

Announcements



3-Apr-01

CSCI {4,6}900: Ubiquitous Computing

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Outline

- Wireless Application Protocol - WAP
- WAP Trap



Wireless Application Protocol - WAP

- Estimated 500+ million wireless subscribers by 2001
- Wireless devices – constrained CPU, memory, battery life, display, UI etc.
 - Wireless device = cell phone
- WAP forum – enabling sophisticated telephony and information services on handheld wireless devices
- Protocol for presentation and delivery of wireless information and telephony services on mobile phones and other wireless terminals



WAP

- WAP forum founded by Ericsson, Motorola, Nokia and Phone.com in June 1997
- Open to all industry participants – leverage best minds (not necessarily from academia)
- Creates license free standards for industry participants
- WAP – air interface independent, device independent and fully interoperable
- Wap allows access to the “Web”
- Fully leverages investments in Web infrastructure



WAP Goals

- To bring Internet content and advanced data services to wireless phones and other wireless terminals
- To create a global wireless protocol specification that works across all wireless network technologies
- To enable the creation of content and applications that scale across a wide range of wireless bearer networks and device types
- To embrace and extend existing standards and technology wherever possible and appropriate



Salient points

- Built on existing standards
 - Users HTTP 1.1 to communicate between gateway and web servers
 - Users carrier infrastructure
- Invite full industry participation (only members can influence the “standard”)
- Maintain Bearer Independence – across all air interfaces
- Maintain device independence – across all cell phones



WAP Features (cont)

- Ensure inoperability
- Encourage and foster market development
- Market is different:
 - Ease of use: simple and easy to use. No installation scripts, complicated menu structures, application errors, GPF's or complicated key sequences
 - Market size: 200 million wireless subscribers (compared to desktop users)
 - Price sensitivity: ~\$149 to be competitive
 - Usage patterns: Subscribers expect instant service, easy to use and designed to access info quickly
 - Essential tasks: Not surfing but quick info. retrieval

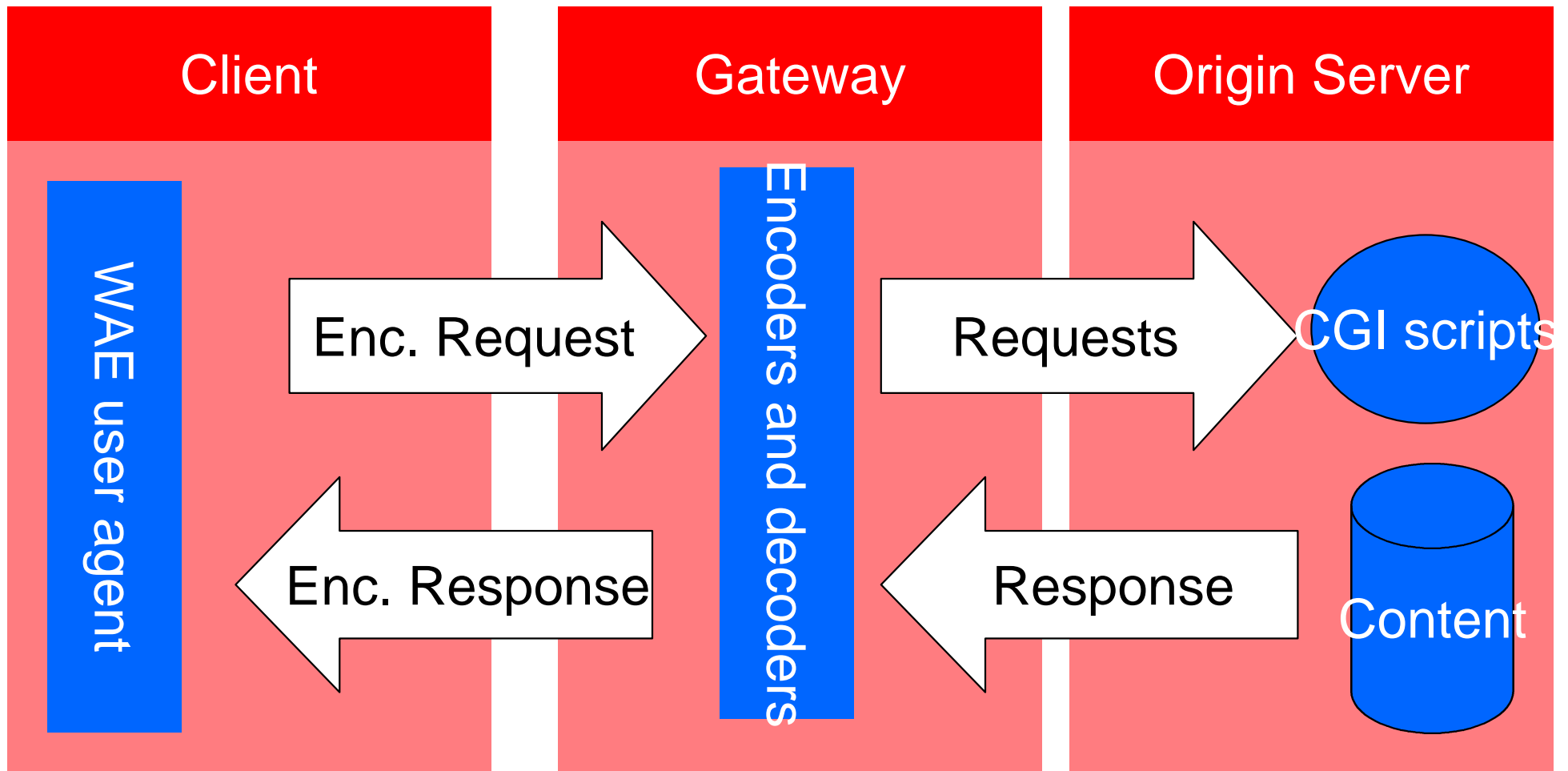


Constraints:

- Wireless network
 - Less bandwidth
 - More latency
 - Less connection stability
 - Less predictable availability
- Device
 - Less powerful CPU
 - Less memory
 - Restricted power consumption
 - Smaller display
 - Different input (phone keypad, voice input)



WAP Programming Model



WAP protocol stack

- Application Layer:
 - Wireless Application Environment (WAE) – binary HTTP, WML, WMLscript
- Session Layer:
 - Wireless session protocol (WSP – lightweight suspend)
- Transaction Layer:
 - Wireless transaction protocol (WTP – optimized TCP)
- Security Layer:
 - Wireless Transport Layer Security (WTLS – optim. SSL)
- Transport Layer:
 - UDP/IP or WDP
- Network layer:
 - SMS, USSD, CSD, IS-126, CDMA, IDEN, CDPD etc..



Discussion

- Is the network bandwidth constrained?
 - 3G networks promise at least 384Kb and upto 2Mb bandwidth
- Users want to use the cell phone to access the web
 - as opposed to a PDA ala iPAQ
 - Is processor constrained? Is 1GHz processor slow?
- Users depend on the gateway for service
 - Are cellphone providers infrastructure or service providers?
 - Should the wireless gateway providers give you what you want or what they think that you want? If you ask for maps, should be sent to mapquest or maps.yahoo.com?
 - What about end-to-end semantics?



WAP Trap

- We need a protocol that is optimized for wireless cellular devices
- Do we need a special protocol **OR** do we need to specialize/optimize existing protocols?
- Do we need a closed protocol or open protocol?
- Adoption of WAP with its deficiencies would lead to years of backward compatibility because of the sheer size of the user population
 - If phone unit manufacturers built microbrowsers that speak WAP, how do we fix any problems in WAP?
- WAP is free for members, but not patent free. Trap?



Discussion



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