ORACLE
COMMUNICATIONS

WebRTC Deployment challenges and opportunities

Douglas Tait, Director
January 2013

Golden Gate Bridge
Vital link into San Francisco

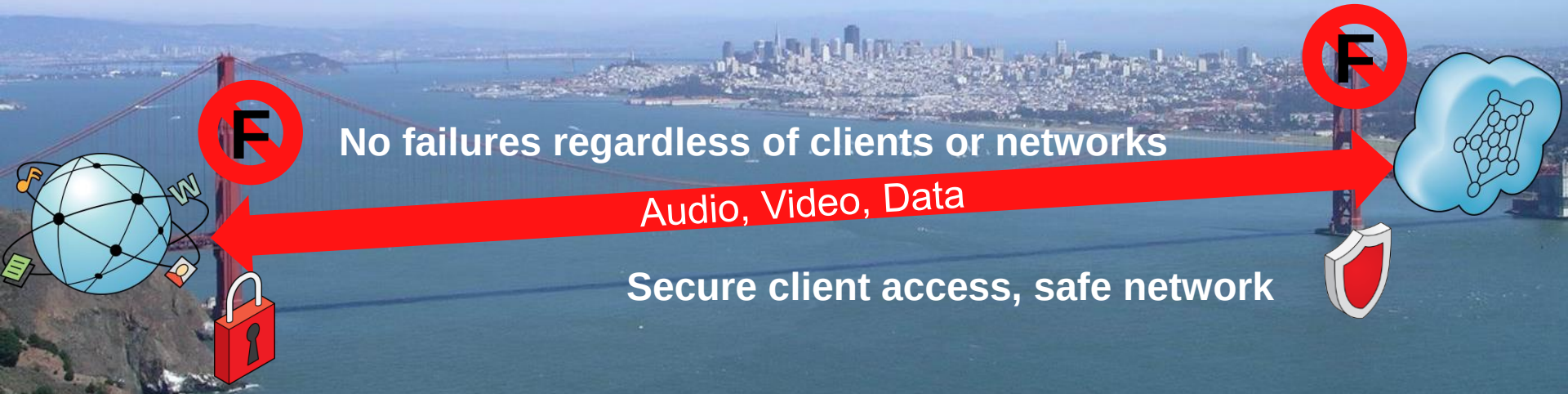
Carries over 100,000 vehicles per day

Physical deterrent systems including surveillance, detection, and lighting

- Interoperability
- Security
- Reliability

WebRTC

Vital link from Web to Network



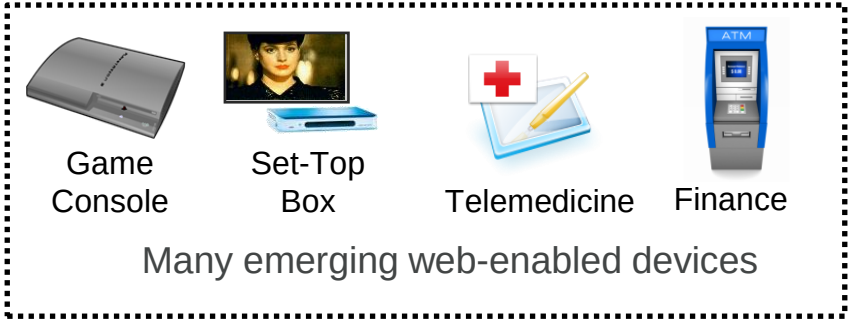
- Interoperability
- Security
- Reliability

WebRTC

Your Browser is Ringing!

No download or plug-in

- Easy to write **audio/video service**
- WebRTC extends browsers with **audio/video** and **screen sharing** capabilities
- Communications become a feature, **not** the application



Agenda

- **WebRTC Market**
- Challenges
- WebRTC Session Controller
- Use Cases and Opportunities
- Summary

What is WebRTC - Technically Speaking?

Mature, Robust VoIP Media Stack & Tools Integrated in the Browser

- Collaborative W3C and IETF standardization
- A built-in application program interface that enables browser-to-browser applications for:
  - voice calling
  - video chat
  - peer to peer file sharing
- Media engine in the browser, accessed by JavaScript, downloaded from web-server
- A peer-to-peer connection with no defined signaling mechanism

New WebRTC Opportunities/Use Cases

Service Provider

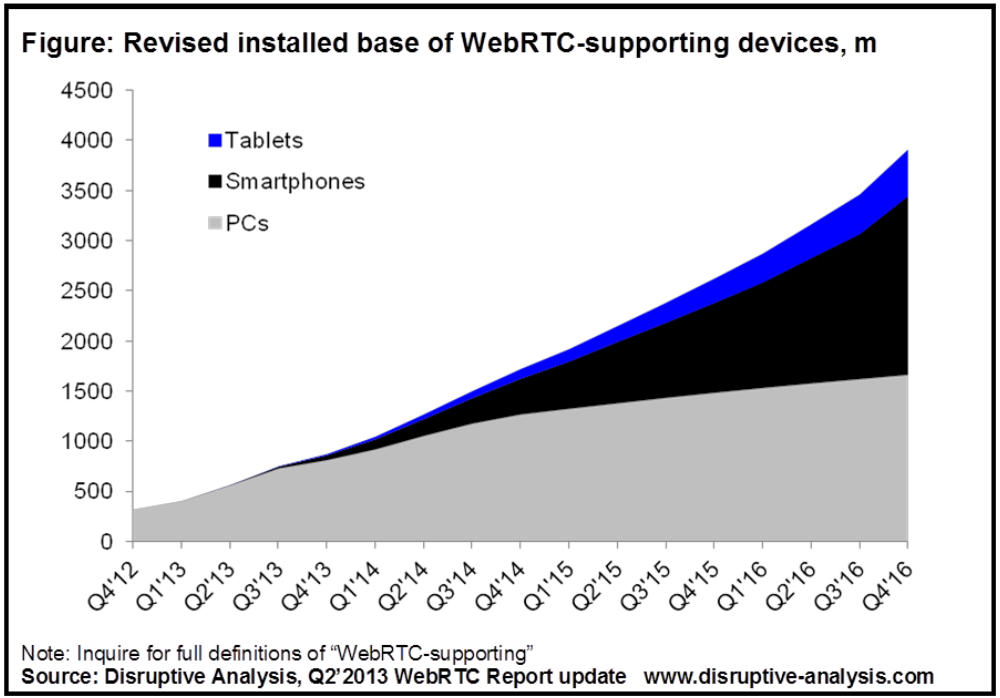
Enterprise

Use Cases

- Webphone – Extend services over web
  - OTT into new territory
  - Enterprise IP phone replacement
- Hosted conferencing services
- Contact centers
- Enhanced Unified Communications
- Enterprise services
  - Healthcare
  - Real Estate
  - Banking/Investing
  - Education
  - Military
  - Insurance

WebRTC Market Trends

1B Devices Supported in 1Q14



- Widespread adoption by 2016 – 3.9b devices
- 875m devices with WebRTC support at end-2013
- 1 billion device threshold crossed in Q1 2014
- Active user base (individuals) for WebRTC to exceed 1.5b people by end-2016

http://webrtcstats.com/webrtc-forecasts-upgraded-mobile-support-accelerating/

Agenda

- WebRTC Market
- **Challenges**
- WebRTC Session Controller
- Use Cases and Opportunities
- Summary

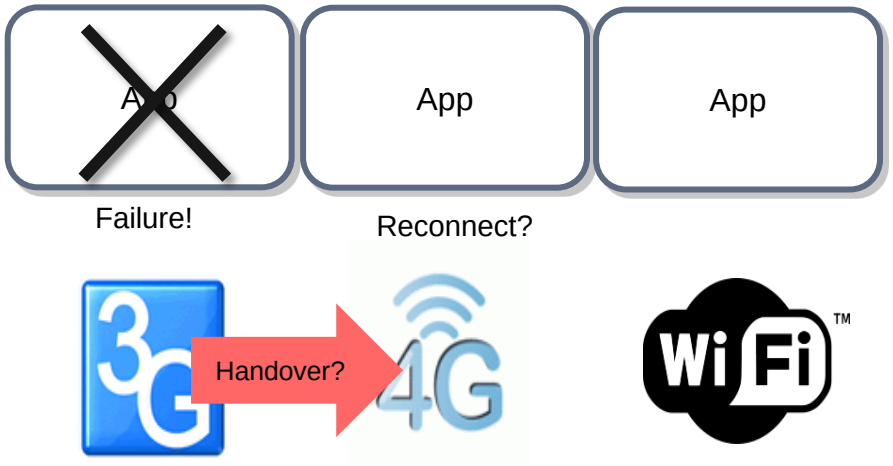
What is WebRTC Missing?

Lacks Reliability, Interoperability and Security

- No built-in network security, identity, authentication, or authorization
  - More user name and passwords
  - Denial of Service
- Underlying technology does not provide reliable network solutions
  - Sessions get lost when browser refreshes, a weak signal or network problems
  - Lack of support for large networks with many sessions and many connections
- Interoperability with signaling and media
  - Insufficient mapping from web based signaling to network based signaling
  - No support for policy, charging, or internet traversal

WebRTC Challenge: No App Control

App has no Control Outside of Browser or Over the Network

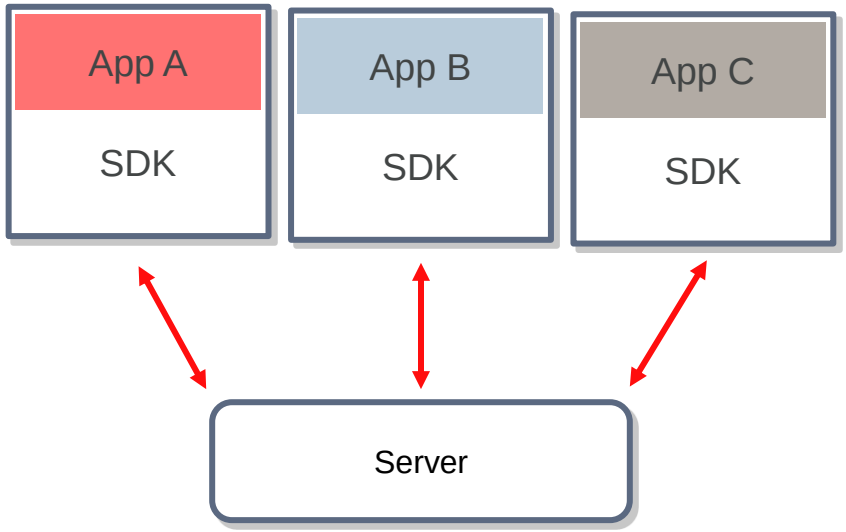


- Sessions get lost due to browser or network issues
- No network handoff

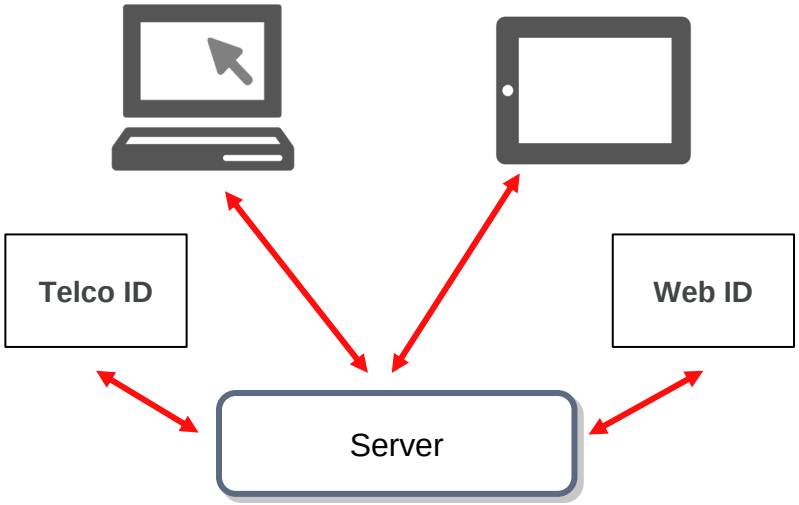
WebRTC Challenges: Poor App Creation

Development Takes too Long

- Requires easy to use, client SDK for rapid development
- Need diverse browser support
- Need Client-server coordination for back-end integration



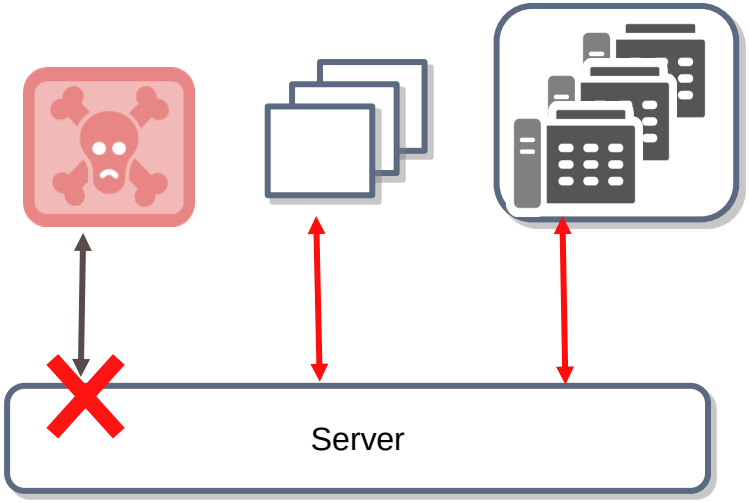
WebRTC Challenges: No Identity Management



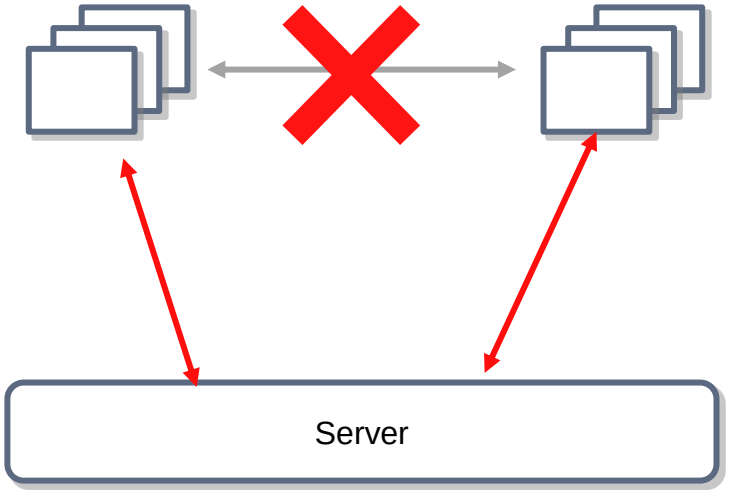
- No unified identity management
- Requires web to network integration
- No multi-connection support

WebRTC Challenges: Lacks Network Security

- No overload protection
- No safe guards against “Denial of Service”(DoS)
- Lacks network-level authentication
- All traffic treated the same



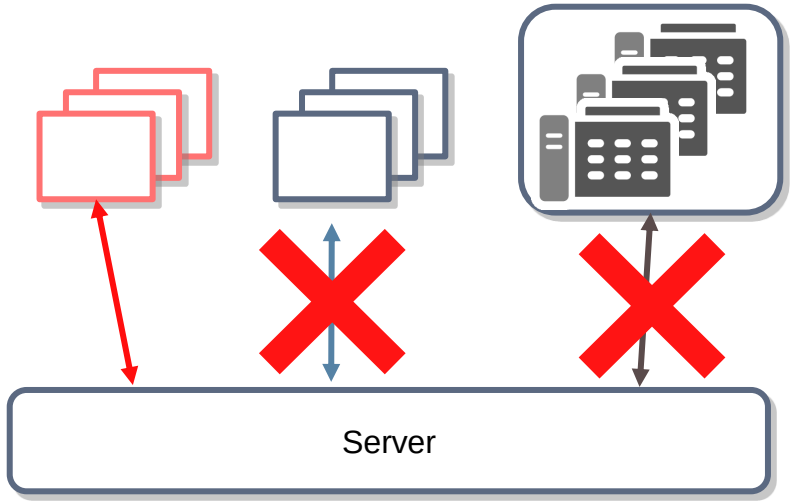
WebRTC Challenges: No Media Definition



- National Address Translation(NAT) prevents message routing
- Slow congestive encryption
- No high capacity transcoding

WebRTC Challenges: Interworking

- National Address Translation(NAT) prevents message routing
- Slow congestive encryption
- No high capacity transcoding
- Simple signaling & media does not support inter-network traffic
- Encryption issues
- Poor or no codec transcoding

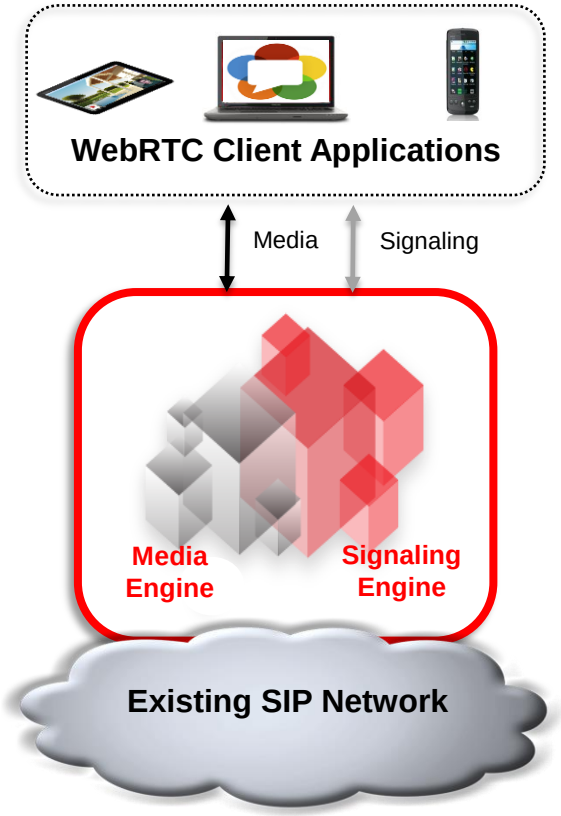


Agenda

- WebRTC Market
- Challenges
- **WebRTC Session Controller**
- Use Cases and Opportunities
- Summary

WebRTC Session Controller

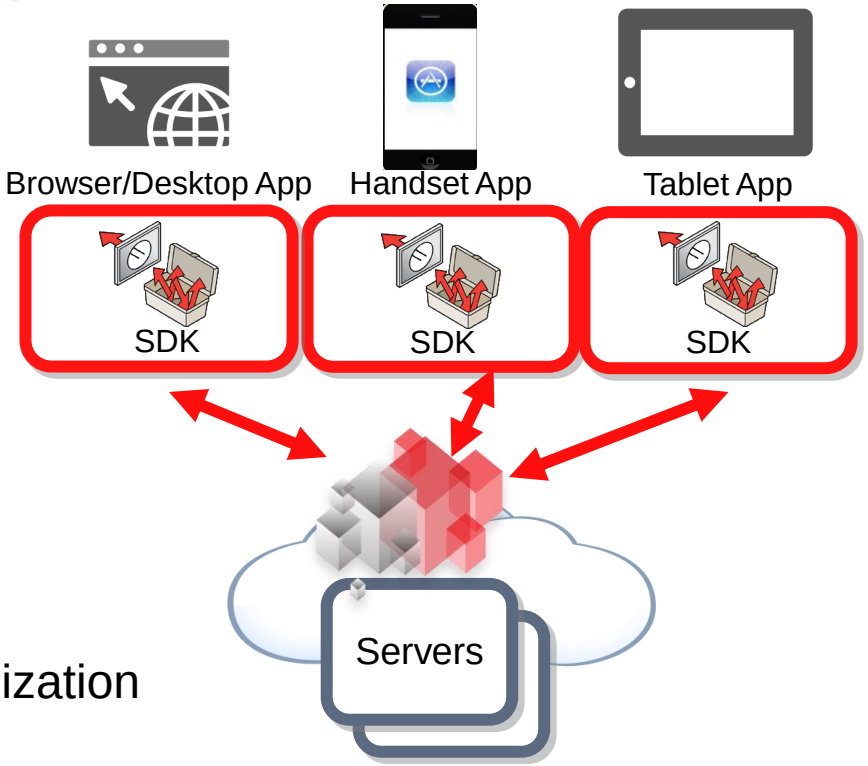
- Manage and control WebRTC:
  - Signaling
  - Media
- Connect Web to Networks
  - Enables WebRTC deployments in service provider & enterprise environments
  - Powerful signaling engine
  - Scalable WebRTC media support
  - Focus development on clients for rapid service creation



Browser Support

WebRTC HTML5 Application Development

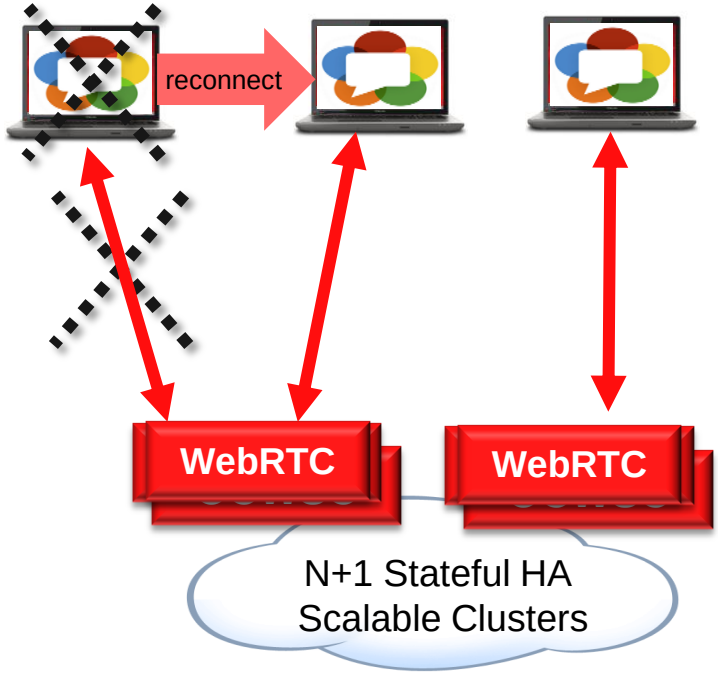
- Rapid custom client development
- JavaScript for easy programming
- Cross platform support
- Manages browser compatibility across vendors and versions
- Client authentication
- Session and Connection Management
- Client-server state resynchronization
- Application specific signaling with customization via configuration driven scripting engine



Reliability – Rehydration, Recovery

Persistent Sessions, High-scale Signaling & Media

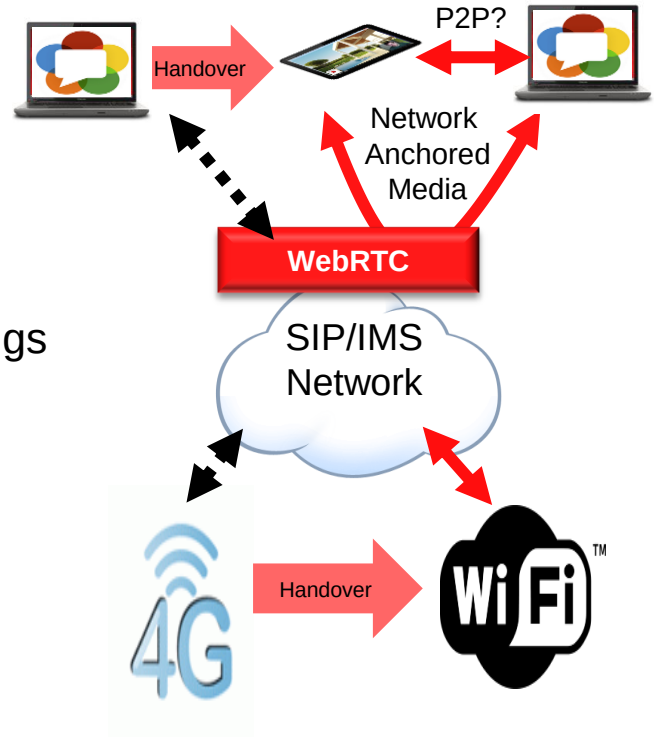
- Rehydration – persistent session, re-establish connection
  - Intermittent network connectivity
  - Browser crash or reload
- Highly-scalable software-based SRTP termination
- Distributed high available signaling and media architecture for carrier-grade scalability



Interoperability

Media, Network, Devices

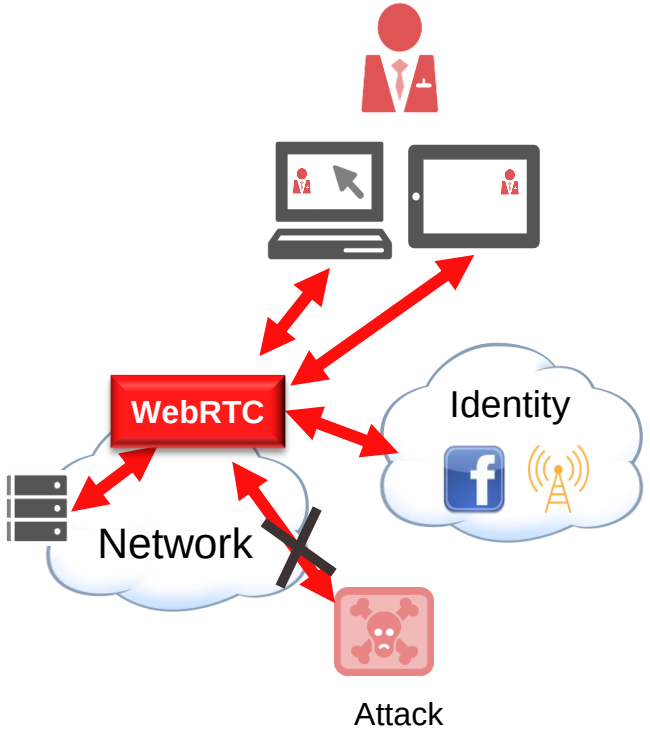
- Conditional Media Anchoring
  - Peer-to-peer if path exists, otherwise - Anchored
  - Preserving ICE and DTLS
  - SDP negotiation
  - Media release for improved scale & bandwidth savings
- Network handover - rehydration
  - Roaming between networks
  - Optimal use of bandwidth
- Device handover - rehydration
  - new interface or IP
  - update media address to peer



Security – User Identity, Authentication

Standard Web-based or Telco AAA Mechanisms

- Client Identity/Authentication - OAuth
- Coordinates identity across multiple sessions
- Telco/enterprise authentication mechanisms
- Network Identity - Encryption keys & network authentication
- Prevents Network Overload/DoS
- Traffic prioritization maintains normal service to valid users



Agenda

- WebRTC Market
- Challenges
- WebRTC Session Controller
- **Use Cases and Opportunities**
- Summary

New WebRTC Opportunities/Use Cases

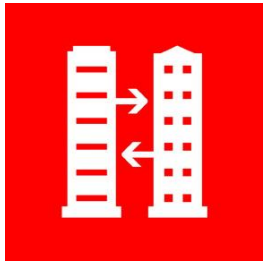
Web Phone

Web Conferencing

Contact Centres

Rich Communication Suite

Unified Communications



Vertical Industries

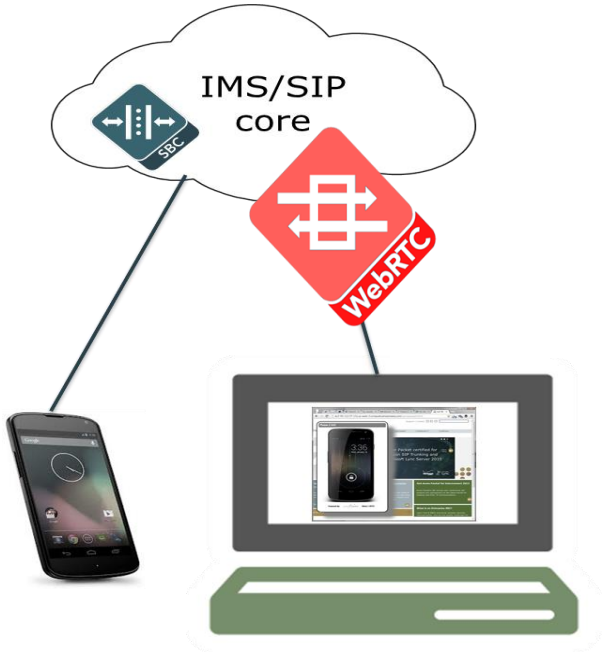
ORACLE

ORACLE

24

Web-Phone

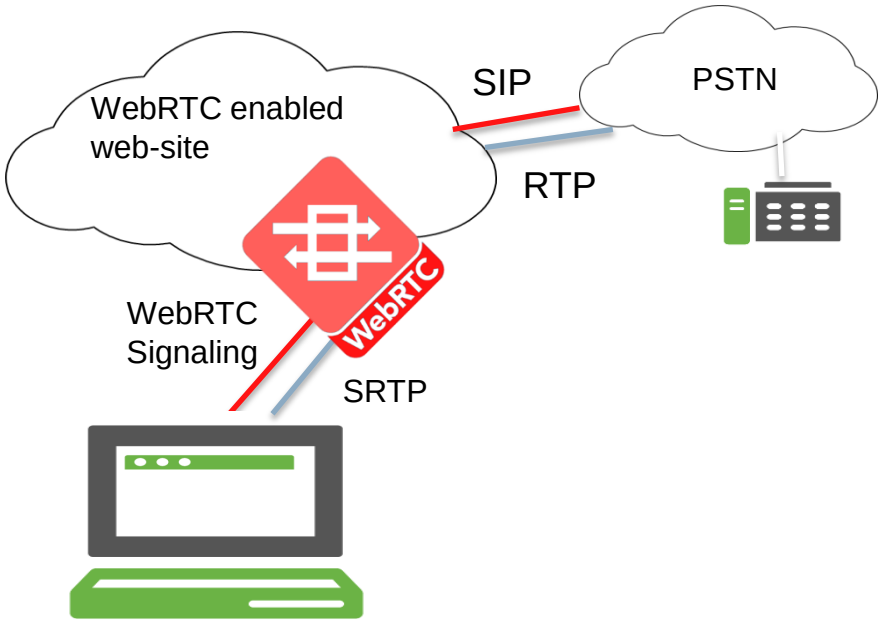
Environments: Traditional CSPs with VoIP services



- **User benefits**
  - Allows remote access to telephony features anywhere in the world
  - Easy alternative when phone is lost/dead
  - Avoid roaming or multi-SIM use
- **CSP benefits**
  - Differentiating feature
  - Increases usage of CSP's network
  - Potential new revenue

Web Comms Provider PSTN-Breakout

Environments: Web-based startups – social, gaming, etc.

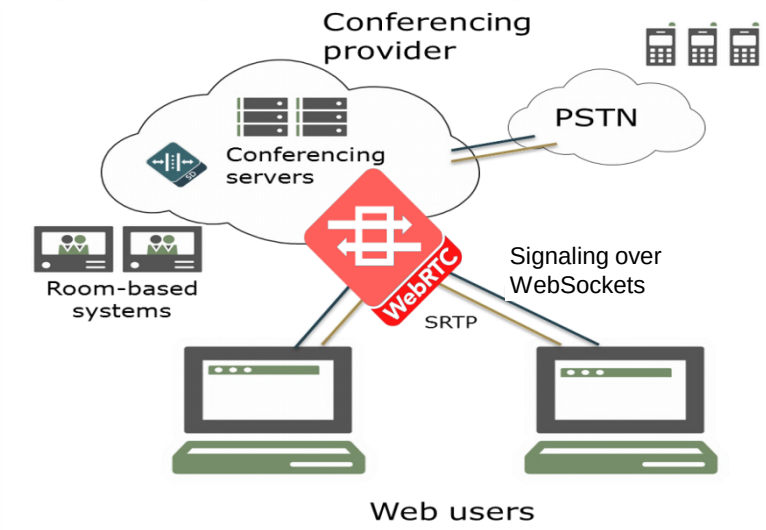


- **User benefits**
  - Access the ~6B+ users on the PSTN
  - Lowers barriers to entry (everyone already has a PSTN phone)
- **Web service provider benefits**
  - Securely connect WebRTC calls to the PSTN
  - Add core-network protections to all traffic

26

Web-Enabled Conferencing

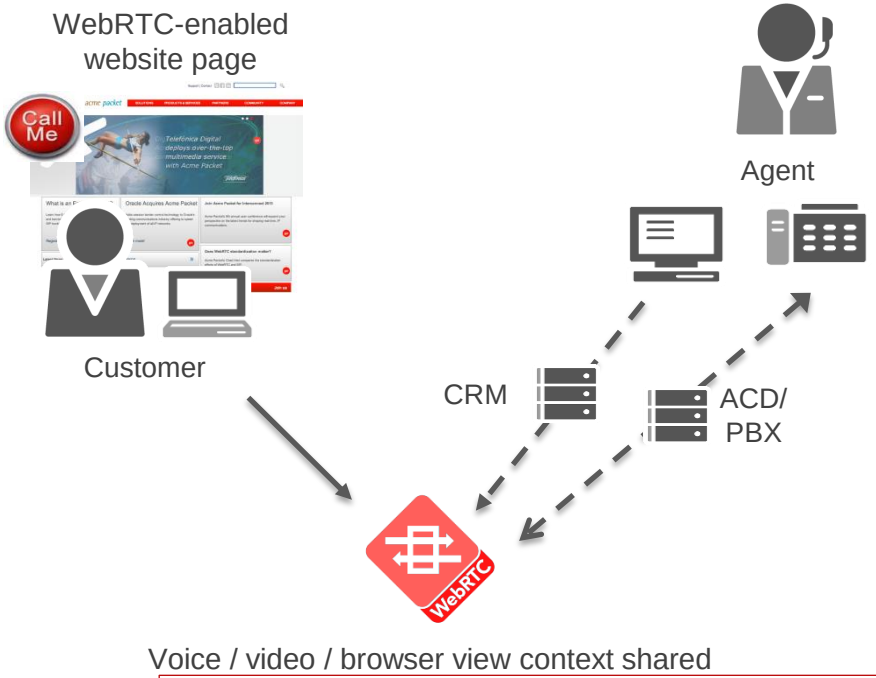
Environments: Hosted Conferencing Services



- **User benefits**
  - Easy to add “click to dial” to meeting invites
  - Integrates with web-based collab tools
  - No browser compatibility issues
  - Toll-free audio
- **Service provider benefits**
  - Augment PSTN-only conferencing services
  - Easy deployment & modification

Contact Centers

Environments: Enterprises with Customer Care

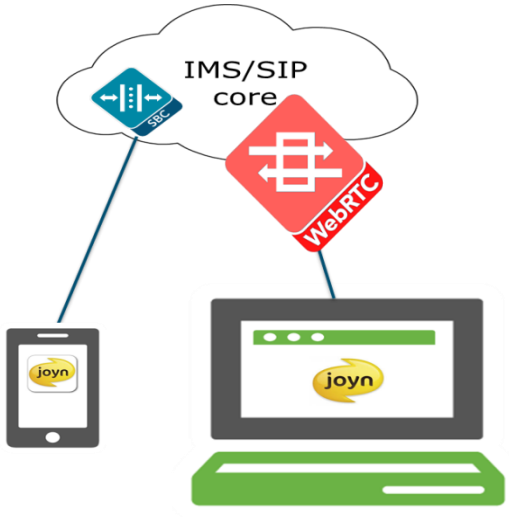


- **User benefits**
  - Connect immediately to an agent (no IVR) using the browser's media capabilities
  - No more click-to-call or call back required
  - Use computing device as a phone
- **Enterprise benefits**
  - WebRTC embeds RTC capabilities directly into web pages
  - Browser context (page view) info can be shared
  - Lower cost and enhances customer service

Cost Savings: Overall savings of $17M per year over a 5 year period on communication and marketing costs

RCS Everywhere

Environments: Mobile SPs

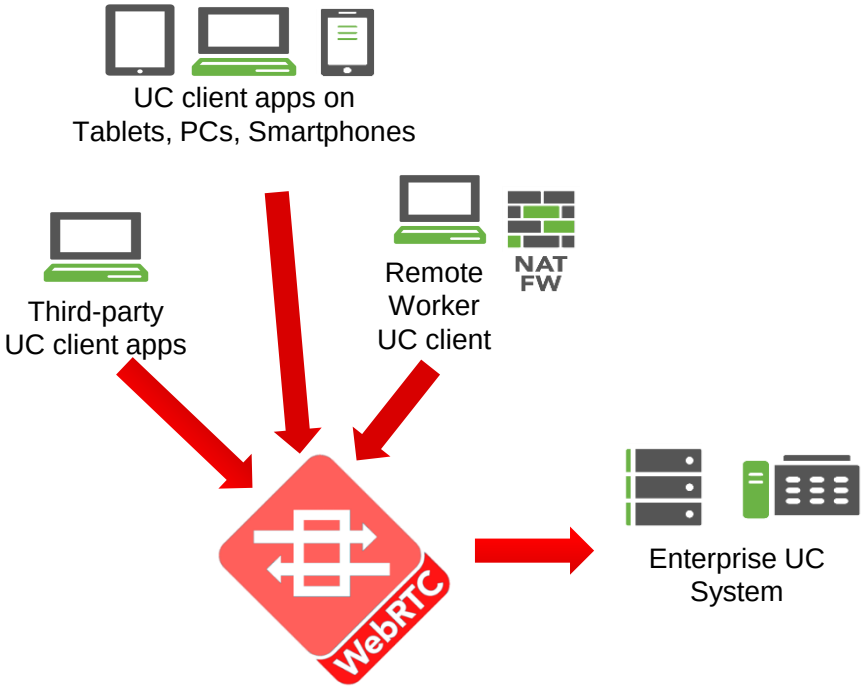


Extend RCS/joyn services anywhere on the web

- **User benefits**
  - Allows remote access to RCS features anywhere in the world
  - Seamless use of comms in any environment
  - Enhance RCS with web-based features
- **Service provider benefits**
  - Differentiating feature
  - Increases usage of SP's network
  - Potential new revenue

Enterprise Unified Communications

Environments: Mobile SPs

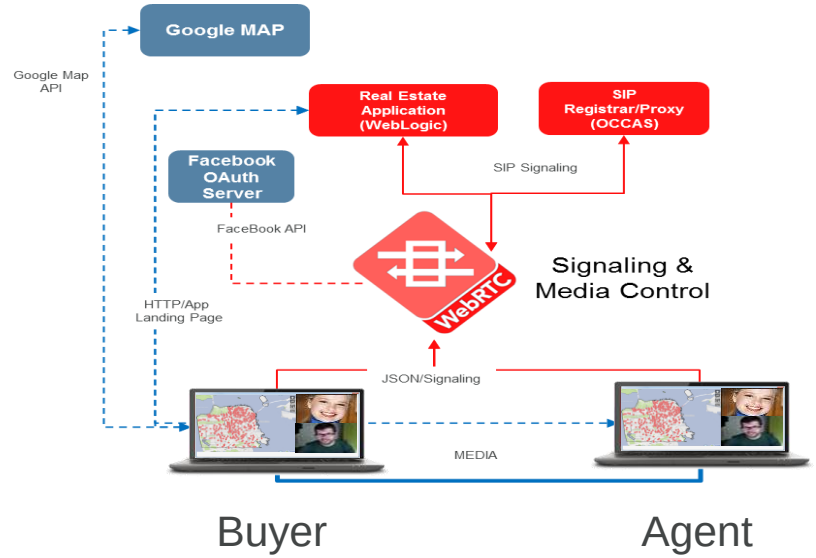


- **User benefits**
  - Provides UC on any device with a WebRTC-compatible browser
  - Seamless & secure remote worker access via secure WebRTC methods
- **Enterprise benefits**
  - WebRTC-enable existing enterprise UC system
  - Allows for browser-based UC independent of UC client vendor
  - Doesn't require a thick UC client to be installed & maintained

30

Vertical Applications – Real Estate

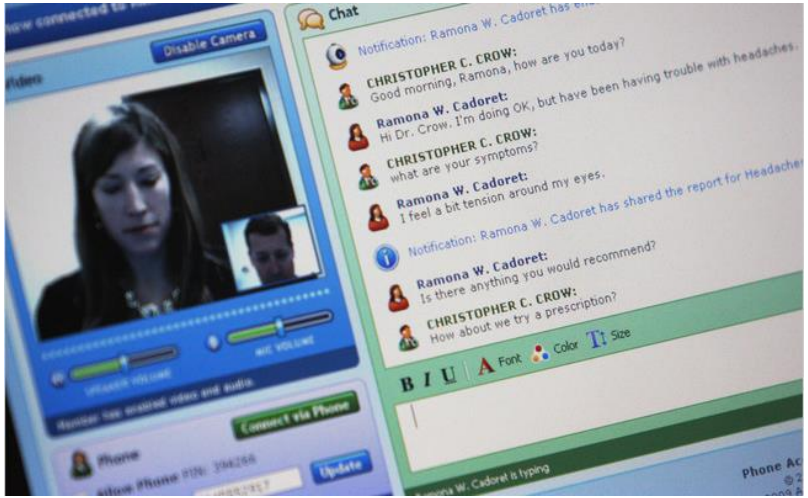
Environments: Business Focused Service Providers



- **User benefits**
  - Seamlessly blends multiple modes of communication & diverse information
  - Lowers transaction times
  - Higher end-customer satisfaction
  - Leverages existing IDs
- **Service provider benefits**
  - Leverages CSP brand
  - New value-added revenue stream

Healthcare

Benefits/News



Jan. 8, 2014, 8:17 a.m. EST

Net Medical Xpress Releases WebRTC Telemedicine Video Conferencing App for Websites

Company's Fourth WebRTC Product Is HIPPAA Compliant

MARKET WIRED

ALBUQUERQUE, NM, Jan 08, 2014 (Marketwired via COMTEX) -- Net Medical Xpress Solutions, Inc., (otcqb:NMXS), an emerging leader in the rapidly growing telemedicine industry, said today the company's new RTC Conference Switch for telemedicine and other websites is now available for general use.

The company's WebRTC (Real Time Communications) Telemedicine video conferencing tool allows organizations to embed a browser based video conferencing system within a website. It's a highly efficient, extremely high quality communications device.

- Effective communication between patient and doctor
- Community benefits - Rural healthcare, Increased Collaboration
- Eliminate desk and wall phones and communication infrastructure
- Near zero communications costs
- Time savings

Cost Savings: Overall savings of $2M-$20M

http://stcblog.com/2012/10/31/healthcare-disruption-webrtc/?goback=%2Egde_4677426_member_180792367#%21

ORACLE

32

Agenda

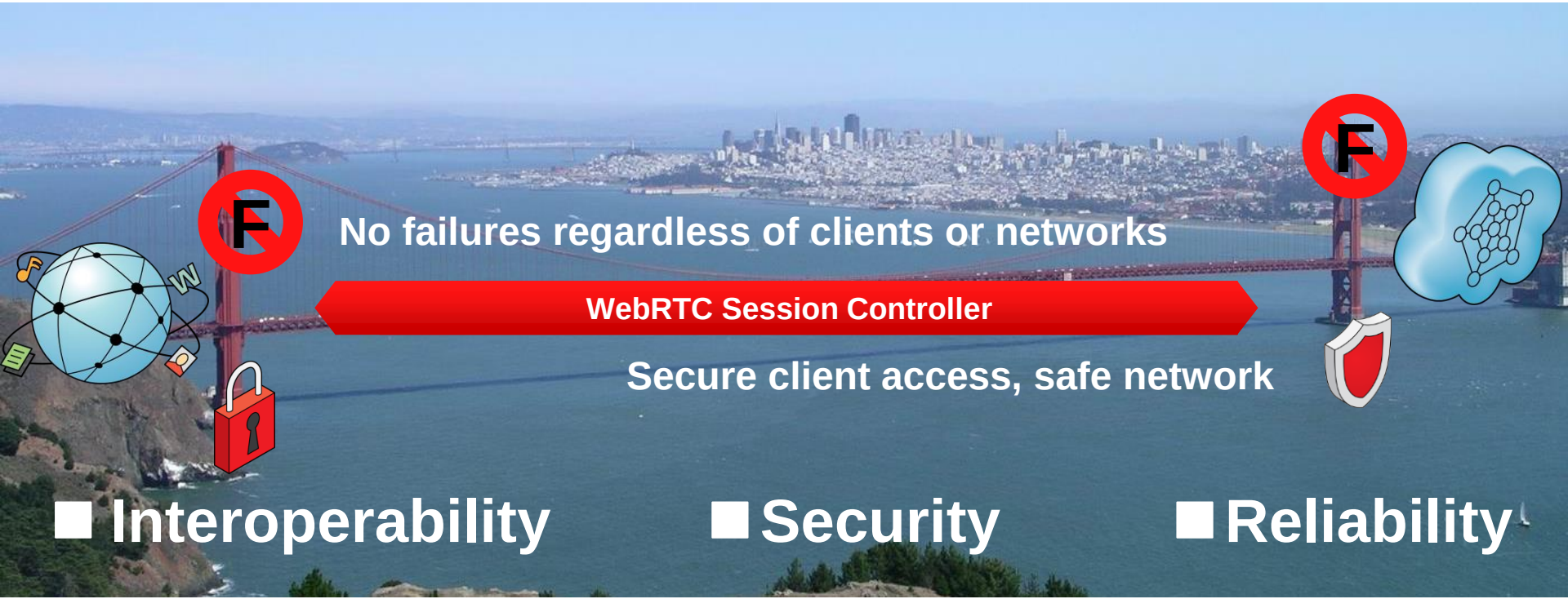
- WebRTC Market
- Challenges
- WebRTC Session Controller
- Use Cases and Opportunities
- **Summary**

Bridging Communications with the Web

WebRTC and Beyond

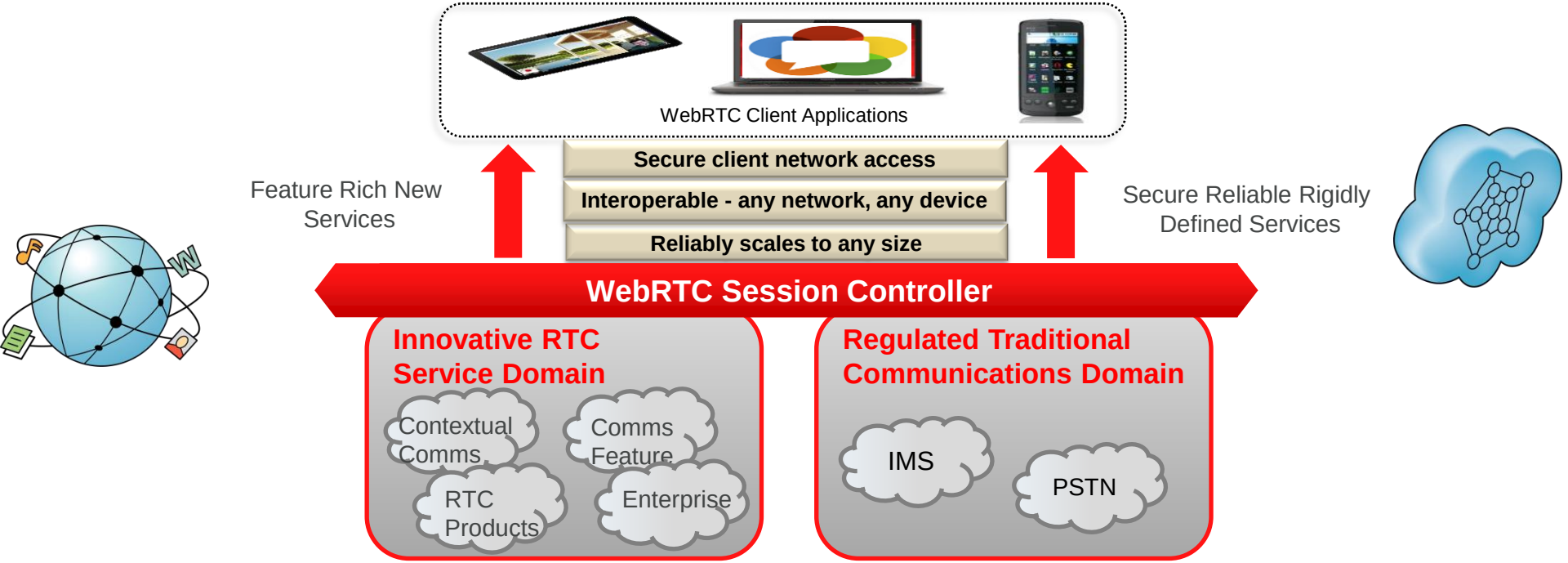
Bridging Communications with the Web

WebRTC and Beyond



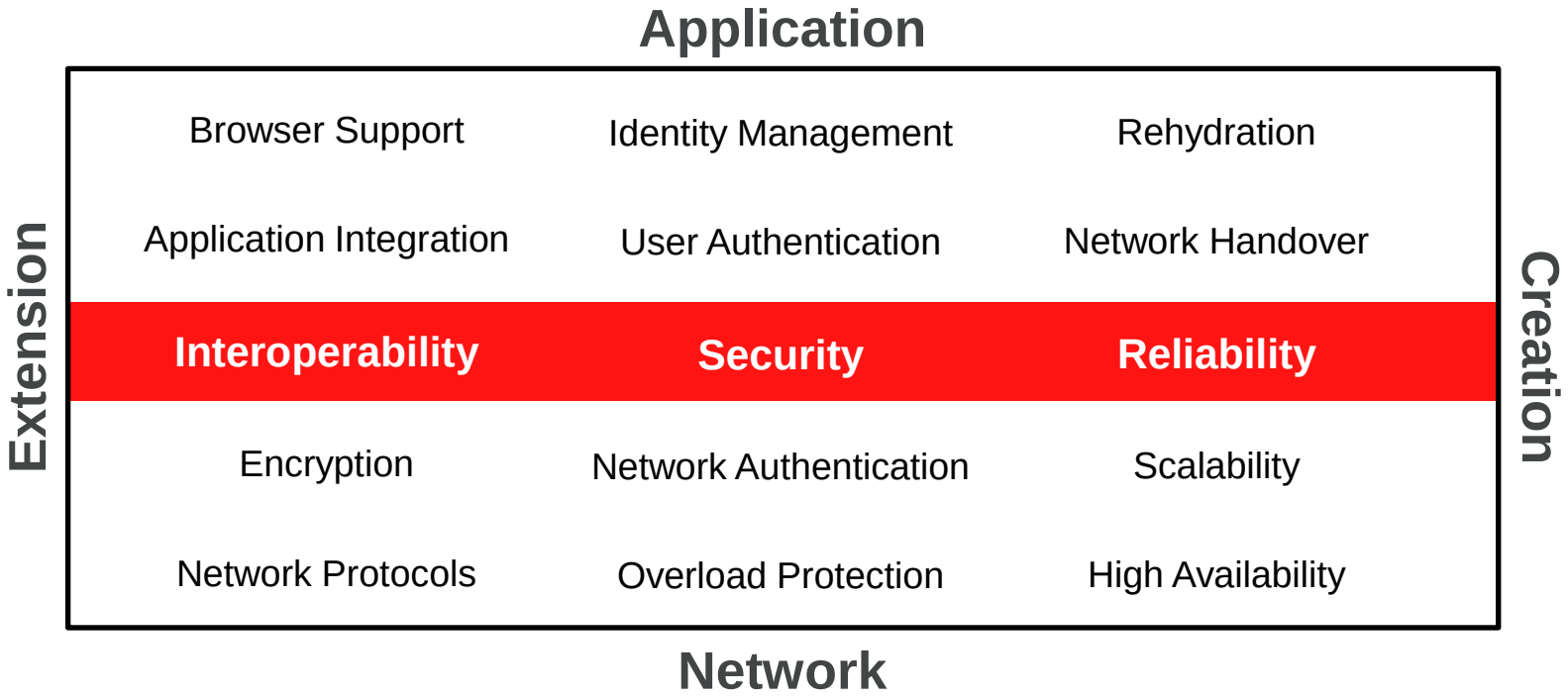
Bridging Communications with the Web

WebRTC and Beyond



Carrier Grade WebRTC Requirements

OCWSC Delivering Premium Service



Hardware and Software

ORACLE

Engineered to Work Together

The preceding is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle's products remains at the sole discretion of Oracle.


ORACLE®