



# **The Business Case for DomainKeys Identified Mail**

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# Fighting Spam & Email Abuse Requires a Multi-Faceted Approach

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DomainKeys Identified Mail is part of a multi-faceted approach to protect consumers against spam and phishing scams.

- **Industry collaboration efforts**  
Cisco, Sendmail, PGP, AOL, IBM, and others worked together to submit DKIM to IETF
- **Legislation and litigation**  
CAN-SPAM; numerous lawsuits against spammers from Yahoo! & others
- **Increasing consumer awareness**  
Consumer information available at <http://antispam.yahoo.com> and <http://security.yahoo.com>
- **Enhanced technologies**  
Content filters, virus protection, sender reputation, and accreditation





# The State of Email – Market Situation



Worldwide Estimates [Radicati Group]	2006	2009
Email Traffic msgs/day	171B	331B
Email Installed base mailboxes	1.4B	2.2B

- Original design makes email forgery & spoofing easy for spammers
- Phishing & online identity theft are the most egregious types of email abuse



# The Proliferation of Phishing Attacks

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## Gartner

### **Gartner Study: Increased Phishing and Online Attacks Cause Dip in Consumer Confidence (6/05)**

- 2.42 million US adults report losing money due to phishing attacks
- In 2004 and 2005, 11 million phishing e-mail recipients clicked on the links
- More than 80 percent of online consumers say that their concerns about online attacks have affected their trust in e-mail from companies or individuals they don't know personally.



### **Forrester Study: Phishing Spreads Among Consumers (9/05)**

- 14,000 phishing attacks were reported to the Anti-Phishing Working Group from April to Sept 2005
- According to the APWG, the number of unique key logging Web sites increased 125% from April to Sept 2005
- 86% of phishing attacks target the financial services industry



## Why Yahoo! Mail is Involved

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- Yahoo! Mail is the largest webmail provider in the US and in the world
  - 67MM US monthly unique users [comScore MediaMetrix]
  - 231MM WW monthly unique users [comScore MediaMetrix]
- Yahoo! provides email for:
  - SBC/AT&T
  - Verizon
  - British Telecom
  - Rogers Cable
  - 100,000s of small business and personal domains
  - and more





## Sender Reputation Based on IP Address Has Proven Problematic

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- Maintenance
  - IP addresses change over time; changes aren't communicated; occasionally changes aren't even realized by senders
  - Mailbox providers end up relying on end-user reports
- Email Service Providers and shared IP addresses
- Forwarding
  - 80% of forwards traffic is spam
  - Extremely hard to distinguish legitimate forwarded mail from forgeries
  - Mailbox providers are between rock/hard place
    - protect user from phishing & other forgeries or yield false positives
  - Very significant amount of marketing mail gets legitimately forwarded
    - Yahoo!, EarthLink, Comcast, Juno, Mail.com, SBC, ...
- Users don't know or care about IP addresses
- Marketers don't care about IP addresses



## Sender Reputation Based on Domains

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- DomainKeys was developed to solve these issues
  - Low maintenance for both sender and mailbox provider
  - Many domains can share the same IP address without sharing the same reputation
  - Survives forwarding
  - Users know about domains
  - Company's domain is (or should be) a prime brand attribute to marketers



## Key Benefits of DomainKeys

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- Mailbox provider can measure the correct reputation
- Mailbox provider can help you protect your brand
- Reduce sender reputation maintenance
- Protect email users from forgery





## Implementation Costs of DomainKeys

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- CPU Cost:
  - Sendmail study shows 8-16% mail server software CPU increase
  - Several major mailbox providers & senders have not needed to add additional hardware
- Several royalty free software implementations available
  - E.g., <http://domainkeys.sourceforge.net>
- ESPs are beginning to implement
- DNS – infrequent updates required



## Implementation Costs: Licensing

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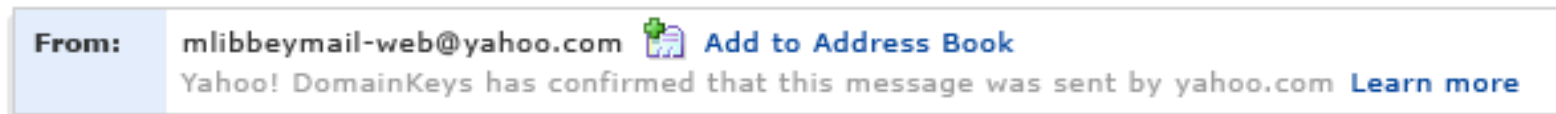
- Patent license designed to allow freedom to operate, while protecting the industry
  - Royalty free
  - Sub-licensable
  - Perpetual
  - No registration required
- Alternatively, GPL (GNU General Public License) is also available



## How Yahoo! is using DomainKeys

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- Signing and verifying email using DomainKeys
- Expect to begin using DKIM as specification stabilizes
- Showing positive verification results to users




- Skipping some antispam filters
  - Especially forgery detection
  - Filters that get fooled by forwarding most often
  - Not guaranteed inbox delivery!
- Working on providing complaint feedback loops for signed mail
- Continued integration into sender reputation systems



# Domains from which Yahoo! has received a DomainKeys signed email





More information and specification:  
<http://antispam.yahoo.com/domainkeys>

Tools for deployment  
<http://domainkeys.sourceforge.net>