SIP Evolution

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Outline

- SIP Design Characteristics
- Process to extend SIP
- Examples of extensions to SIP
  - Preconditions
  - NAT Traversal
  - Session Policies
  - Consent-based Communications

SIP Design Characteristics

- Generality over efficiency
- Easy to adapt to multiple systems deployment designs, also known as *system architectures*
- Intended for long protocol life
- Easy to analyze and adapt for new requirements
- Resilient to fundamental changes such as highly mobile usage
- Interoperability
  - All SIP implementations support base functionality
  - Different system architectures may use different SIP extensions

Process to Extend SIP

- Documented in RFC 3427
- SIPPING WG analyzes requirements
- Actual solutions generally developed in other WGs (e.g., SIP)

SIP Logical Architecture

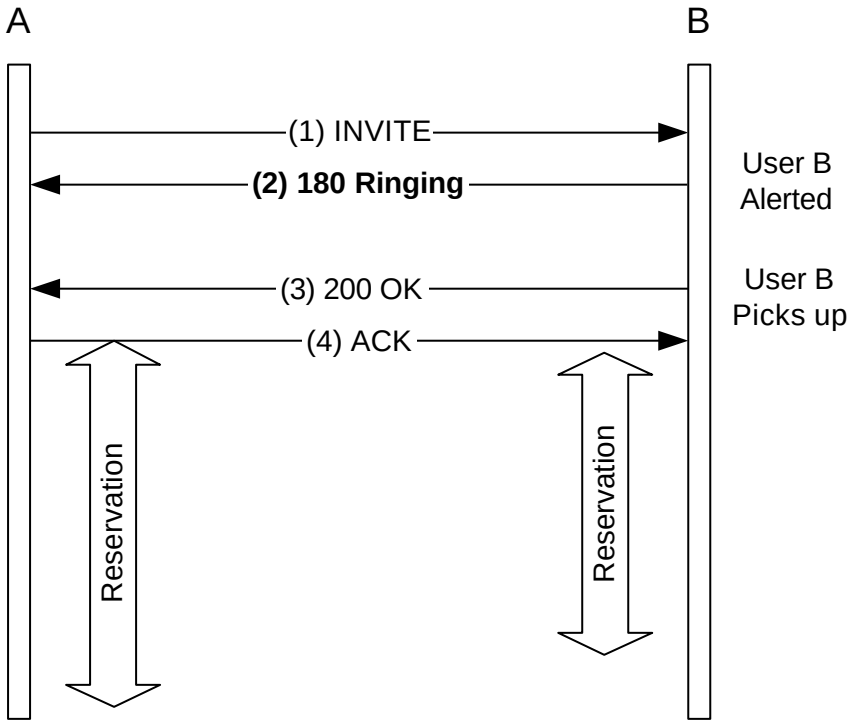
- General architecture that allows for flexible
  - realization of concrete system architectures (e.g., IMS)
  - network policies
- Main components
  - User Agents
  - Proxies
- Architecture characteristics
  - Session state pushed to the endpoints
  - Functions of components defined in very general terms
  - Same protocol in the access and in the network
  - Users identified by URIs

Preconditions

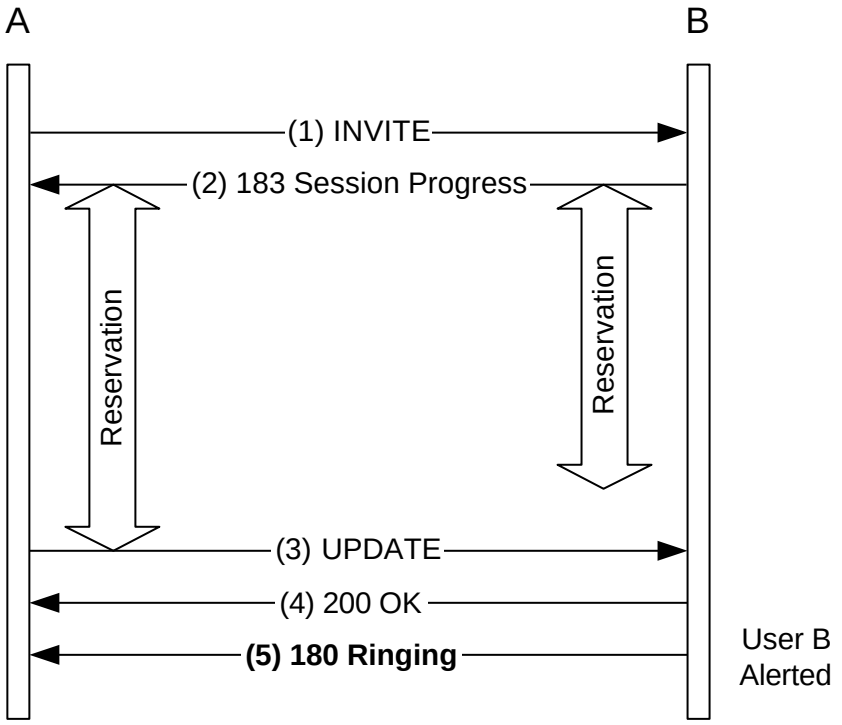
- Original assumption
  - User accepts a session
  - Media-related tasks start
    - E.g., QoS reservations, security establishment, connectivity checks, connection establishment, etc…
  - Hopefully, they are successful
- New Requirements
  - Everything ready before alerting the user
  - Avoid ghost rings
- Solution
  - Preconditions framework
  - Different precondition definitions

Preconditions, cont

No preconditions



Preconditions



NAT Traversal

- Original assumption
  - User agents exchange their IP addresses
  - They start exchanging media
- New requirements
  - User agents may belong to different address realms
- Solution
  - Protocols to
    - insert relays
    - discover new addresses using reflectors
    - perform end-to-end connectivity checks
  - Framework to use them within SIP

Session Policies

- Original assumption
  - The network
    - routes SIP messages between endpoints
    - does not have anything to say about the sessions endpoints want to establish
- New requirements
  - The network
    - may want to know more about the sessions
    - may have something to say
- Solution
  - Policy server
  - Protocol between endpoints and policy servers

Consent-based Communications

- Original assumptions
  - Everybody can contact everybody
- New Requirements
  - Only certain users, and only in certain ways, are allowed to contact a particular user
- Solution
  - Consent framework