

SOA Enabled Unified Communication

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Abstract

In today's Internet-driven economy, companies are under relentless pressure to respond more quickly to the ever changing demands of their customers, partners, suppliers and employees. To meet new market demands, enterprises are seeking ways in which information technology can be better leveraged to improve their efficiency and productivity. In practice, service-oriented architecture (SOA) is increasingly being seen as providing a framework for more effectively integrating disparate business systems and Web service is believed to be the best technology to implement SOA. SOA and Web services enable enterprises to create and connect application with far less development time, expense and expertise than ever before and make it possible to combine complex business systems together to deliver solutions in highly customized ways to end users. Also, Unified communication, which encompasses a broad range of technologies and many potential applications, such as unified messaging, collaboration, and interaction system; real-time and near real-time communications; and transactional applications, and is promises to highly improve employee's productivity, has repeatedly been the center of many discussions involving the future of communications.

This project is to find a way by which unified communication can be provided in the context of a SOA framework. Three principal objectives for this project are: (1) investigates enterprise application trend, which involves conducting market and technology analysis on SOA and SOA enabling of IP PBXs by telecommunications vendors, (2) conducts a comparison of Parlay-X and ECMA-348, which are standards that are to expose communication capacities in the form of web services, and (3) finds the ways by which existing IP PBX can provide its functionalities in a service-oriented architecture through defining a web services interface to the product.

The report starts by a market analysis on SOA, IP telephony, and SOA enabled IP PBX in terms of their drivers, market value, and main players and their products. Doing so is to assess the business value of this project. Next, an overview about SOA related technologies including the SOA concept and its implementation pattern, Web Services, XML, SOAP, WSDL, and UDDI, and an overview about related communication protocol/APIs, including Parlay-X and Parlay/OSA, ECMA-348 and the CSTA Phase III protocols Suite, SIP, IMAP, and SMTP. Then a detailed comparison between Parlay-X and ECMA-348 is presented. The comparison is of value to finding a way by which an application written in Parlay-X can work in an ECMA-348 environment. The comparison is structured in three layers: first, a table that shows which classes of Parlay-X web services have correspondences in ECMA-348, and which do not have; second, a

description of key aspects of the operational models used by Parlay-X and ECMA-348 and how they compare; third, detailed comparisons of operations defined in both protocols in terms of Input messages, Output messages, operations, and a mapping discussion.

The report continues with a discussion on SOA enabled unified communication, which includes an introduction about SOA enabled unified communication and a five layers SOA enabled unified communication architecture to establish a common view for the continued design.

Finally, the report presents a design solution of a unified communication portal for a proposed business-critical scenario. The solution is based on SOA concept and utilizes standard communication web services defined in Parlay-X, thus, to a large extent ensuring interoperability. Then we define additional web services interfaces to cover the functionalities that have not been standardized. A design solution for Parlay-X to ECMA-348 Adapter is also presented to enable applications written in Parlay-X to work in an ECMA-348 environment.