PANEL
Internet Payment Mechanisms: Requirements and Architectures

Ravi Ganesan
Center of Excellence for Electronic Commerce
Bell Atlantic
Silver Spring, MD 20904
Ravi.Ganesan@Bell-Atl.Com

Department of Computer Science
The Johns Hopkins University
Baltimore, MD 21218
ganesan@blaze.cs.jhu.edu

The Panel

Our panelists are:
- Cliff Neuman, USC ISI
- Dave Crocker, Brandenburg Consulting
- To be announced
- To be announced

Background

Electronic payments for services rendered or products purchased are extremely common in much of the developed world. For instance, many large companies in USA regularly conduct seventy to eighty percent of their interactions with suppliers and banks electronically. The Electronic Data Interchange (EDI) standards and products used to achieve this are fairly mature. Typically such transactions occur computer to computer using direct dial-up connections or using Value Added Networks (VANs). EDI technology is rapidly spreading to smaller businesses and it is rapidly becoming economical for even the smallest of businesses to “do EDI”. However, EDI is generally restricted to “business to business” electronic commerce. The primary “individual customer to business” electronic payment mechanism is credit-cards. Customers ordering supplies from a paper catalog or on a television shopping network, typically read out credit card numbers over the phone.

The primary transport for all these communications was the public switched network (i.e. the phone network), which has proven to be fairly secure over the last century.

Enter the Internet

In the past the goods and services provided over the Internet generally took the form of ‘free’ software, documents, etc. The increasing use of the Internet by users who are willing to pay for what they get, has created a new marketplace and there is a need to develop payment mechanisms. The primary transport however, is now a shared data network whose inherent openness has resulted in less security. How will payment mechanisms on the Internet differ from those used by say, the EDI community?

Enter Electronic Cash

In the last decade or so, some cryptographers have been busy developing the electronic analogue of paper cash. A myriad of schemes exist, each with different properties, e.g. traceable vs. anonymous. With a few notable exceptions, electronic cash technology has tended not to venture outside the pages of the proceedings of crypto conferences, and into the real world marketplace. However, the spiraling growth of smarter payment (credit/debit/etc.) cards, added to the needs of the emerging marketplace in the Internet mean that the time may have arrived for electronic cash technology to take off in a big way.

So what are the Requirements?

The panelists first focus on defining their view of the requirements for the new payment mechanisms to be created on the Internet. (e.g. what functionality is essential vs. what is nice to have, requirements of business to business commerce on the Internet, assumptions about end user computing devices, etc.)

Potential Solution Architectures

Next the panel describes potential architectural solutions that meet the requirements they envisage. Panelists describe their work on systems they are building or standards they are developing.

Open Discussion

The panel concludes with audience questions, comments and an open discussion on emerging directions and the most outstanding problems.