Internet Information Commerce:
The First Virtual (TM) Approach

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Talk Outline

I. The Problem: Doing Business on the Internet
II. Is Encryption the Solution?
III. Why Information Commerce is Special
IV. The First Virtual Information Commerce Model
V. How It Works
VI. What It Costs
VII. The Protocols
VIII. The Corporation
IX. The Future
X. What We Have Learned

The Internet is BIG. Really, really BIG.

Growing too fast to put numbers on my slides.

Unrestricted commercial use, enormous visibility.

We wanted to sell jokes on the net. (Really!)

Until October 15, 1994, no workable payment infrastructure

Traditional Approaches to Internet Commerce
- Focus on goods and services
- Some require encryption
- Some require a closed system

First Virtual focuses on information commerce
- "Information" means "delivered via the net"
- No encryption required
- Permits rapid introduction of commerce
- Consistent with today's Internet

First Virtual's Goals

Focus on Information Commerce

Allow anyone to buy or sell

Never keep financial information on the Internet

Security, but cryptography optional

No special software

Work with today's Web, FTP, and E-Mail

High degree of privacy

Very low cost (\$0.29 + 2%, INCLUSIVE)

Permit microtransactions (sub-penny level)

Available today!
(a working system, not a statement of direction)

Ecyp S ?

Not completely. There are serious problems.

-- Legal: Export & patent restrictions.
(Do you like lawsuits & trials?)
(Do you want customers in France?)

-- Interoperation: There are NO standards.
(Do you want to do business TODAY?)
(Do you want to limit your customer base to browser X? To only the WWW?)

-- Usability: Harder than setting your VCR clock.
(Do you want Joe Sixpack as a customer?)
(Do you want to be liable for mismanaged crypto keys? Deleted wallet files?)

Why Information Commerce is Special

Information has unique properties

For Buyers
-- Can’t evaluate without obtaining

For Sellers
-- Never need returned goods
-- Near-zero cost of inventory and distribution
-- Relatively low out-of-pocket expenses

What should a commerce mechanism guarantee?

Credit cards guarantee, for physical goods:
-- Merchant gets paid, OR gets back goods
-- Statistically, usually gets paid.

Information merchants NEVER need returns.
-- The statistical guarantee is everything!

Commerce and Inventory

Commerce evolved for goods or services.
-- Information was bundled (e.g., in a book)

Inventory was costly:
-- Shipping, handling, trucking, warehousing, etc.
-- Returned goods, damaged merchandise, etc.

The cost of producing information (e.g., royalties) is small, compared to the cost of inventory

Information Networks Change the Rules

Electronic information can be
-- duplicated cheaply (virtually free)
-- distributred cheaply (virtually free)

Of course, Internet access does cost real money
-- Each subscriber pays for their own "pipe"

The dominant cost is now information creation/synthesis, NOT the cost of inventory!

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C c Md

We Introduced a New Paradigm:

Duplicate, Download, and Decide to Pay

Consistent with the Internet culture:
- Information is still freely available!
- If you don’t like what you get, you don’t pay.
- But if you abuse the system you get no more!

Allows anyone to be a seller or buyer,
- No need to qualify as a Visa/MC merchant.
- An unprecedented opportunity for small entrepreneurs.

Works with existing financial institutions
- Keeps sensitive information off the Internet
- Use bankcards/checking accounts for settlement

Benefits to Sellers

Accounting, billing, and collection are simplified
-- First Virtual serves as the "back office"

The entire Internet is enabled as the market
-- 30 million potential customers today!

"Shareware" is the proof of concept
-- Some folks have earned a lot of income.
-- Ease of payment has proven crucial.
(Consider the first shareware millionaire!)

The FV paradigm is vastly superior to shareware.
-- With FV, payment is automatic.
-- With FV, abusers lose privileges.
-- With FV, it takes action to refuse to pay.
-- FV works well for text, music,
images, & software.

Benefits to Buyers

Examine information before deciding to pay for it

E-mail confirmation of buyer acceptance detects fraud

Bankcard and checking information is not sent or stored on the Internet

No cryptography is needed!

No new software is needed!

For privacy, cryptography can be layered on optionally later.

V Hw W k

Account Application via Internet
-- Sensitive information via phone/post

Transactions via Web/FTP/Email
-- Payment confirmation via email

Anyone can be a seller
-- Those without servers can use our
InfoHaus (TM), an information
"automat"

Settlement via direct bank deposit
-- Payment lags for untrusted sellers

The Account Application Process

Buyer fills out application form via Telnet, Web, Email, etc.

Includes all non-sensitive information:
-- Name
-- Email address
-- Address, phone, etc.
-- Account-ID choice
-- Optional settings

If complete, FV sends "almost ready" message, including 12-digit application-id

To activate your account as a BUYER:
-- Call 1-800-*** with app-id and CC#
-- $2 charge on credit card
-- Credit card used for future purchases

To activate your account as a SELLER:
-- Send a $10 check to PO Box ****
-- Bank account credited for future sales

Notification by email when account is ready to use for buying, selling, or both.

The Transaction Process

Seller receives order via Web, FTP, E-Mail, etc.

Seller may validate account in real-time or
via e-mail

If seller honors order
-- Information sent to buyer
-- Transaction record sent to First Virtual

First Virtual sends "transfer token" to buyer
via e-mail

Buyer replies with 1 word:
-- Yes: payment is authorized.
-- No: payment is declined.
-- Fraud: cancel account.

Seller bears risk of non-payment,
but buyers who say "no" too often
get invalidated

The First Virtual InfoHaus

The World's First Public Access Information Mall

Anyone can be a seller!
-- Each seller has a seller description + info-items
-- Each info-item has a free part and a paid part
-- 7x24 high-bandwidth availability
-- Topic/keyword and date-based searching
-- Full text search soon

What can be sold?
-- One-shot items for sale
-- Periodicals (magazines)
-- Boxed sets
-- Web forms that generate charges, send email

Seller access methods
-- Telnet/FTP interface
-- MIME email interface

Buyer access methods
-- WWW
-- FTP
-- Email

The InfoHaus: An Automat for Cyberspace!

All operations automated
- Seller does not need own computer
- FV does backups, collection, etc

Reasonable charges for use
- Monthly storage fees
- Transaction fees for completed sales
  (+ normal FV charges)

Accounting summaries generated (soon)
- How many browsed
- Who bought, who refused

A Third party business?
- The InfoHaus has NO privileged position
- Separate business unit
- Competition with FV possible

The Settlement Process

When buyer accumulates more than $N of charges:
- A single bankcard transaction is originated
- Buyer gets a detailed summary via e-mail

First Virtual ages funds for 90 days (for untrusted sellers), and then regularly:
- Direct-Deposits money into seller's account
- Notifies seller in detail via e-mail

The 90 day period will eventually be reduced for some sellers

Chargebacks are STRONGLY discouraged.

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Account setup
-- For buyers: $2.00
-- For sellers: $10.00

Transaction fees
-- For buyers: None
-- For sellers: $0.29 + 2%
(Visa/MC/bank charges INCLUDED)
-- Microtransactions permitted
(seller accumulation required)

Seller settlement charge
-- $1.00 per settlement

InfoHaus Charges
-- $1.50/month/meg
-- 8% of sucessful sales
(+ normal FV charges, as above)

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The First Virtual System Architecture

-- Client/server protocols based on TCP/IP standards
-- Client sends a "transaction" to FV server (Finer granularity than "fund transfer")
-- Server gives response, may take additional actions

Data Structures
-- All transactions/responses are structured MIME data
-- Heavy use of multipart/mixed, multipart/alternative
-- One new specialized MIME type

Client Interfaces
-- All access may be done via email (SMTP)
-- Optional access through interactive protocol (SMXP)
-- Specialized uses of finger, telnet, DNS, etc.

Connection Protocols: Mail and SMXP

Mail is simplest:

To: sgcs@card.com
Content-type: application/green-commerce;
    transaction=transfer-request

SMXP is almost as easy

New protocol (port 440), modeled on POP protocol

Basic function: interactive exchange of MIME objects.

Client passes one MIME object to server.
-- Server gives back "+ERR" or "+OK"
-- Sometimes, server also gives back another
    MIME object.

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RC 82 s s s us b

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A u S u s s

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APPL CA ON R SUL :
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Fu d sf (u s)

RANSF R R QU S :
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S v ksbu f f v

RANSF R R SPONS :
Us s s s f ud
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RANSF R R SUL :
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O s s

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H S ORY R QU S (u d)

S v b opu s
CAPAB L S R QU S ,
CAPAB L S R SUL

k f w
PAY N NO F CA ON
PAYOU NO F CA ON
PAY N CHARG BACK NO F CA ON
PAYOU CHARG BACK NO F CA ON
PAY N FA ILUR NO F CA ON
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VIII. The Corporation

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D Nw, fHusDv

S P s

DS

F s USA

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L d w k

NDZCd

($v s $)

F s V u s' d Gu u

W w d s v s's w
b .

S f s tb s d
(f fr d)
(s b f ERC)
A v s xs f s u u
F v b sfw
sub
C su v b
Ss tb u
(NO VAPORWARE!)
Ss d s v bss

IX. The Future

W' s d s !
S d ss ud dv
Ad s s s
j s s
W f u w f du ss !

Ou : b d s u
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X. What We've Learned From the first 8 months of Internet Commerce

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P s us s
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