A Novel IDE for Data Security on Publisher & Subscriber Data

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Abstract

The fundamental security of content predicated pub/sub system provides authentication and confidentiality in publisher and subscriber. Due to loose coupling, it's arduous to achieve the authentication of publisher and subscriber. As like, confidentiality of events and subscriptions conflicts with content-predicated routing. Here we are going to provide authentication and confidentiality in broker-less pub/sub systems, by utilizing the paring predicated cryptographic mechanism, the authentication and confidentiality of publisher and subscriber of events is assured. This paper provides the signcryption which is a potent primitive that offers both confidentiality and authenticity to consequential Messages. Signcryption performs simultaneously both digital signature and encryption. Honey Bee Demeanor Inspired Particle Swarm Optimization Technique has been habituated for Resource Allocation and procures Energy Efficiency

Keywords: - publisher, subscriber, content predicated, signcryption

1. INTRODUCTION

The publisher/subscriber messaging system has been very popular due to its built in capability in decoupling of publishers from subscribers in terms of time, space, and synchronization. Publisher's passes information into the pub/sub system, and subscribers describe the events of interest by denotes of subscriptions. Published events are forwarded to those subscribers whose subscriptions are matched against the publish event. In the traditional systems, this decoupling is been achieved by the intermediate routing over a broker network. All the communication is been done through the broker. It became a single point of failure in the traditional broker architecture. So to surmount these issues, in current systems, publishers and subscribers are utilizing a broker-less routing environment. Even if there is a failure of publisher or subscriber, it will not bring down the entire system. There are two types of subscription models for designating the subscriptions: 1) topic-predicated. 2) Content predicated. In the topic predicated model, a single topic is designated and all the events or messages cognate to that topic are distributed to the cognate subscribers. The subscribers cannot designate any restrictions on the message contents. Content-predicated pub/sub is the most expressive subscription model; by utilizing this model subscribers will define the subscriptions that will provide restrictions or constraints on the message content. This expressiveness and asynchronous nature is auxiliary for sizably voluminous-scale distributed applications like news distribution, stock exchange, environmental monitoring, traffic control, and public sensing. Pub/sub has to fortify the mechanisms that are acclimated to provide the rudimental security requisites of such applications like access control and confidentiality. Access control with reference to the pub/sub system denotes that only authenticated publishers are sanctioned to publish events in the network and only those events are distributed to sanctioned subscribers and the content of events should not be disclosed to the routing infrastructure and a subscriber should receive all germane events without exposing its subscription to the system. Addressing these security issues in the context of content-predicated pub/sub system engenders incipient challenges. For example, end-to-end authentication by utilizing a public key infrastructure (PKI) will not maintain the loose coupling between publishers and subscribers. In the PKI, publishers must organize the public keys of all fascinated subscribers to encrypt events. Subscribers must have the cognizance of the public keys of all cognate publishers to verify the authenticity of the received events. It will not maintain the decoupling between publisher and subscriber.

Kenning their subscriptions sanction subscribers and publishers authenticate each other without kenning each other. In the past, most research that has been done focused only on providing expressive and scalable pub/sub systems, but little attention was given for the desideratum of security. All the subsisting approaches for secure publisher/subscriber systems mainly depend on the presence of a traditional broker network. So to provide a better security in the broker-less Publisher/subscriber systems, an incipient approach is proposed that will provide authentication and confidentiality in a broker-less pub/sub system. In this approach, all subscribers are sanctioned to maintain credentials according to their subscriptions. Private keys that are assigned to the subscribers are withal labeled with the credentials. A publisher maps each encrypted event with a set of credentials.

Here, identity-predicated encryption (IBE) mechanisms are habituated to ascertain that a particular subscriber can decrypt an event only if there is a match between the credentials associated with the event and the key; and additionally to sanction subscribers to verify the authenticity of received events.

2. RELATED WORK

Subsisting system

Content-predicated publish/subscribe is the variant which pro-vides the most expressive subscription model, where subscriptions de ne restrictions on the message content. Its expressiveness and asynchronous nature is concretely utilizable for astronomically immense-scale distributed applications with high-volume data streams. Access control in the context of publish/subscribe system designates that only authenticated publishers are sanctioned to disseminate events in the network and only those events are distributed to sanctioned subscribers. Similarly, the content of events should not be exposed to the routing infrastructure and a subscriber should receive all germane events without revealing its subscription to the system. These security issues are not picayune to solve in a content-predicated pubish/subscribe system and pose incipient challenges. It is very hard to provide subscription condentiality in a broker-less publish/subscribe system, where the subscribers are arranged in an overlay network according to the containment relationship between their subscriptions. In this case, regardless of the cryptographic primitives utilized, the maximum level of attainable condentiality is very constrained. The circumscription arises from the fact that a parent can decrypt every event it forwarded to its children. Ergo, mechanisms are needed to provide a more impuissant notion of condentiality. Do not intend to solve the digital copyright quandary.

Proposed system

In this paper, we present an incipient approach to provide authentication and condentiality in a broker-less publish/subscribe system. Our approach sanctions subscribers to maintain credentials according to their subscriptions. Private keys assigned to the subscribers are labelled with the credentials. A publisher associates each encrypted event with a set of credentials. We habituated identity predicated encryption mechanisms. To ascertain that a particular subscriber can decrypt an event only if there is match between the credentials associated with the event and the key. To sanction subscribers to verify the authenticity of received events. Furthermore, we address the issue of subscription condentiality in the presence of semantic clustering of subscribers. A more impotent notion of subscription confidentiality is defined and a secure connection protocol is designed to preserve the impotent subscription confidentiality. Determinately, the evaluations demonstrate the viability of the proposed security mechanisms.

3. IMPLEMENTATION

Publishing Events

In this phase, publisher will publish the events in the system. Publisher is authenticated by utilizing the advertisements in which a publisher tells in advance the set of events which it intends to publish. This notification is forwarded to all the subscribers in the system and the subscribers those are fascinated with that particular event will send respond to the publisher.

Key Generation

Afore publishing an event, a publisher will contact the key server along with the credentials that is been assigned by the key server for each attribute that are present in its advertisement. If the publisher is been authenticated to publish events according to its credentials, then the key server will engender separate private keys for each credential. In the same way, to receive events that are matching to its subscription, a subscriber should additionally contact the key server and receive the private keys for the credentials that are associated with each attribute in the subscription.

Identity Predicated Encryption

In this phase, publishers and subscribers contact the key server. They provide credentials to the key server and receive keys, which fit the capabilities in the credentials. After that, those keys are habituated to encrypt, decrypt, and sign the pertinent messages in the content-predicated pub/sub system. The keys that is been assigned to the publishers and the subscribers, and the cipher texts, are labeled with the credentials. Identity-predicated encryption ascertains that a particular key can decrypt a particular cipher text only if there is a match between the credentials of the cipher text and the key.

4. EXPERIMENTAL WORK

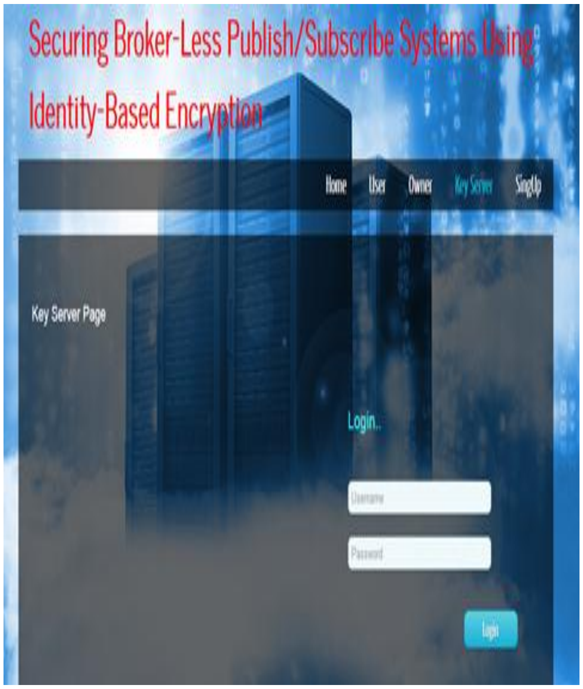
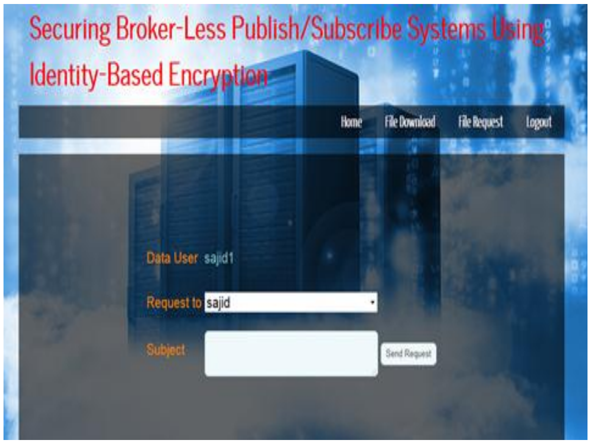

Securing Broker-Less Publish/Subscribe Systems Using Identity-Based Encryption
Home
User
Owner
Key Server
SignUp
Key Server Page
Login..
Username
Password
Login

Fig:-1 Key Server

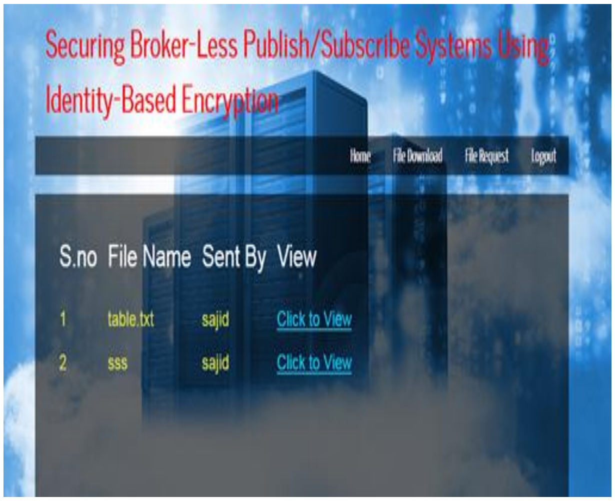

Securing Broker-Less Publish/Subscribe Systems Using Identity-Based Encryption
Home
File Download
File Request
Logout
Send Request

Data User sajid1

Request to sajid

Subject

Fig:-2 File Request


Securing Broker-Less Publish/Subscribe Systems Using Identity-Based Encryption
Home
File Download
File Request
Logout

S.no	File Name	Sent By	View
1	table.txt	sajid	Click to View
2	sss	sajid	Click to View

Fig:-3 Identity Based Encryption

5. CONCLUSIONS

Confidentiality and authentication in the content-predicated publisher/subscriber systems is not facile to achieve due to the loose coupling between the publisher and the subscribers. Ergo, we have proposed an incipient approach to provide authentication and confidentiality in a broker-less content-predicated pub/sub system. This approach is highly scalable in number of subscribers and publishers in the system and the number of keys that is been maintained by them. It will assign credentials to publishers and subscribers according to their subscriptions and advertisements. Private keys assigned to publishers and subscribers, and the cipher texts assigned with the credentials. So that the subscribers can only decrypt an event when there is a match between the credentials of the cipher text and the key.

REFERENCE

[1] G. Ateniese, R. DiPietro, L. V. Mancini, G.Tsudik. Scalable and Efficient Provable Data
Possession.SecureComm 2008, article 9, 2008.

[2] C. Erway, A. Kupcu, C. Papamanthou, R.Tamassia. Dynamic Provable Data Possession.
CCS’09, 213-222, 2009.

[3] F. Sebe, J. Domingo-Ferrer, A. Martınez-Balleste, Y. Deswarte, J. Quisquater. Efficient
Remote Data Integrity checking in CriticalInformation Infrastructures. IEEE Transactions on
Knowledge and Data Engineering, 20(8):1034-1038,2008.

[4] J. Bethencourt, A. Sahai, and B. Waters, “Ciphertext-Policy Attribute-Based Encryption,” Proc. IEEE Symp.Security and Privacy, 2007.

[5] D. Boneh, G.D. Crescenzo, R. Ostrovsky, and G. Persiano, “Public Key Encryption with Keyword Search,” Proc.

Int’l Conf. Theory and Applications of Cryptographic Techniques on Advances in Cryptology (EUROCRYPT), 2004.

[6] D. Boneh and M.K. Franklin, “Identity-Based Encryption from the Weil Pairing,” Proc. Int’l Cryptology Conf. Advances in Cryptology, 2001.

[7] S. Choi, G. Ghinita, and E. Bertino, “A Privacy-Enhancing Content-Based Publish/Subscribe System Using Scalar Product Preserving Transformations,” Proc. 21st Int’l Conf. Database and

Expert Systems Applications: Part I, 2010.

[8] V. Goyal, O. Pandey, A. Sahai, and B. Waters, “Attribute-Based Encryption for Fine-Grained Access Control of Encrypted Data,” Proc. ACM 13th Conf. Computer and Comm. Security (CCS), 2006.

[9] M. Ion, G. Russello, and B. Crispo, “Supporting Publication and Subscription Confidentiality in Pub/Sub Networks,” Proc. Sixth Int’l ICST Conf. Security and Privacy in Comm. Networks (SecureComm), 2010.

[10] H.-A. Jacobsen, A.K.Y. Cheung, G. Li, B. Maniymaran, V. Muthusamy, and R.S. Kazemzadeh, “The PADRES Publish/ Subscribe System,” Principles and Applications of Distributed Event-Based Systems. IGI Global, 2010.