Telephony modem upgrade for Femtocell support

Leading Telecom equipment provider upgrades its widely deployed telephony modem to support mobile phones with a plug-and-go Femtocell add-on.

CASE STUDY

A leader in cable modems and other telecom equipment had a successful residential telephony modem, which provided connections for two analog phones over cable. It was widely deployed across markets in Asia. However, as the mobile revolution unfolded, one of the company's primary Service Provider partners needed to address growing demand for better local cellular coverage in subscriber homes and apartments, and prevent attrition of landline subscribers currently using the dual-line telephony modem.

Protecting subscriber revenue

The Service Provider had a significant installed base of landline subscribers generating highly profitable service revenues. They realized they could leverage this incumbent CPE to deliver local cellular coverage as well, thereby maintaining account control, and protecting their recurring revenue stream.

Elegant product life extension

Our client came up with an elegant solution that would enable them to extend the life of this successful product, and add value to the installed base. The idea was to connect an external Femtocell, to the previously unused RJ45 management port on the telephony modem, and enable up to five additional cellular devices.

The solution would need to be completely plug-and-go, so that users could upgrade their service by plugging in the external Femtocell, and it would just work without needing a truck roll or phone support.

embedUR repeat performance

embedUR had worked extensively on various of the company's cable modems with SIP software that supported two or more analog phones, so we were the natural choice for this project. Our mission was to activate the Ethernet port and integrate Femtocell sessions to the cable headend. The project required six software engineers, and two test engineers. Two of the engineers had been on the original team that developed the SIP stack used in this telephony modem six years earlier.

Until now the RJ45 port had not been used for anything more than device

embedUR has excelled again. The mobile support upgrade is so simple, users can do it themselves and it just works.

B.I., President, Media and Communications Systems

OBJECTIVE:

Upgrade telephony modem to provide cellular support and prevent attrition of landline subscribers as mobile revolution unfolds.

SOLUTION:

- Software upgrade only
- Leverage unused RJ45 port
- Support external Femtocell
- Add five concurrent SIP calls

RESULTS:

- No truck-roll required
- Client retention solution
- Relevant to installed base
- Delivers added value to users
- Portable to other CM products

management so there was no bridging or routing of data services on the cable infrastructure. Activating the port as an Ethernet/SIP interface involved modifying the SIP stack to handle the additional cellular calls.

Extensive QoS optimization

The most important part of this project was QoS. Obviously, SIP traffic needs preferential treatment over other subscribers' IPTV and general Internet traffic on the cable network. We needed to pay particular attention to QoS and priority queue management to ensure that ingress traffic was optimally queued at the device when concurrent calls were in progress, plus ensuring the packets were properly tagged to receive the appropriate priority treatment at the headend. To do this we utilized the Unsolicited Grant Service (UGS) features of DOCSIS 2.0.

Performance validation was another important step. For customer acceptance, we needed to prove we could deliver carrier-grade voice quality for up to five concurrent SIP calls originating from the Femtocell in addition to the two calls from the existing analog lines, while competing with other traffic types in the network. It was crucial that in adding Femtocell support, clients did not experience degraded on the existing analog service.

Plug and go deployment

A standard requirement for all Service Provider CPE devices is the need for remote management and firmware upgrades. Also, to minimize setup and configuration, and end-user support calls, the new firmware also needed to detect the presence of the Femtocell in the Ethernet port, and perform basic diagnostics before attempting to pass or receive traffic.

With the new firmware enabled, the device could automatically detect the presence of the Femtocell as soon as the user plugged it in, and within a couple of seconds could be passing SIP calls from clients associated with the Femtocell, over the cable infrastructure, all without user intervention.

Low cost win-win solution

For our client, the cable modem manufacturer, this creative software upgrade provided a highly economical way to extend the life of its widely deployed telephony modem, and enabled a new feature that could be leveraged across related cable modem products in its portfolio, and promoted to other Service Provider partners in future. And for the Service Provider it gave them a fast and easy way to protect recurring revenues, and deliver a compelling value-added service to their installed base.