Provisioning of VoIP Phones

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What Is Provisioning?

- Provisioning means different things to different people.
- The process of enabling a user to access new or additional services.
- Provisioning in the VoIP network includes:
  - Network provisioning: BW, QoS, IP address, hostname, etc.
  - Service provisioning: Billing, authorization, service activation, subscribers info, etc.
  - Device provisioning: Gateways, CPEs, MTA, phones, etc.
- Manual vs automated provisioning.
Why Automated Provisioning?

- Automated provisioning will accelerate the ability to provide better services to users
  - Rapid revisions
  - More choices of services
  - Flexibility in service usage
  - Efficient way to manage systems
  - Easily expandable
  - Reduce cost of maintenance and support
Provisioning in VoIP Network

Provisioning Server

VoIP Network (e.g., SIP)

SIP Phone

SIP Phone

SIP Phone

SIP Phone
Provisioning of VoIP Phones

- Configuration
- Phone firmware
- Feature upgrade
- New applications
Provisioning Method for IP Phones

● Three entities
  – Provisioning server: Security, authentication, notification
  – Configuration server: provisioning file holder
  – IP phones: initiates download

● Pull vs Push

● Notification of provisioning
  – SNMP
  – Other method (e.g., NOTIFY method in SIP)

● Download provisioning file to devices
  – TFTP
  – HTTP
SNMP

- Simple Network Management Protocol for Internet network management SNMP v3
- IETF RFC 2570, April 1999
- SNMP v1 and v2 are widely deployed
- SNMP uses UDP
- Used to notify provisioning need to devices
- Downloading provisioning info by TFTP or HTTP
TFTP

- Trivial File Transfer Protocol
- IETF RFC 1350, July 1992
- A simple form of the File Transfer Protocol (FTP).
- TFTP uses the User Datagram Protocol (UDP)
- TFTP service runs at port 69
- TFTP supports five types of packets: Read request (RRQ), Write request (WRQ), Data (DATA), Acknowledgment (ACK), and Error (ERROR)
HTTP or HTTPS

- Hypertext Transfer Protocol -- HTTP/1.1
- IETF RFC 2616
- An application-level protocol for distributed, collaborative, hypermedia information systems
- Widely used in accessing WWW
- The client typically makes a TCP-IP connection to the server
- If the port number is not specified, 80 is always assumed for HTTP
Example 1: DOCSIS Provisioning

- Data-over-cable service interface specifications
- Specified in PKT-SP-PROV-103-01121
- Specifies a PacketCable 1.1 embedded MTA (Multimedia Terminal Adaptor)
- Provisioning is a subset of configuration management control
  - Defining configurable data attributes
  - Managing defined data reporting
  - Resource initialization
  - Managing resource software and
  - Configuration data reporting
PacketCable 1.0 Network Component

Embedded MTA Client

Standalone MTA Client

HFC (DOCSIS) CMTS

Call Mgmt Svr
  Call Agent
  Gate Controller

MGC
MG
SG

Managed IP network

OSS:
- Key distribution,
- DHCP servers,
- DNS servers,
- TFTP, HTTP svrs
- SYSLOG svr
- Record keeping svr
- Provisioning svr

PSTN
MTA Provisioning States

- Unknown
  - DHCP OK
    - Known
      - Security Exchange OK
        - Authenticated
          - Config data OK
            - Provisioned
          - Fail
            - Un- provisioned
    - Fail
      - Un- authenticated
- Fail
  - RESET/INIT
  - Retry
  - Retry
  - Retry
  - Retry
Example 2: Provisioning in SIP

- No standard is defined yet
- A proposal
  - SUBSCRIBE/NOTIFY methods for configuration
- SIP phones SUBSCRIBE a provisional server
- SIP phones use HTTP GET to download the contents
- The provisional server informs changed profile
- SIP phones use HTTP GET to download the update
- Provisioning file in xml
SIP Provisioning (Cont’d)

Enrollment and Initial provisioning

Discover Svr

SUBSCRIBE
200 OK
HTTP GET
200 OK

Update changes

NOTIFY
200 OK
HTTP GET
200 OK
Xml Schema for Provisioning File
ipDialog VoIP Tone™

- ipDialog VoIP Tone™ family of IP phones are very affordable OEM phones with SIP, H.323, MGCP, and Megaco/H.248 support.
- ipDialog demonstrated call setup among multiple protocols.
- ipDialog will introduce IP phones with multiple protocol support.
- User configuration by the web page in the phone.
- User initiated provisioning by TFTP server.
- Provisioning will be implemented according to the standards when they are ratified.
- Please visit [www.ipDialog.com](http://www.ipDialog.com) for more info.