

## **Why we should care about SIP:**

1. SIP has the potential to enable and actually spur the creation of many diverse end points and video-enabled applications
2. SIP is becoming a fundamental a driver for desktop (personal) conferencing – something that every reseller and system integrator should be tracking closely.
3. SIP is gaining market share and mind share with solution developers, such as Microsoft, because it enables ad-hoc communications. SIP is the only signaling protocol that incorporates IM (Instant Messaging) and presence, two technologies that are today driving ad hoc communications. So a communication between two people (ad hoc) can be launched by a short SIP-based IM message, then a click of a button upgrades the call to voice and/or video.
4. SIP is also gaining market share because, at least from our recent experience in the market, more and more large companies are looking to incorporate SIP into their networks – it is gaining significant traction – particularly with the emergence of IP communications network infrastructure and end points that fully support SIP.
5. Just because both SIP and H.323 are IP a communications protocol does not mean that they automatically interoperate with one another. In fact they don't.

SIP's view of the network matches that used in the Internet: intelligent devices communicate directly with each other over a simple transport infrastructure. This contrasts with the traditional telephone network, where transport between dumb endpoints is provided through an intelligent network core that is an active party in any conversation. This difference allows the network to become a commodity and allows any device attached to the network to provide a service to any other. This increases competition, which drives down prices, and helps innovation, because the investment required to set up a new service is very small.

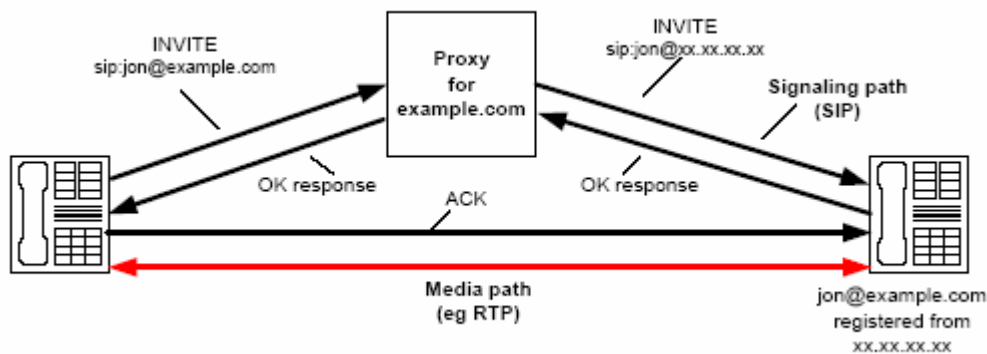
With the traditional intelligent telephony network, only the telephone company can provide new services, and this requires the network core to be upgraded, which is an expensive and slow process.

While the above explains why IP telephony is helping to drive down the general cost of telephony, and why there is a high level of SIP innovation, the following SIP features show why it is such a powerful framework.

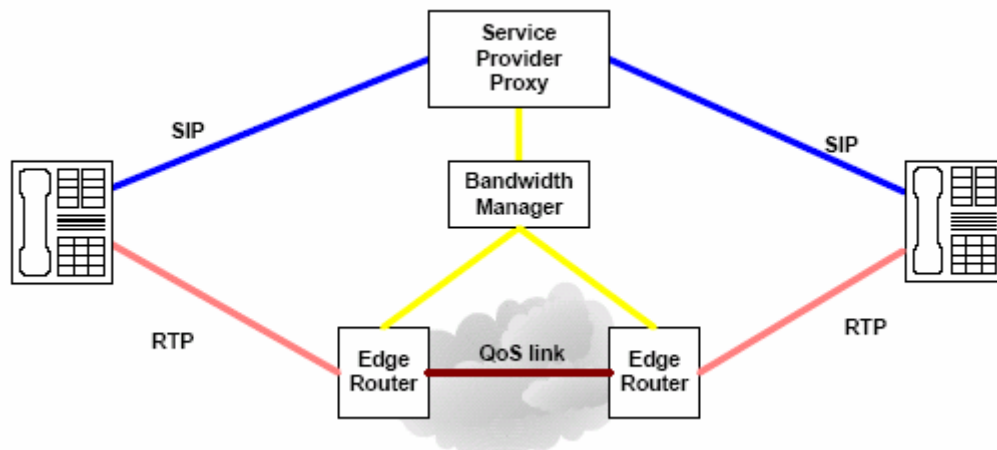
- **Mobility:** SIP allows a client to register dynamically with a fixed location, so that calls can be routed to it using a well-known address, similar to an email address.
- **Flexible message structure:** SIP's message structure makes it much easier to extend for new applications than equivalent existing protocols, such as H.323 which uses the ITU's

opaque ASN.1 encoding standard instead of text, and it is seen as being much simpler and more flexible.

- Distribution of function between devices: SIP enables requests to be dynamically routed through different devices, enabling functionality to be distributed and requests routed through the relevant devices.
- Negotiation of supported features: This makes SIP very adaptable, as the media and protocol extensions to be used for a particular call are negotiated between the clients on that call. As a result, SIP can be used to set up any type of media conversation, including voice, video and messaging.
- Separation of signaling and media: In SIP, the paths of the signaling and the media are totally independent. The signaling and media may traverse different routes through independent sets of devices on different physical networks.



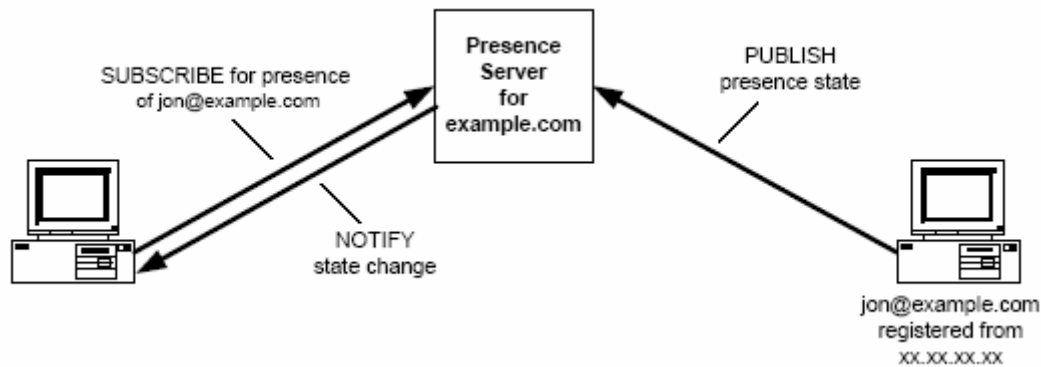
- Also works with QoS mechanisms by making use of a SIP Proxy Request for QoS path:



- Forking: This allows multiple devices to be associated with a single address, so that all or a selection of these devices can be contacted simultaneously or sequentially, according to local policy. These features are equally applicable to many areas, including telephony and messaging, and have been the drivers for SIP's adoption by the major players in these fields.

SIP enables / allows for:

1. It enables easier mixing of video with voice and Web as never before and delivers it over IP to the desktop
2. The power of presence, delivered by SIP, enables easier communications



3. SIP provides the ability to initiate Instant Messaging (IM) sessions and so is a natural way to initiate and control a voice or video session.

From the technical/protocol point of view SIP also has some advantages over the H.323: Modularity – SIP is modular designed around WEB technologies versus H.323 that is an umbrella standard.

Easier for debugging – no need to alter tools on each new extension

Operators in charge of own services (Less dependency on the vendors since the code is text format and extension headers, while in H.323 code is binary and ASN.1 formatted)

Internet friendly – Due to the modularity of the protocol and the better interaction with WEB protocols

SIP Through a NAT:

Once a device has received a SIP message from another device that is behind a NAT, it can respond to the address and port from which the message was received, and these addresses remain valid as long as the NAT binding is kept alive. However, if the first SIP message is to the device behind the NAT, another mechanism is required.

This first SIP message can be sent through the proxy with which the device registered its location, as long as the device maintains its NAT binding with the proxy. As discussed earlier, this can be achieved by using a TCP connection or by refreshing its registration at regular intervals.

By Record-Routing all requests, the proxy can also ensure that it remains in the path of all future requests, and that external devices do not try to contact the device behind the NAT directly. As result, this mechanism works for even the most restrictive NATs.

