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March 31, 2014

AllSeen Alliance
Technical Steering Committee

Dear AllSeen Alliance Technical Steering Committee:

Affinegy, Inc., an AllSeen Alliance Communty member (Affinegy), would like to propose that the Alliance instantiate a Project and dedicated Working Group to develop a new AllJoyn common implementation for secure communication and management services between AllJoyn devices and remote/cloud services via a Gateway Agent/device

1. Purpose

AllJoyn is a proximal networking technology. It promotes and enables seamless connections between disparate devices and applications running on the same IP subnet. Owners of these AllJoyn devices and applications are mobile. They move in and out the proximal network with their Control device and Control applications. It is desirous that when these users are not within the proximal environment that they can still maintain a functional connection to their AllJoyn devices and applications. We promote that it is an inherent security risk to enable every single proximal device or application to have a direct connection to the Internet. Not only does this expand the attack footprint, it also exposes devices and applications to sophisticated attacks for which most MCU-based RTOS are not designed to protect against. There are many reported instances of such attacks:-

- http://www.cbsnews.com/news/baby-monitor-hacked-spies-on-texas-child/
- http://www.networkworld.com/community/node/84845
- http://www.nbcnews.com/technology/smart-refrigerators-tvs-hacked-send-out-spam-according-new-report-2D11947402

Also take note of this blog post by Liat Ben-Zur, Chairman of the Alliance - http://m-ent.biz/1fmngAF

We therefore propose the formation of this Working Group in the Allseen Alliance to establish a standard Gateway Agent mechanism as a common implementation for securely remoting AllJoyn devices and applications for remote access use cases via the gateway as a hardened service node.

Additionally, many applications and services that people use and rely upon every day are Cloud based i.e. they run outside of the proximal network. In order for AllJoyn enabled devices and applications within the proximal network to take advantage of these cloud based services, we believe that there exists a need for a secure services discovery and provisioning node that will enable the proximal network owner or a managed services provider on their behalf, via a single user interface, to discover and decide which external services to allow into his proximal network. These external services should then be provisioned via a single, hardened node.

In order for the AllJoyn Gateway Agent to reliably connect proximal networked AllJoyn devices to cloud services and remote applications, the Gateway Agent will support options for reliable, secure, NAT traversal that is highly automated in its configuration. This is to ensure that this common implementation will work with nearly any Internet connection. This project will borrow from the best practice standards to support this requirement. The intended code contributions for the Gateway Agent from Affinegy support will this functionality based on existing high volume deployment experience.

Furthermore, within physical proximity of an AllJoyn network environment, there may also exist devices and applications running on non-IP based technology e.g. Z-wave. It is desirous from a usability perspective to be able to offer a single application or user interface to device owners to manage these heterogeneous networks. We propose that the AllJoyn Gateway Agent provide a common implementation for developing such technology bridges with the goal of delivering a seamless AllJoyn experience to the end user. Affinegy embedded gateway software implements such bridges today and Affinegy intends to contribute code for bridging to such layer 2 devices.

2. Scope of Project

The scope of the proposed Project is to deliver a common implementation into the open source which accomplishes the following use cases:-

- Enables AllJoyn device owners to securely remote their devices and corresponding services
- Enables AllJoyn device owners and Service Providers to securely discover and provision Cloud based services and applications into the proximal network
- Enables application developers to create bridges between AllJoyn enabled devices and applications, and devices and applications running other technologies

More specifically, it is proposed that the following discrete components will be delivered by the Project:-

- Enhancements to Core (see dependencies below)

- Gateway Management App/package – to manage the owner-set rules and service provider-set rules. This package will implement the following new AllJoyn Interfaces:-
    - Gateway Management Interface
- Mobile OS (Android and iOS) SDK – to allow the development of the necessary UI for device owners to control the Gateway
- Sample Control Application for Android
- Web services interface API for interface to browser management UI
- Secure, high efficiency NAT traversal
- Secure Package Installer App/package – to securely download, install and manage packages on openWRT and Linux platforms

3. Dependencies

The Project will have a dependency on certain aspects of the 14.06 Alliance release, as detailed below:-

- Core - enhancements to the Routing Node to enable message filtering functionality using the D-bus 'config-file' construct

4. Project Name

The proposed name for the project is the "Gateway" and the proposed git repository is "gateway"

5. Proposed Working Group

We propose that the Gateway project become a part of a new working group. The proposed name is the "Gateway" working group. The proposed working group chair is Art Lancaster, CTO, Affinegy.

6. Project Committers and Contributors

Maintainer

- [PROJECT MAINTAINER] – to be determined

Committers

- Affinegy

- Josh Spain, Director of Applications and Embedded Software

- Qualcomm Connected Experiences, Inc. (QCE), a Premier member of the Alliance
  - Tsahi Asher, Engineer Snr. Staff / Manager
  - Tali Messing, Engineer Senior
  - Josh Hershberg, Engineer Senior Staff

Contributors

- Affinegy
  - Art Lancaster, CTO
  - Josh Spain (see above)
- Qualcomm Connected Experiences, Inc.
  - Shane Dewing – Snr. Director Product Management

7. Project Plan

We propose the following high level Project Plan for the Gateway Agent:-

- Project creation, requirements, use cases and initial submissions – April 30, 2014
- Enhancements to Core
  - Initial submission – April 30, 2014
- Gateway Management App and new AllJoyn Interfaces
  - Aligned with an Alliance release October 2014 time frame
- Mobile SDK and Sample App
  - Aligned with an Alliance release October 2014 time frame
- SDK for 3rd Part App developers. Abstraction layer
  - Aligned with an Alliance release October 2014 time frame

- Other modules
    - Initial submission – April 30, 2014
    - Aligned with an Alliance release October 2014 time frame

8. Initial Contribution

Upon formation of the Working Group, the following Initial Contribution is planned:-

- QCE will contribute a High Level Design Document that details a proposed architecture and design for the Gateway Agent
- Affinegy will contribute a release of its embedded Gateway management client with secure, remote cloud management and NAT traversal technology

Thank you for your consideration and review of this Proposal.

Sincerely,

Art Lancaster, CTO
Affinegy, Inc.