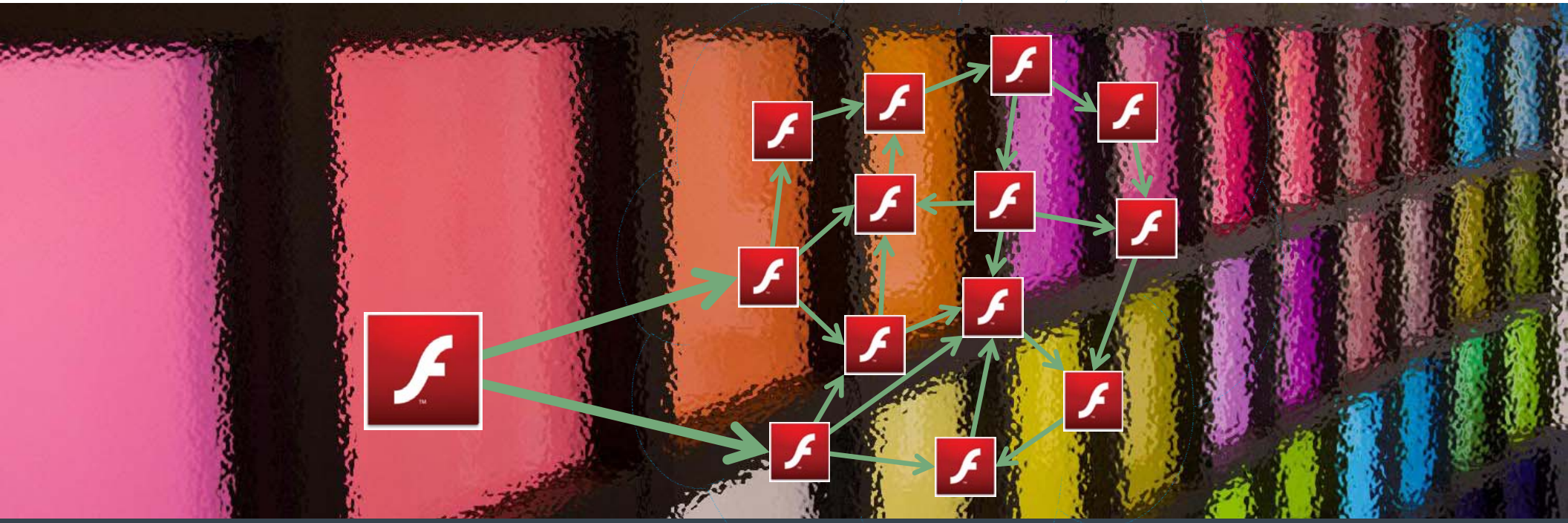
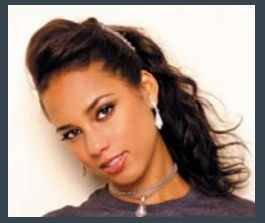
P2P on the Adobe Flash Platform with RTMFP

Kevin Towes | Adobe Product Manager, Flash Media Distribution



Flash is the most used platform to deliver video

- In 2009 more content was delivered in Flash than ever before
- Quality is increasing up to HD
- Multiple live events drew over 100,000 connections
- Content Delivery networks increased capacity but need to continue to grow to meet demand
- Many Regions still under serviced



Adobe

Key Drivers for using video

- **Within the enterprise (save money)**
  - save costs in traveling for meetings and training
  - Remote communication
  - Collaboration between teams
  - Customer service
  - Employee work/life balance
  - Customer marketing / outreach

- **Monetization of content (make money)**
  - Training materials
  - Distance learning
  - Download to own or rent scenarios
  - Entertainment

70%

Web games use Flash

85%

Of Alexa top 100 websites use Flash

75%

of all video on the web is Flash

98%

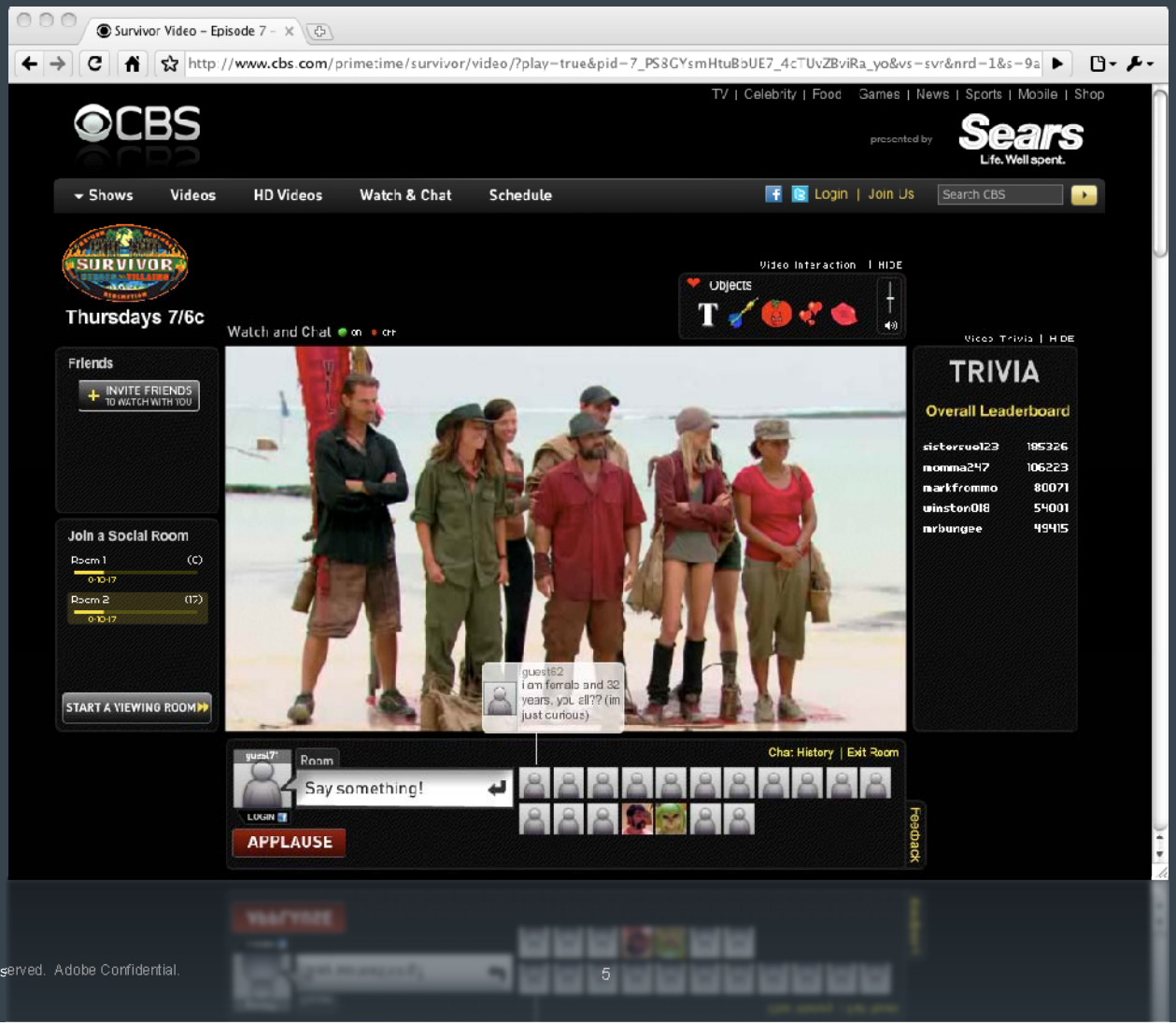
of Internet connected PCs worldwide have installed Flash Player

95%

of top 20 phone OEMS committed to delivering Flash

95%

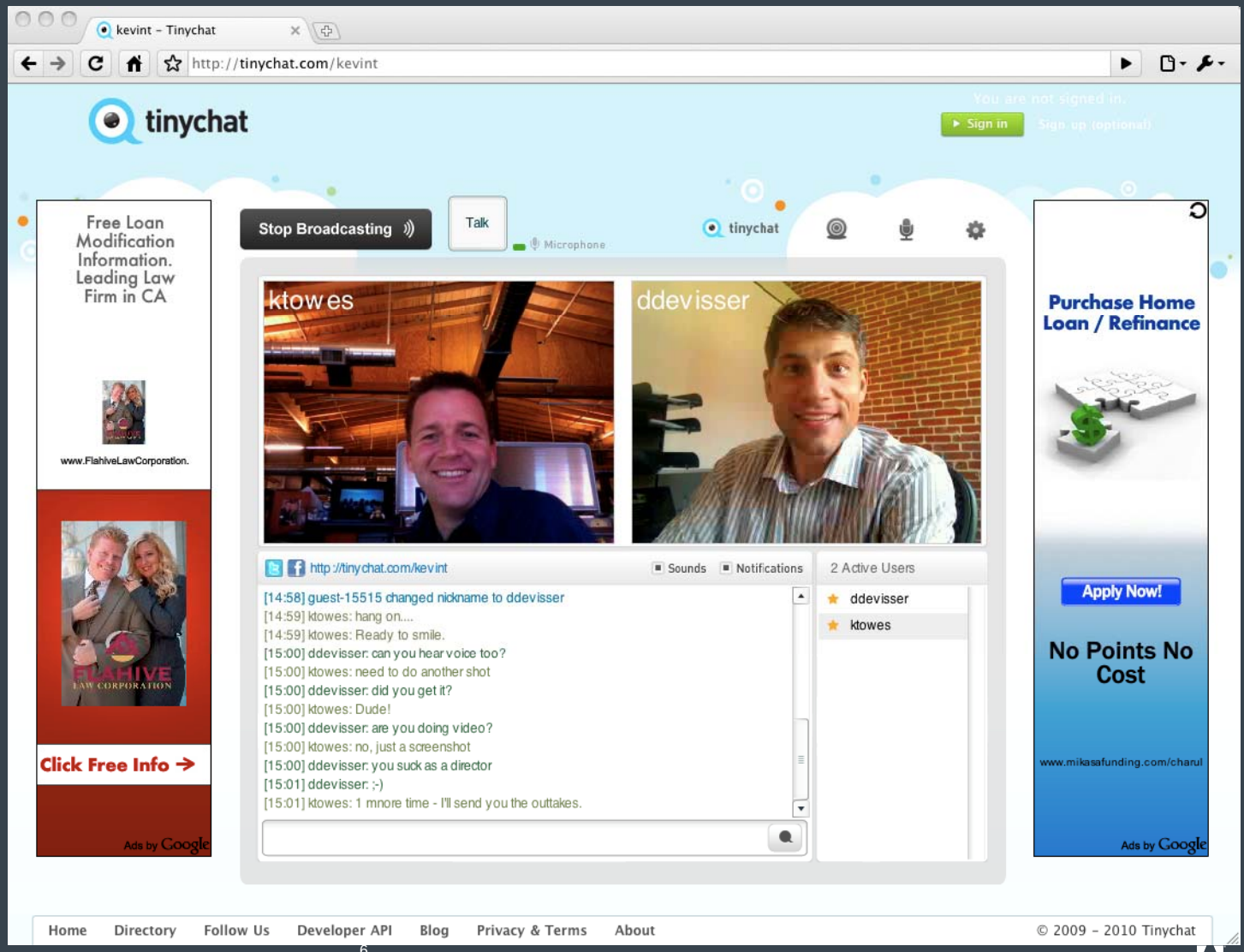
of Internet connected PCs worldwide have installed Flash Player 10



Adobe

P2P support in the Adobe Flash Platform enables Tinychat to offer customers live video calls

Virtually no bandwidth costs and unlimited scalability for interactive communication.



Create an Environment for Employee Generated Content (ECG)

with Adobe Flash

Enterprise Video

- Internal and External Video Communication
- Empower employees to create and publish relevant content
- Peer – Peer knowledge sharing
- Reduce employee travel time and expense
- Manage bandwidth within the Enterprise
- Control costs and security
- Integrate with existing systems
- Grow with your organization

Flash Media Family of products

Largest reach	**Adobe Flash Player**
Best quality of service	**Adobe Flash Media Server**
Standards-based Media Player	**Open Source Media Framework**
High Quality Live	**Adobe Flash Media Live Encoder**
Content protection	**Adobe Flash Access**
Standards-based delivery	**HTTP Dynamic Streaming**

- Traditional Streaming
  RTMP with Flash Media Server
- HTTP Progressive Download
- HTTP Dynamic Streaming (new!)
- Application Multicast (new!)
  with Peer Assisted Networking
- IP Multicast Broadcast (new!)

Flash Player 10.1: **multiple streaming protocols**

Adobe

HTTP Dynamic Streaming

for Adobe Flash Platform

Enable massive capacity increase

Same quality you expect from Flash

Desktop + Mobile support

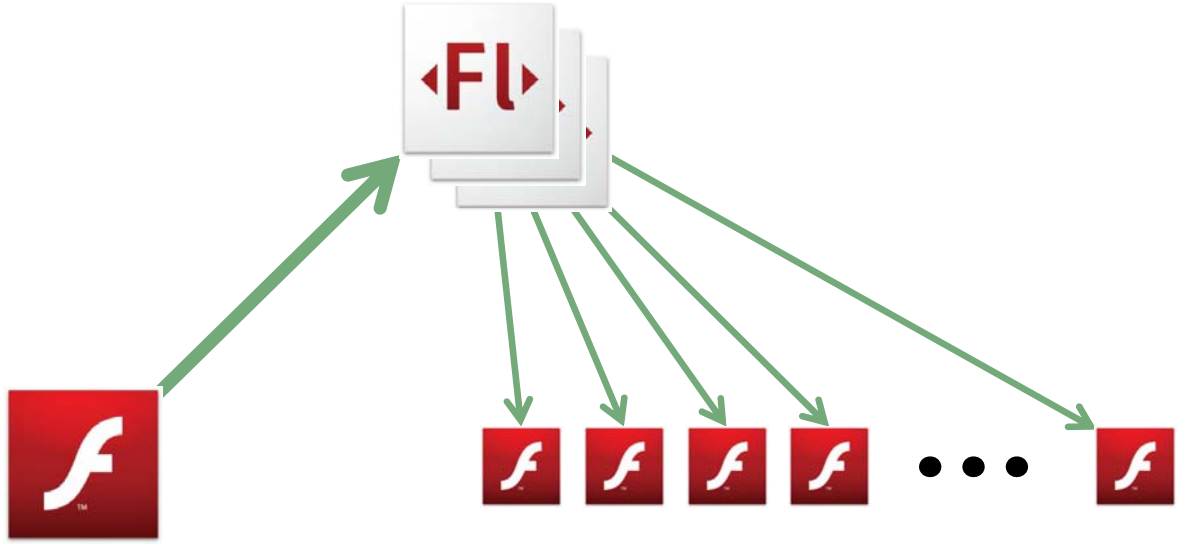
Full Content Protection with Flash Access

Protected Live with DVR support

Adobe

How Flash Media Server works today

- Unicast Media delivery
- Operates on TCP
- All data flows through the server
- As your business scales you need
  - More bandwidth
  - More servers
  - More infrastructure



Peer Assisted Networking

for Adobe Flash Platform

Reduce Infrastructure costs

Reduce Bandwidth costs

Help enable new Social applications

Foundation for Massive media delivery

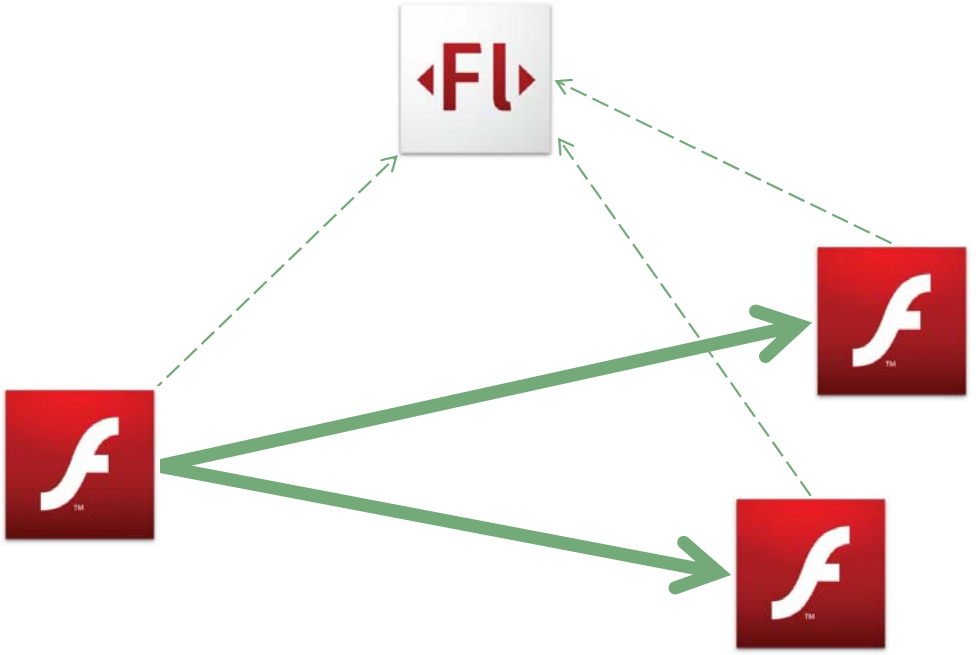
Adobe

Evolution of data transport

- Unicast (TCP)
  - RTMP and HTTP Dynamic Streaming
  - Server to Client
  - Reliable transmission
  - Requires 1:1 ratio of server to client
- Multicast (UDP)
  - Server broadcast
  - Unreliable transmission
  - Requires expensive hardware and network infrastructure
- P2P (UDP)
  - Server broadcast without hardware

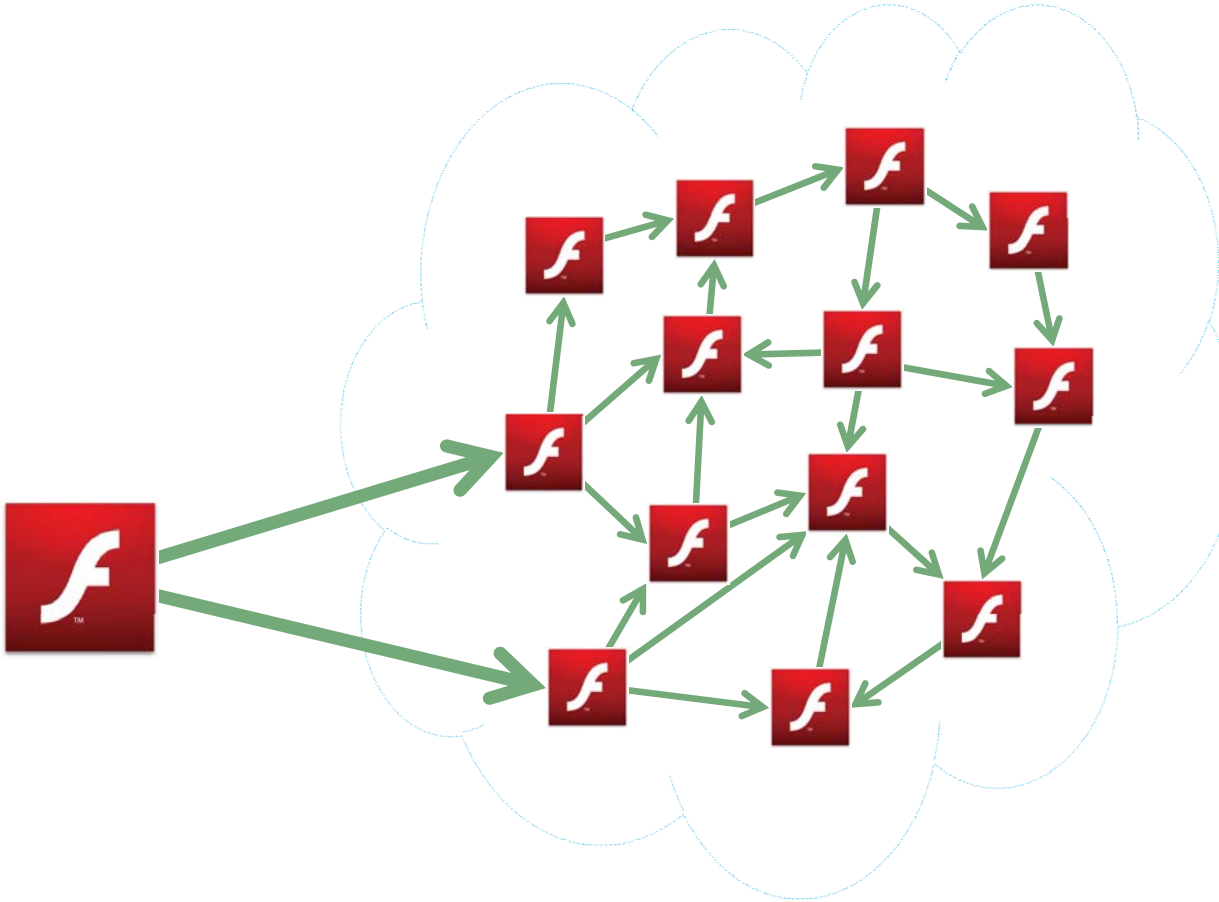
Flash Player 10.0 (November 2008)

- Introduced in Flash Player 10 (November 2008)
  - Now at 95% penetration
- Allows Data flow between Flash Players
- Managed P2P solution
- No Network probing



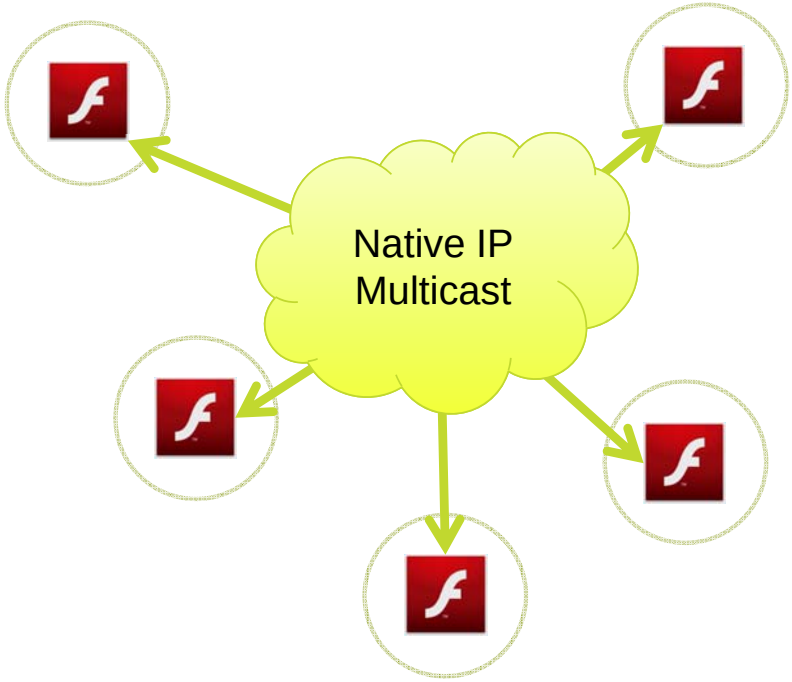
Flash Player 10.1 (H1’2010)

- P2P can be good for the network
  - Reduce Hardware costs
  - Access Control
  - Media Flow control
- Peer Assisted Networking uses it’s neighbors to help distribute
  - Send Media
  - Send Data
  - Send Messages



IP Multicast

- IP Multicast leverages UDP network broadcasts to deliver content
- No Server connection required
- Single copy of the stream passed through the network



More Information

- **Adobe Labs**
  - www.adobe.com Search: RTMFP
  - http://labs.adobe.com/technologies/stratus/
  - http://kb2.adobe.com/cps/405/kb405549.html

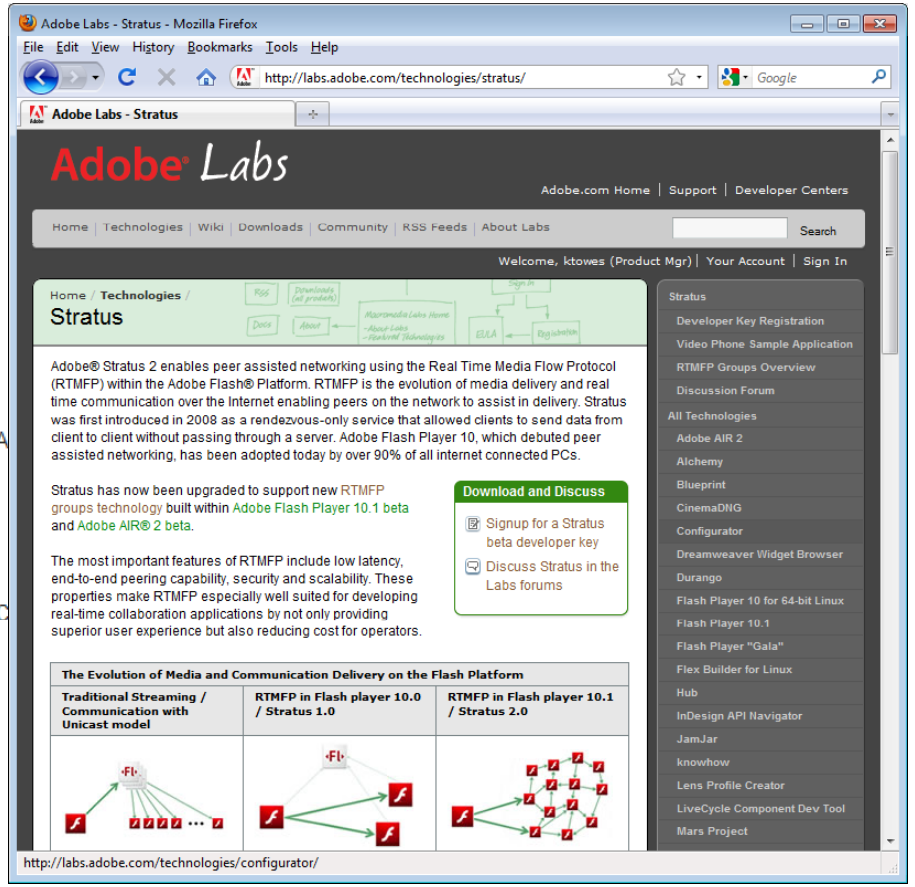
Peer-assisted networking using RTMFP groups in Flash Player 10.1
David Hassoun and Jun Heider (Feb. 22, 2010)
Discover the peer-assisted networking capabilities unleashed in Flash Player 10.1 using RTMFP and A
Stratus.

Using peer-to-peer applications on the Adobe Flash Platform
Tom Krcha (Nov. 17, 2009)
Learn about the options available for developers to use peer-assisted networking using Stratus and LiveC
Collaboration Service.

Stratus service for developing end-to-end applications using RTMFP in Flash Player 10

Adobe Flash Player 10 and Adobe AIR 1.5 introduce a new communications protocol, Real-Time Media Flow Protocol (RTMFP), whose low latency, end-to-end peering capability, security, and scalability make it especially well suited for developing real-time collaboration applications by not only providing superior user experience but also reducing operators' costs.

Jozsef Vass
Adobe



- Traditional Streaming
  RTMP with Flash Media Server
- HTTP Progressive Download
- HTTP Dynamic Streaming (new!)
- Application Multicast (new!)
  with Peer Assisted Networking
- IP Multicast Broadcast (new!)

Flash Player 10.1: **multiple streaming protocols**

Adobe


Adobe