International Journal of Research in Engineering, Science and Management
Volume-2, Issue-12, December-2019
www.ijresm.com | ISSN (Online): 2581-5792

Single Sign-on for Heterogeneous Social Networking Sites

Xavier Bhausaheb Bansode
Student, Department of computer Engineering, Smt. Kashibai Navale College of Engineering, Pune, India

***Abstract*: We all interact with social networking sites on daily basis. Depending on person to person the interaction and activity on such sites keeps on changing. We have hundreds of Social networking sites and we need to manage them on daily basis. We need to remember all the passwords and credential of the sites and login into each one separately. Here we propose a system to create a Single sign on login to all the social networking sites so user can manage and interact with multiple heterogeneous SNS using a single interaction windows. Instead of interlinking the sites we need to interconnect peer/users based on their status on SNS. In today system we can communicate only with homogeneous social networking users. To manger the bridge we are trying to create a model which will interact with any user irrespective the structure and type of social networking sites.**

***Keywords*: SNS: Social networking site, OSN: Online Social Networks**

1. Introduction

In digital era there are multiple ways to communicate with people around. Once such platform is social networking sites. Social networking sites are platform for entertainment, relationship and business delivery model as well. There are various patters and observations which point to security constraints as well while we are on SNS. Many times it gets difficult to find the exact peer and connect with same on the network. We have various algorithms which will keep on suggesting us various matches and mutual attributes between peer profiles [1]. Based on this calculation we are connecting and interacting with people regardless of what the primary constraints are.

As per the increasing digitization people are getting more acquainted with social network sites. Every site has its own working architecture and constraints. Users are creating profile on various site and manage them independently, which create a burden on user. We need a solution today where we can bring all the SNS under one roof and manage them efficiently. Once we are connected through a SSO into applications we can move ahead to share files and interchange messages over the network. We try to user data and link/relationships of users to connect peer system and make them interact with each other. It can be heterogeneous sites and user need to be from various sites for interacting.

2. Literature survey

A. Privacy and security for online social networks: Challenges and opportunities.

In past few decades there is increasing number on OSN's and the variation in user's registered with them. Mutual path is formed by using the hobbies, interest, profile and many other factors. All these data need to be in encapsulated manner. Nowadays data is important asset and needs to be protected [1].

B. Architecture of social networking sites.

There are two types or architecture based on which the communication and working of such SNS take place. It can be peer to peer architecture or the client server architecture. Peer to peer Is always considered and better than the Client server architecture [3].

C. Link and relationship management

In every social networking sites, we need to interconnect with peers. There are many constraints based on which we are connected to other. Considering example of facebook, it suggests us based on similarities in our profiles. But times it gets difficult to find a person or connect to a person who has least similarities which is part of threshold value defined but maximus interest and interaction similarities in behavior [2].

D. Measurement and Analysis of online Social networks

In past decade there increasing number of sites prove the users' needs and way they interact with social networking sites. Users are ready to interconnect and communicate with people who have similar hobbies and interest as of them, the need suggestions on connecting and creating a peer based on their interaction and activity on SNS. User are curious to get in touch with people from various platform and interact with them using minimum effort. Users are requesting for an application where they can have a single sign in to multiple Social networking sites which will reduce make user more comfortable [2].

3. Proposed methodology

In this article me propose a model for user to from various SNS to integrate and connect apart from their independent structure and communicate with large community. We try to propose an architecture called P2P-iSN, which tries to integrate all the heterogenous social networking sites and establish global

relationship over a single integrated SNS.

For example, A is in friend list of B and B is in friend list of C. we can conclude that there is directional link among the users as stated. A→B and B→C, Building directional links forma a graph in SNS for users relationship and connections. Where there is path associated between two user's we can say there is relationship among the user from the source to destination.

We propose an architecture where peer node is installed/configured on users end. Work of peer node is to maintain user's system status and metadata of user in SNS. Another part is index peer node which contains user's message flow, routing information and analysis of paths (directional links) between connected nodes.

- *Peer Node:* Peer node contains the sign-in information of user. A Token is generated to store the credentials and user authentication constraints. In this scenario we have consider primary key and Unique_ID as the system generated number as User_ID. User_ID is unique to all users and cannot be reassigned Consider that user has access to multiple social networking sites we need to create a table which can store and categorize the sites. Each SNS is recognized using a identifier. Data regarding sites, their credentials and personal information in stored in the peer node [1]. User need to register using a GUI to authenticate himself and register himself, so we can authenticate him. Personal information and credentials are encapsulated from entire system and need to be invoked only by the index node. Index node cannot main entire data peer data [1]. Peer node is responsible to store users entire personal data as well which is isolated from entire system unless and until user and his peer is completely authenticated.

Table 1
Peer node [Value initialization]

SNS	SNS_ID	Priority_Value	Port_No
Facebook	f_UserID	0 to 10	4010
Google+	G_UserID	0 to 10	4045
LinkedIN	l_UserID	0 to 10	8080
Whatsapp	w_UserID	0 to 10	4056
Twitter	T_UserID	0 to 10	1095

As shown in Table 1, each site is abbreviated by a ID. This is same for all the user's across the system. SNS are the sites which are abbreviated using SNS_ID and priority values are threshold values as per users interaction with system.

Table 2
Status lookup table of peer node

UserID	SNS_ID	Credential Token	Access
9855266112	f_UserID	FO/FF→ 0/1	Flag 0/1
9975758696	G_UserID	GO/GF→0/1	Flag 0/1
8875451236	l_UserID	LO/LF→0/1	Flag 0/1
9856321245	w_UserID	WO/WF→0/1	Flag 0/1
7989452361	T_UserID	TO/TF→0/1	Flag 0/1

- *Index node:* Index node is maintained to control and main routing information of all peer nodes. Index node communicates using Port_ID. Its is port number of peer node which is connecting to another peer. There can be multiple ports based on which user is connecting. Index node has maintains a table called Globalid_List. This list contains information about ports their connection with other nodes and ip address based on which these ports are interacting with peer nodes. The major concern is security where we need to maintain a constraint checked which deals with abstraction of credentials irrespective of the functionality.

Table 3
Friendlist and connected peer lookup table

User_ID	Peer_ID	Threshold	Status
9855266112_ f_UserID	7989452361_ l_UserID	<5	Inactive
9856321245 G_UserID	7989452361_ G_UserID	>5	Connected
8875451236_ l_UserID	985526611_ f_UserID	>5	Connected

A. *Architecture*

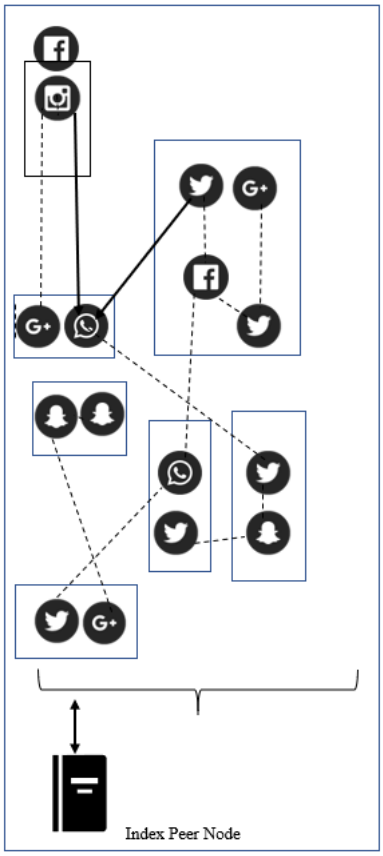

Fig. 1. Architecture of the proposed P2P-iSN

In system the primary goal is to interact with other user and peers irrespective of platform they are connected through. We need to connect facebook user with linked_in users. A single user has multiple SNS account hence to connect one we need to design a platform independent network. Hence we will be

connecting to the system and not the networks of at vendor site. We are obtaining the users information and storing it in tables at peer node, once it is validated we need to connect to index node which stores the directional links, routing information and sessions of active connections. We will be using various vendor side api's to implement the model. Web based interaction in one page to all sites and their updating without platform dependency is followed and given emphasis on. Mentioned below is architecture in terms of overview, design and needed elements for actual development of the system using technology and essential

As Shown in Figure 1, various sites are listed and interconnected to each other based on the port number and directional link associated with peer. Port number is a medium or interface for SNS to connected to external internet. Port number and IP address are the basic identifiers at system implementation level for the system. Based up the ip address the nodes are connected with each other. Consider example of two users A and B where A is WhatsApp user and B is Facebook user. A and B are interconnect based on the Open_ID protocol and can interchange messages on the network itself.

B. Algorithm

Input: s,r,P,Z(P)
Output: Pnew,Z(Pnew)
1. Foreach v:v € G-P do
2. If v=r then
3. Pnew←P U {s→v};
4. Z(Pnew)←Z(P)F(s;v)
5. Return;
6. Else if v is online, and Z(P)F(s,v)≥Δ
7. V.iSearch(v,r,P U{s→v},Z(P)F(s,v))
8. Else
9. Quit;
10. End
11. end

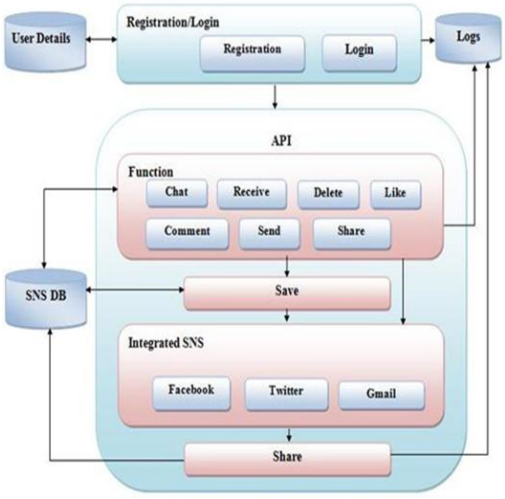

Fig. 2. Design model of Peer to Peer architecture of social networking site

A global relationship model needs to be developed in order to work and connect the user. The global relationship model will be developed based on the index node data and information look-up table maintained by the index node. Apart from this there needs to be a friend-list table which needs be maintained to develop a global relationship model. Above algorithm focuses on TTL -time to live concept used in control flooding algorithms in broadcast networks. TTL is used when data packet does not find the destination and remain in medium, due to which traffic is generated. Hence TTL is used to kill the packet within certain time if no one acknowledges it. In SNS this concept is used to kill the packets which are not acknowledged by users and a feedback message regarding the same is sent back to sender of the packet/message.

As illustrated in Figure 2, we are using SNS API to integrate and collect data from the source websites and then store metadata into our local system. User will only interact with the webpage but can communicate with any use from any platform based on the IP address and port number. A webpage will contain the interfaces among the websites to interchange the message and data associated with the platform. Friend_List will be a local database which is on local (SNS database). Friend_List will be generated based upon the threshold value as stated in development practices.

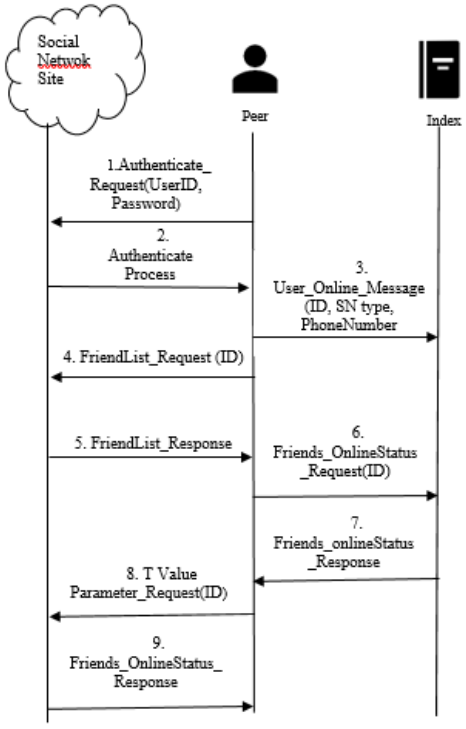

Fig. 3. Message flow from login procedure

Figure 3 illustrates the message flow from peer to peer in the model designed to interconnect heterogeneous social networking sites. User need to authenticate himself and token are generated, after token generation message can be sent to another peer on networks. Each message and information has a

unique structure to store and transmit the data in header format so there is no flooding and breach of security constraints in network. Each message is alive until is TTL time is live and once expired message is discarded. Peer node communicates with index node and social networking sites. It fetches data from social networking sites to join peers and connects with index node to join the peers locally on the system based upon the port number and IP address.

C. Implementation

Social Login should enable users to use their existing accounts from over twenty different social networks and identity providers such as Facebook, Google, Twitter, Yahoo, Hotmail, LinkedIn and others to login or register on developed testing website. This list is completely based on API we are integrating and trying to develop.

Once system finds a user is authenticated, it will provide a consistent user token. This token will allow user to create new user accounts anytime or else integrate with social networking site in existing in database. Mentioned is below is flow chart which illustrates flow of data while creating account assuming respective user has been authenticated and can interact with our developed architecture.

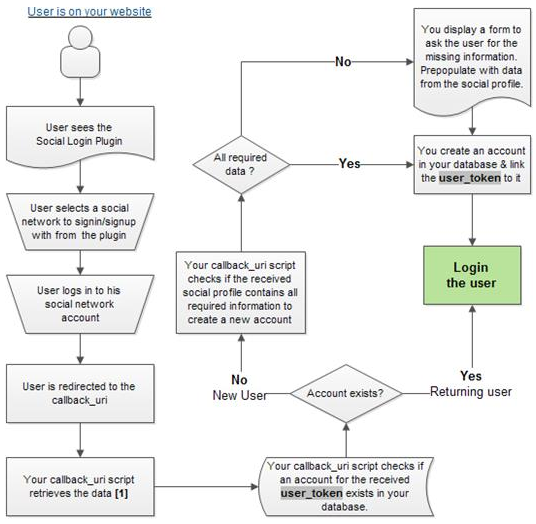

Fig. 4. Implementation Flow of data when New user is authenticated

Apart from above scenario another scenario can be when we have a user who already has an account. In such cases we need to follow another process to get the needful done. Below given process will link the existing users to respective accounts in our database. Basic pre-requisite for this user must have this Social service login [Our database]. Post verification and authentication of credentials if system finds the user as valid, the user is assigned a token which remains consistent throughout TTL i.e. time to live for this mechanism. If the user is not valid, system will prompt and try to create a new token which will result in primary account formation for the user. This is a way where exiting users can login to the system and user the proposed system to interact with Social networking sites. As shown in Fig. 5, it implements data flow if we want to link as user who already has an account and want to login.

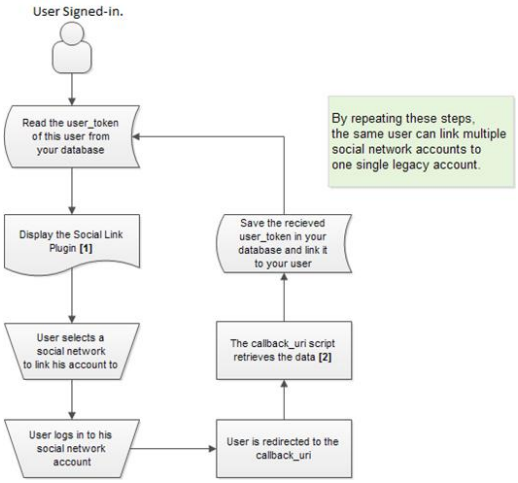

Fig. 5. Implementation of existing user [Linking user]

4. Conclusions

We have proposed a model to communicate with heterogeneous social networking sites. A single sign on design for logging-in into multiple social networking sites and communicate with each other apart from platform dependency and type of social networking site they belong to.

References

[1] Chi Zhang and Jinyuan Sun, Xiaoyan Zhu and Yuguang Fang, "Privacy and security for online social networks: Challenges and opportunities, IEEE Network, July/August 2010.
[2] Danah M. Boyd, and Nicole B. Ellison, "Social Network Sites: Definition, History and Scholarship, "Journal of Computer Mediated Communication.
[3] Phone Lin and Pai-Chun Chung, National Taiwan university and Yuguanf Fang, university of Florida. P2P-iSN: A peer to peer architecture for heterogeneous social networks. IEEE Network, January/February 2014
[4] M. N. Ko, "Social-Networks Connect Services, Computer, vol. 43, no. 8, Aug. 2010, pp. 37–43.
[5] https://developers.facebook.com/docs/graph-api/
[6] https://developers.facebook.com/docs/whatsapp/
[7] https://developer.linkedin.com/docs/rest-api