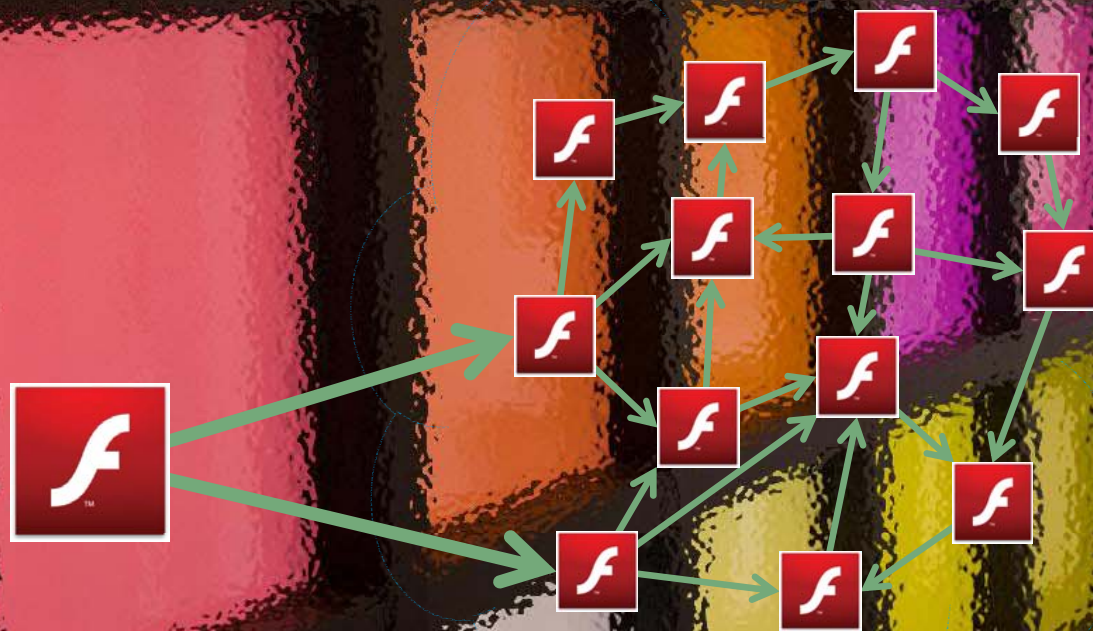




P2P on the Adobe Flash Platform with RTMFP

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



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



85%

Of Alexa top 100
websites use Flash

98%
of Internet connected PCs
worldwide have installed
Flash Player

70%

Web games use Flash



95%

of Internet connected PCs
worldwide have installed Flash
Player 10

75%

of all video
on the web
is Flash

95%

of top 20 phone OEMS
committed to delivering
Flash

Survivor Video - Episode 7 - X

http://www.cbs.com/primetime/survivor/video/?play=true&pid=7_PS3GYsmHtuBoUE7_4cTUvZBviRa_yo&vs=svr&nrd=1&s=9a

TV | Celebrity | Food | Games | News | Sports | Mobile | Shop

CBS

presented by **Sears**
Life. Well spent.

Shows Videos HD Videos Watch & Chat Schedule Login Join Us Search CBS

SURVIVOR
Thursdays 7/6c

Watch and Chat on or off

Video Interaction | HIDE

Objects

Friends

+ INVITE FRIENDS TO WATCH WITH YOU

Join a Social Room

Room 1 (C)
0-10-17

Room 2 (17)
0-10-17

START A VIEWING ROOM

TRIVIA

Overall Leaderboard

sistercuel23	185326
nomma247	106223
markfrommo	80071
winston018	54001
mrburgess	49415

Video Trivia | HIDE

guest162
i am female and 32 years, you all?? (im just curious)

Chat: History | Exit Room

Say something!

APPLAUSE

Feedback

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

Virtually no bandwidth costs and unlimited scalability for interactive communication.

The screenshot displays the Tinchat web application in a browser window. The address bar shows the URL <http://tinychat.com/kevint>. The page features a central video chat area with two participants: 'ktowes' and 'ddevisser'. Below the video feeds is a chat window showing a conversation log with timestamps and messages. To the left of the chat area are two advertisements: one for 'Free Loan Modification Information' from 'Flahive Law Firm in CA' and another for 'Click Free Info' from 'Flahive Law Corporation'. To the right is an advertisement for 'Purchase Home Loan / Refinance' from 'mikasafunding.com/charul'. The bottom of the page contains a navigation bar with links: Home, Directory, Follow Us, Developer API, Blog, Privacy & Terms, and About. The footer indicates the copyright years '© 2009 - 2010 Tinchat' and the Adobe logo.



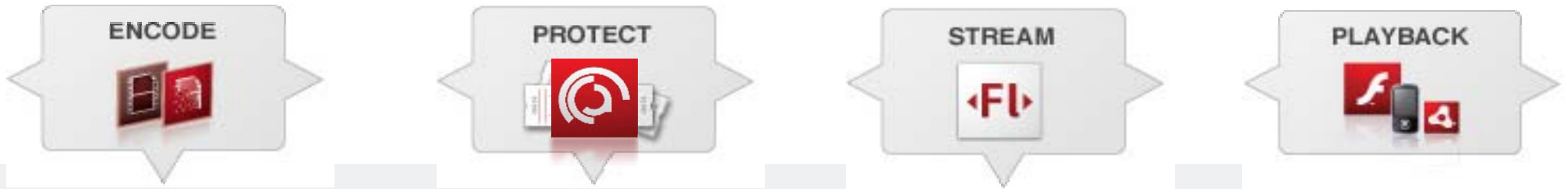
Create an Environment for Employee Generated Content (ECG)

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

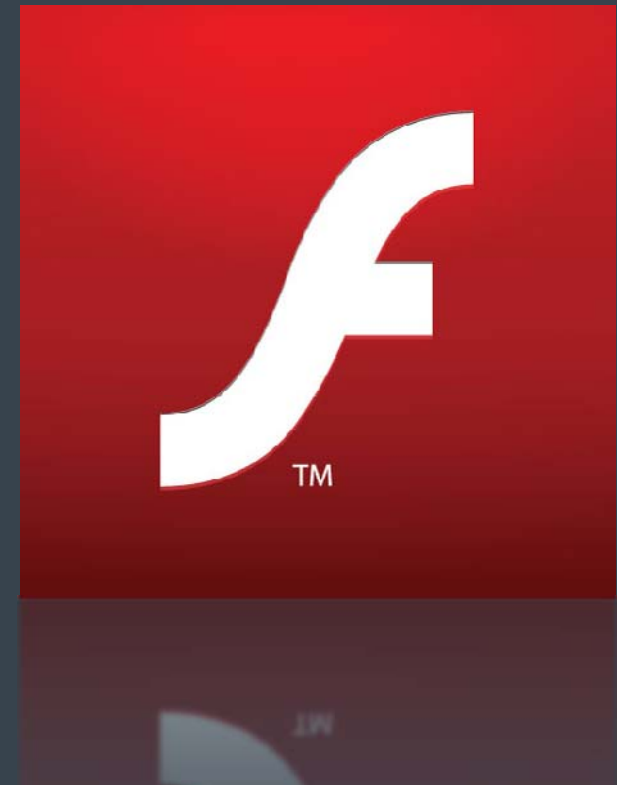
Flash Media Family of products



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



HTTP Dynamic Streaming

for Adobe Flash Platform

Enable massive capacity increase

Same quality you expect from Flash

Desktop + Mobile support

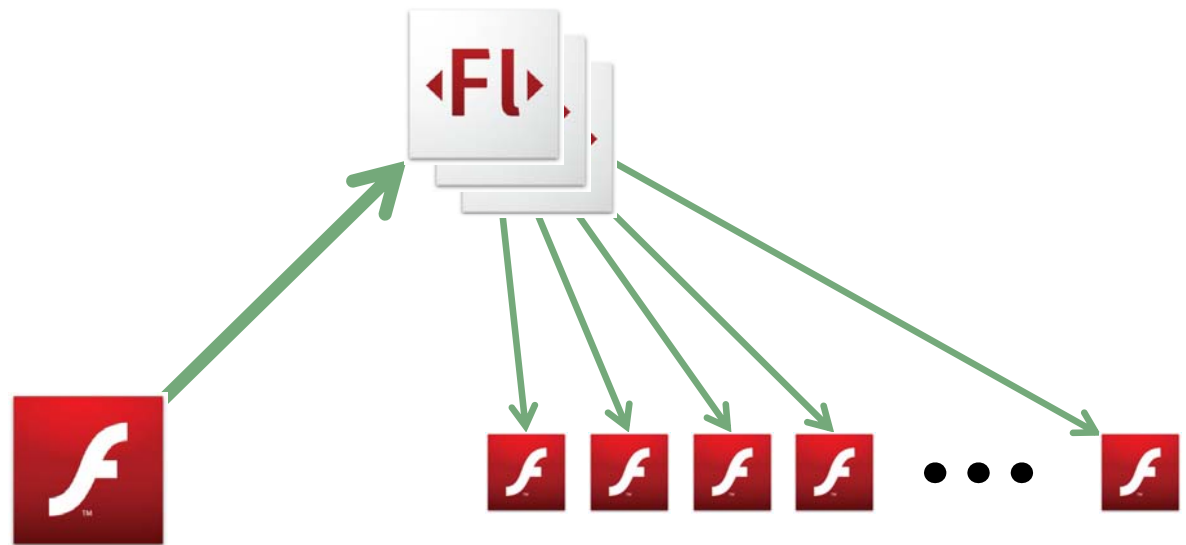
Full Content Protection with Flash Access

Protected Live with DVR support



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

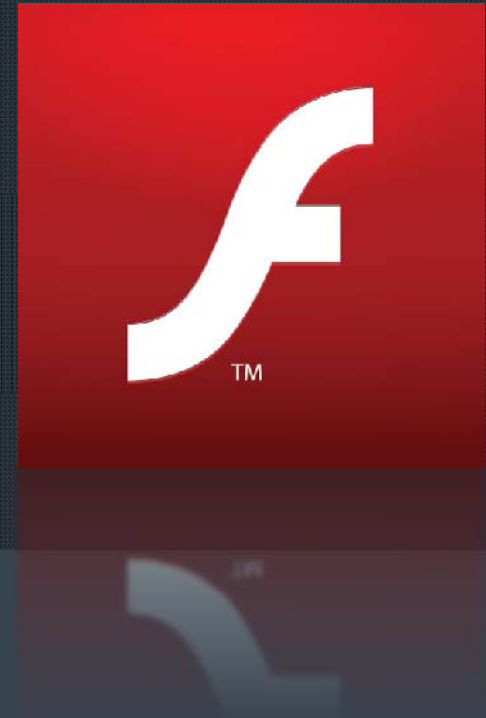
for Adobe Flash Platform

Reduce Infrastructure costs

Reduce Bandwidth costs

Help enable new Social applications

Foundation for Massive media delivery

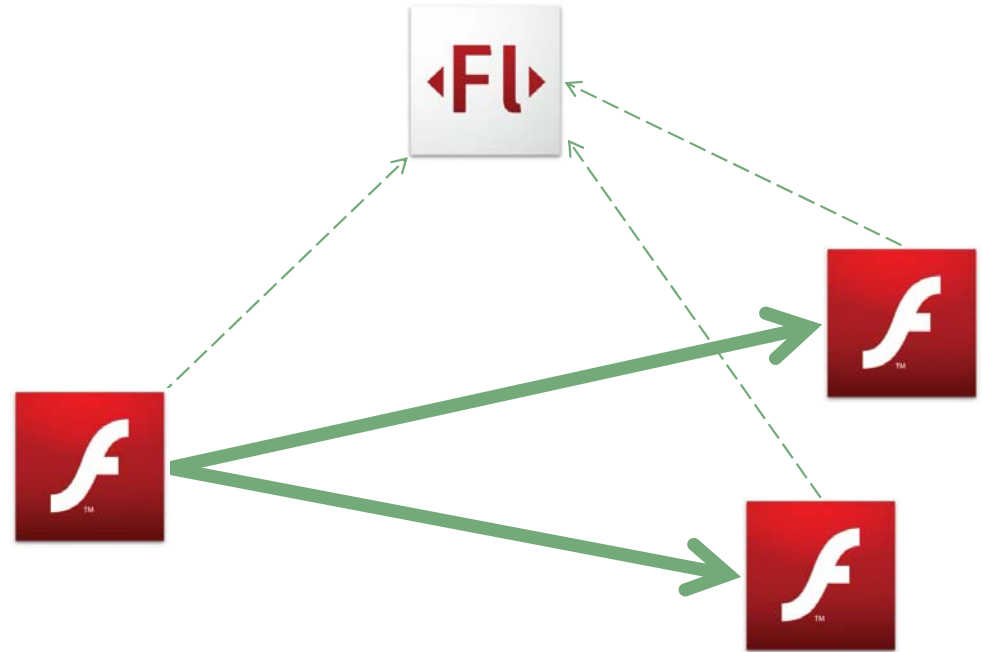


Evolution of data transport

- **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

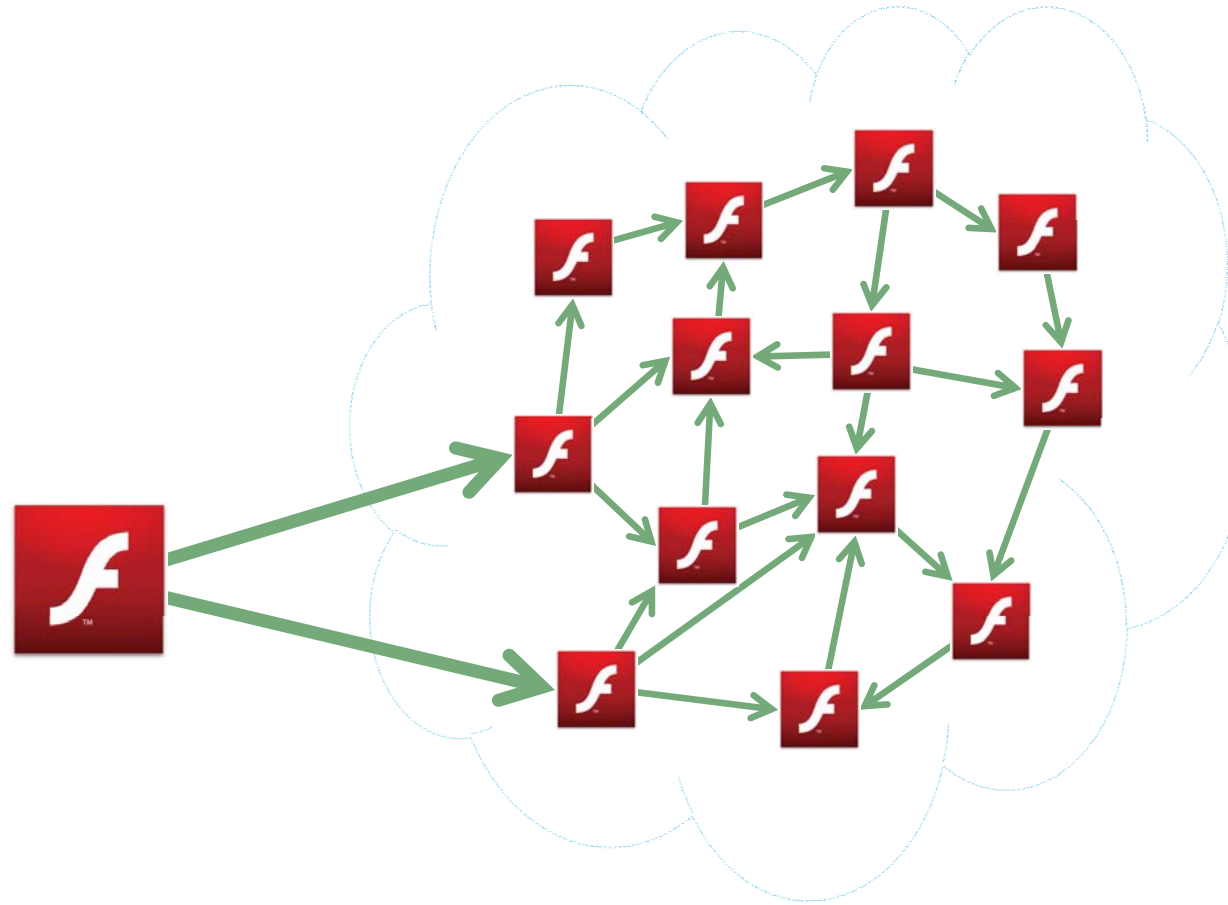
Flash Player 10.0 (November 2008)

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



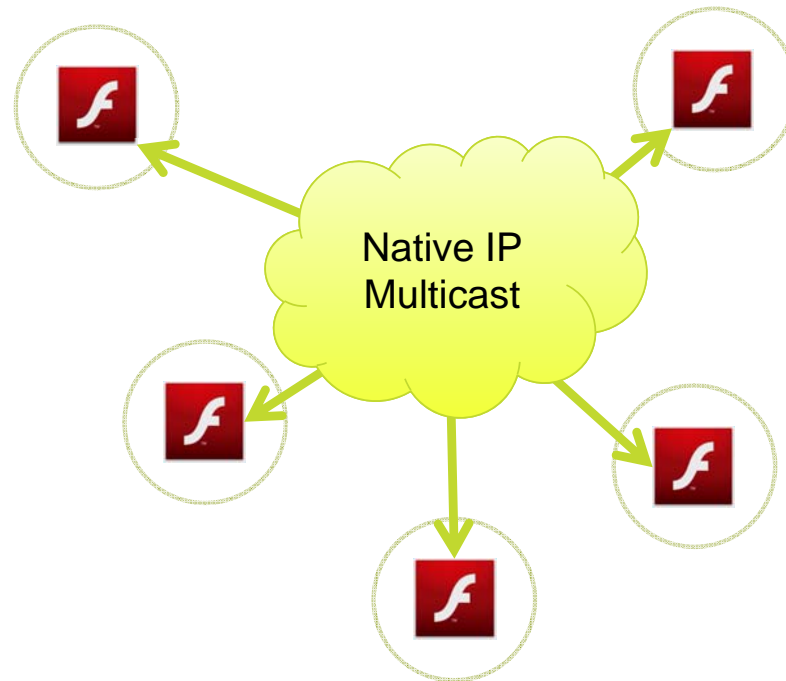
Flash Player 10.1 (H1'2010)

- 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.



Jozsef Vass
Adobe

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.

Adobe Labs - Stratus - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://labs.adobe.com/technologies/stratus/

Adobe Labs - Stratus

Adobe.com Home | Support | Developer Centers

Home | Technologies | Wiki | Downloads | Community | RSS Feeds | About Labs

Welcome, ktowes (Product Mgr) | Your Account | Sign In

Stratus

Adobe® Stratus 2 enables peer assisted networking using the Real Time Media Flow Protocol (RTMFP) within the Adobe Flash® Platform. RTMFP is the evolution of media delivery and real time communication over the Internet enabling peers on the network to assist in delivery. Stratus was first introduced in 2008 as a rendezvous-only service that allowed clients to send data from client to client without passing through a server. Adobe Flash Player 10, which debuted peer assisted networking, has been adopted today by over 90% of all internet connected PCs.

Stratus has now been upgraded to support new RTMFP groups technology built within Adobe Flash Player 10.1 beta and Adobe AIR® 2 beta.

The most important features of RTMFP include low latency, end-to-end peering capability, security and scalability. These properties make RTMFP especially well suited for developing real-time collaboration applications by not only providing superior user experience but also reducing cost for operators.

Download and Discuss

- Signup for a Stratus beta developer key
- Discuss Stratus in the Labs forums

The Evolution of Media and Communication Delivery on the Flash Platform

Traditional Streaming / Communication with Unicast model	RTMFP in Flash player 10.0 / Stratus 1.0	RTMFP in Flash player 10.1 / Stratus 2.0

http://labs.adobe.com/technologies/configurator/

- 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

