An Extention for Openstack’s Keystone Module (Authorization Module) for the Support of Session and Session-role Activation

OpenStack, the most emerging Cloud Computing Infrastructure, is gaining immense traction from the industries which are tailoring OpenStack environment to fulfill their business requirements. As a fact of being considerably recent and open sourced platform, OpenStack left some opportunities open for improvement and enhancement which inspired us to find a possible extension for keystone – Openstack’s Authorization Module. We found that Authorization in openstack (keystone) which uses RBAC, implements primitive support of RBAC with no support for ‘Session’ and ‘Separation of Duties’. In the current state, when a user logs into the OpenStack platform, all his roles are being activated. This way, system cannot enforce the constraints of Role-based Separation of Duties (SoD) on a user. With the implementation of session in this project, we provide a mechanism so that

* User/ system may define session for a user.
* When using a session, user can change to another session which does not violate SOD constraints.
* Within an active session, user can add/remove roles (complying the SOD constraints)

Additionally, We also want to introduce Role Hierarchy (RH) and bring the notion of RH into Openstack session.

Example of SOD with respect of role:

For user U1: ROLE\_R1 is\_restricted\_with ROLE\_R2

For user U1: ROLE\_R2 is\_restricted\_with ROLE\_R3

For user U1: (ROLE\_R1,ROLE\_R2,ROLE\_R3…) is\_restricted\_for\_user\_with\_cardinality VALUE\_2

Support SOD Across Session: TBD