Enabling the Mobile Service Access

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Presentation Agenda

- Market vision
- First Hop overview
- First Hop products
- Future Outlook
Mobile Services Today

- SMS and WAP services
  - value added services
  - mobile portals
  - limited access to Internet and company intranets
- Limited number of access methods and users
Mobile Services Tomorrow

- Mobile access to Internet services
- Mobile access to short-range services
  - mobile device used as a key, wallet, id, ticket, etc.

- Explosion in terms of
  - number of services,
  - number of mobile users (E2003 1B),
  - number of device types, and
  - number of service points (short-range services).

Challenges

- More services
  - gaining a competitive edge is harder
  - an unusable service will lose its customers

- More device types
  - new devices will require new interfaces to the services
  - customers will use different devices to access the same service

- More users
  - high availability and scalability will become key issues

- More service points
  - how to manage a highly distributed service architecture?
What is needed now?

- Carrier-class mobile gateways
  - connecting the mobile networks and devices to Internet
  - providing high availability and scalability in order to serve millions of mobile users
  - supporting hosting (e.g., Pan-European Wireless Internet Service Providers)
  - providing Internet-like APIs
- Multichannel publishing
  - delivering the same content to many devices
  - hiding device-specific details from the services
  - supporting brands and private labels

Mobile Gateways

- SMS
- Pager
- WAP
- GPRS, UMTS, WLAN, Bluetooth
Multichannel Publishing

- Delivering the same content to different channels
- A channel can be
  - an end user device
  - an Internet or mobile brand
  - a market segment
  - a private label, etc.

First Hop’s Mission and Strategy

- We provide mobile infrastructure software for mobile operators, mobile ISPs/ASPs, and mobile service providers
- We succeed by creating a constant stream of innovative products based on changing market needs and requirements
Company Overview

- Fast, managed growth
- Leading-edge customers and projects
- Profitable from the beginning

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Number of employees

Current Situation

- Small private placement from Stratos on July
  - To accelerate R&D and recruiting
  - 90% of R&D power moved from projects to product development
  - Past or ending projects include Zed Travel, Port:Alma, Luukku, PrintEurope.com
- Escio Message Gateway sold to two customers
  - Smaller product sales, a number of leads
- Escio gateway product family launch on 11/2000
  - Escio Message Gateway 1.0 and value-added modules
  - Escio Portal 2.0
- Mobile authorization and authentication product family under development
  - Launch on Q1/2001
  - Short-range services
Key Competencies

- Java network programming, XML, object-oriented programming and protocol design
- Strong research on authorization certificates, Java security, 3G software architectures, high availability systems
  - Research is partly funded by TEKES
- Mobile products and prototypes for SIM cards, Palm PDAs, SMS, and WAP
- First Hop has pending patents on mobile authorization and certain mobile applications
- 50 (40) employees (developers), 60 by the end of 2000
- Highly skilled staff
- Strong corporate culture: only one full-time employee has left the company after it was established in 1997

Escio Gateway Products

- Escio Message Gateway
- Future Gateways
- Escio Portal
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Business Based on Messaging Today

- SMS & Paging
- SMS allows international messaging
  - only a small amount of international services exists
- Mobile portals & value-added services:
  - e-mail, alerting applications, ringing tones, picture messaging
- Number of service users is still small
- Number of potential users is significant and rapidly growing

Messaging Services Tomorrow

- Pan-European or global services based on messaging
- SMS service hosting business
- Number of service points will increase dramatically
  - number of services, mobile devices and users grows
- Estimated SMS messages sent monthly (global):
  - December 2000 / 20 billion
  - December 2001 / 40 billion
  - December 2002 / 50 billion
Challenges

- Number of services and users increases
  - gaining a competitive edge is harder
  - an unstable service will damage brand and reputation
- Key requirements and qualities for international messaging-based services
  - connectivity to different SMS centers
  - support for international character sets
  - reliability, high availability and scalability

Solutions

- High Availability Messaging
  - reliable store-and-forward message delivery
  - wide support for SMSC connectivity
  - simple scalable and fault-tolerant messaging services
- Rapid development of messaging services
  - open programming model for messaging services
  - flexible components for integration
  - easy management of messaging
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Escio Message Gateway

- Uniform connection between messaging service and different mobile end user devices
- Carrier-grade distributable server or a library component
- Robust
- Secure (SSL)
- Easily configured and managed via WWW
  - SNMP and proprietary management interfaces
  - Dynamic configuration of services
  - Hosting of SMS and Messaging Services
- Based on industry-standard Java and XML technologies

Features

- Pull and push message delivery
- Batch execution
- Timed messages
- Flexible message routing
  - address-based
  - payload-based
  - context-based
  - arbitrary rule-based
- Hosting interface
- Messaging sessions
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Messaging Support

- All GSM/SMSC protocols approved by ETSI
  - EM / UCP (CMG)
  - CMTD2.0 (Nokia)
  - SMPP 3.3 and 3.4 (de-facto standard, Logica)
  - SMS2000 / OIS (SEMA)
- Additional protocol support
  - OTP to interface with Sonera Content Gateway 2.0
  - GSMAT
- Pagers and PDAs
- International character encodings

Service Provider Support

- Open interfaces for service integration:
  - XML over HTTP, HTTPS and an open proprietary TCP/IP based protocol
- APIs for standard programming languages:
  - Java, C++
- Ready-made components for service integration:
  - Java Servlet, ActiveX, VBA, EJB, CORBA
- Standard interfaces for customer management:
  - LDAP
- Smooth integration for billing:
  - integration to an industry-proven billing system
High Availability

- Clustering
  - redundant messaging servers for scalability and reliability
- Fault tolerance
  - state replication to redundant servers to allow backing up the primary server
  - heartbeat signalling to actively discover crashes
- Load balancing
  - switching the incoming requests to different servers

High Availability Messaging

- More scalable and fault-tolerant messaging
  - replication within a cluster of messaging servers
  - based on an industry-proven high availability solution
- Management of the cluster
  - GUI for easy online administration
- Ensures that the messaging is not a bottleneck or a problem for the quality of service
Networking Messaging Services

- Messages can be routed between installations
- Enables sharing of services between access points
- Facilitates fast market entry

Value-added Packages

- Support for regular text messaging specifications
- Support for Smart Messaging specifications
  - pictures, operator logos, ringtones, business cards
  - simple tools for pre-generation
- Support for OTA configurations
  - SMS-based delivery of OTA configurations to mobile terminals
  - full interoperability with Esido WAP Tuner
Hosting in Messaging

- Escio Message Gateway allows easy management of messaging services and integration to billing systems.
- Hosting messaging services is an emergent business opportunity.
- A mobile hosting company can offer mobile messaging services to virtually any Internet service provider via the easy HTTP and XML based interfaces.

Escio Portal

- Deep multichannel publishing system:
  - Publishes XML content to a wide range of end user devices:
    - WWW browsers, WAP phones
    - SMS and email messages, etc.
  - Easily configurable:
    - Services and channels can be changed or updated on the fly.
Deep Multichannel Publishing

- More finely grained method to publish content
  - the channels can be combined
    - for example, WAP services can be branded with individual brands but still be part of the same service
  - every end user device can be supported separately
    - combinations are possible, too

Escio Portal Overview
Benefits

- Minimises time to market
  - proofed solutions and concepts
  - many current problems solved, eg WAP authentication
  - hides details of end user devices from the services
- Speeds up service alterations
  - new channels can be created easily for new devices, brands or market segments

Benefits, cont’d

- Allows the content to be used more efficiently
  - the same content can be used in a variety of services
  - the content can be bought and sold, too
- Enables more revenue models and billable services
  - mobile services with WAP and SMS
  - billable content, e.g. stock information
Possibilities

Future Outlook

- The importance of WLAN and Bluetooth based services increases
  - IP based mobility, short-range services
- Mobile operators face great challenges, but also opportunities
  - UMTS? WLAN? Bluetooth?
  - Who owns the users?
- Key issues
  - Distributed authorization, not authentication(!)
  - Usability, especially personalization
  - Dynamic downloading of mobile code