessarily what the REALTORS® are doing today, but what SAML might enable them to do tomorrow around things like workflows between applications and the level of data sharing between applications,” said Matt Cohen. “There are a lot of capabilities that we haven’t even begun to explore that Single Sign-On will enable.”
About The National Association of REALTORS®

The National Association of REALTORS® is America’s largest trade association, representing more than 1.3 million members involved in all aspects of the residential and commercial real estate industries. (www.realtor.org)

About Clareity Security

Clareity Security, LLC is the leading provider of security products and services for the real estate and mortgage industries, and is now expanding into Financial Services. Its SAFEMLS® and SAFEACCESS™ products help real estate professionals, the mortgage industry, and financial services companies easily and effectively safeguard sensitive consumer information against unauthorized access and provides next generation strong authentication solutions for secure online transactions. Clareity Security also provides network security services including organizational information security assessments, Unified Threat Management (UTM) appliances, and other IT security solutions in partnership with companies such as with Secure Computing (NASDAQ: SCUR), a provider of global security solutions. Additional information is available at http://www.ClareitySecurity.com.

About Liberty Alliance

Liberty Alliance is the only global identity organization with a membership base that includes technology vendors, consumer service providers and educational and government organizations working together to build a more trusted Internet by addressing the technology, business and privacy aspects of digital identity management. The Liberty Alliance Management Board consists of representatives from AOL, Ericsson, Fidelity Investments, France Telecom, HP, Intel, Novell, NTT, Oracle, and Sun Microsystems. Liberty Alliance works with identity organizations worldwide to ensure all voices are included in the global identity discussion and regularly holds and participates in public events designed to advance the harmonization and interoperability of CardSpace, Liberty Federation (SAML 2.0), Liberty Web Services, OpenID and WS-* specifications.