Migration VoIP Cisco Call Manager -> Asterisk

Executive summary

Over the past few years, a large number of companies and organisations have equipped themselves with Voice over IP (VoIP) based on the Cisco Call Manager solution. Cisco has proved that it has very good products, but the VoIP market has undergone many changes over recent years and low-priced and highly flexible solutions have begun to appear.
Among them, the **Open Source Asterisk** software (www.asterisk.org) has become very well known and is now one of the most widely used solutions in the world.
Asterisk is a very rich alternative to Call Manager and is perfectly able to replace it completely as in the real example detailed below.

The reasons for the success of Asterisk in Cisco environments:

- no licence or maintenance costs;
- very rich functionalities;
- ease of integration with other company applications (ERP, CRM, directories etc.);
- very IT-oriented solution which can be deployed in the company infrastructure (for example in a virtualised infrastructure);
- ease of migration as it can be phased and allows Cisco telephones to be retained

The case below is that of a large Belgian administration: the Administration of the Province of Luxembourg.

Real case: the Province of Luxembourg

In 2003 the Province had invested in a redundant Call Manager solution and deployed around 500 telephone extensions in VoIP over 3 sites (the Province has around one hundred sites). The Province totals a staff of 1250 people.

In 2011, Cisco informed the Province that a software upgrade had to be performed, which represented a substantial budget. The Province then considered alternative solutions whilst abiding by the following objectives:

- lower cost than the upgrade proposed by Cisco;
- possibility of leaving the upgrade mechanism imposed by Cisco;
- possibility of keeping the Cisco stations (as these were a substantial investment);
- no hindrance to users in their daily use;
- acquisition of sufficient skills so as to be able to adapt the telephony at other sites in an autonomous manner;
- opening towards open standards (SIP)

Province de Luxembourg

Engineer Pierre Simon, IT Manager of the Province of Luxembourg:

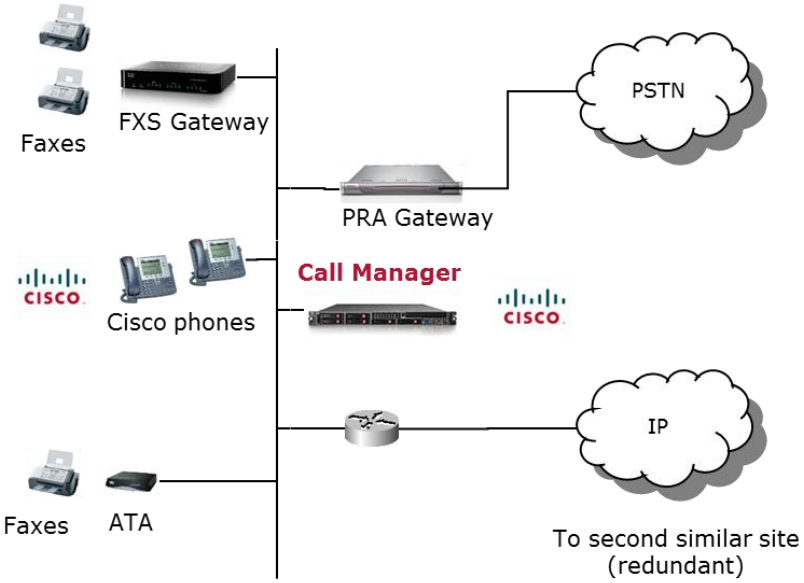
"After investigating the matter and issuing a public call for tenders, we decided to opt for an Asterisk solution and to receive support from Eyepea (www.eyepea.eu), an integrator with considerable experience and whose approach is to involve the client's IT teams and to coach them during deployment."

The migration took place in the following phases:

1. Competence transfer

   The corollary to any Asterisk deployment carried out by Eyepea is the training of the client's IT team in the infrastructure that is to be put in place. This approach enables it to properly understand the technology and the involvement of the team in deployment allows it to be made perfectly autonomous so as to be able to manage and extend its infrastructure.

2. Study of the existing systems (all Cisco and use of the Cisco SCCP protocol)



Note: PRA (Belgium)=E1 (Europe)=T2 (France)

3. Protocol migration

   After the study phase, the decision was to switch from the Cisco proprietary SCCP protocol to the SIP protocol, as the latter is open and has become the most widespread protocol in VoIP. It therefore allows for the potential opening towards a multitude of SIP terminals offered by the market (telephones, speakerphones, public address systems, cameras, SIM boxes etc.) and also for the use of SIP operators in a subsequent phase rather than traditional PRA lines.

4. Pilot installation

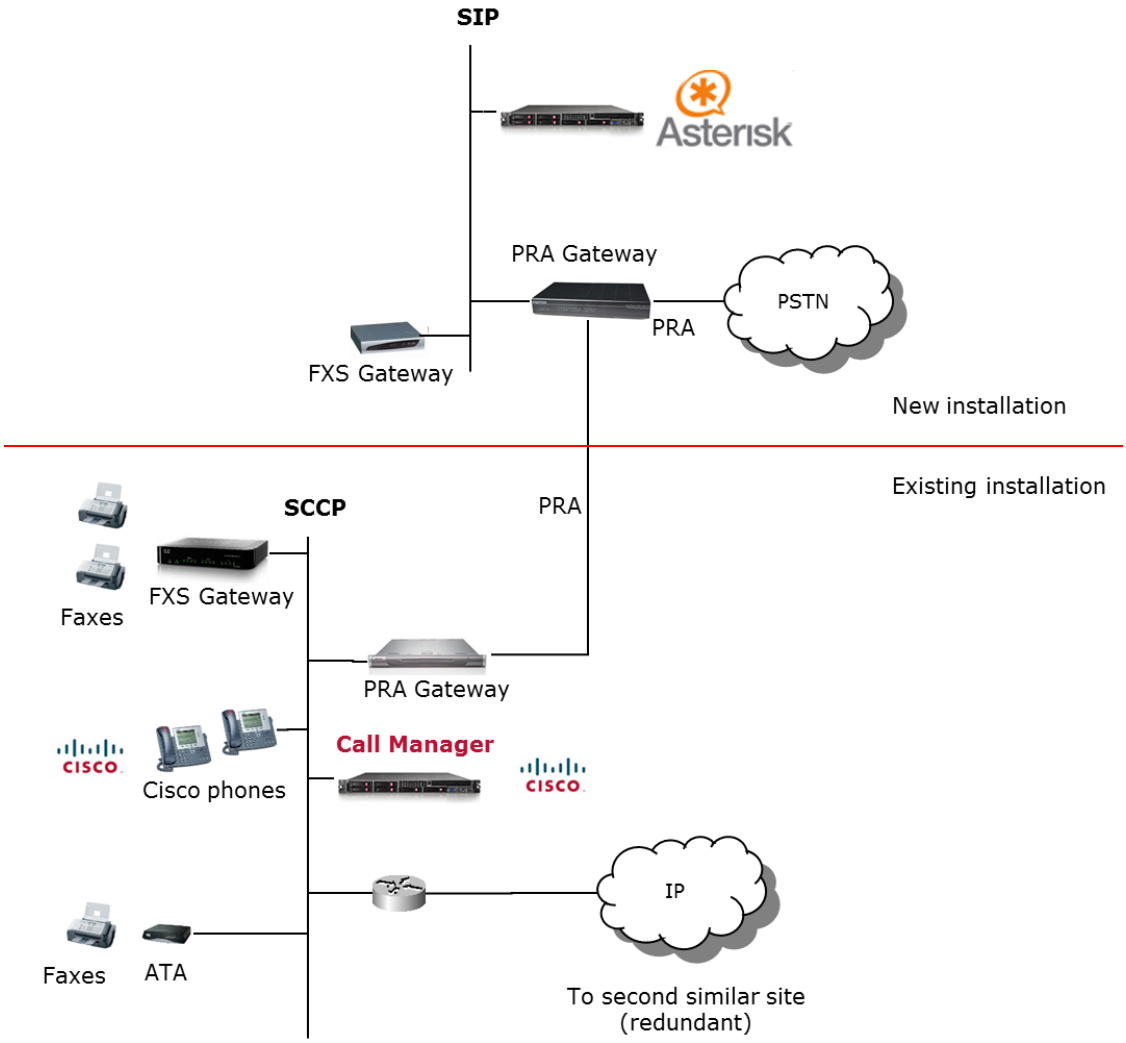
   Two redundant Asterisk servers have been put in place so as to allow the Province to validate the functionalities. In the case of the Province, these Asterisks have been deployed on thoroughly standard HP DL 380 servers supplied by the Province. It should be noted that these physical servers may in the long term be redeployed on the virtual infrastructure that the Province is planning to put in place. Indeed, Asterisk functions perfectly in a virtualised environment of type VMware, KVM, Microsoft Hyper-V etc.

Cédric Schmickrath, IT Department of the Province of Luxembourg: *"The high availability of the Asterisk cluster is very important as this cluster is the basis for deploying VoIP on additional sites.*

These servers have therefore been installed in a high availability cluster (automatic server mirroring) with active/active redundancy (IP telephones recorded in SIP simultaneously on the two servers). In the event of the failure of a server, the calls automatically and instantly pass through via the second server. These two servers have been deployed on two different physical sites."

The connection between the world of Cisco and the world of Asterisk takes place via a multi-PRA gateway. This gateway makes it possible to allow the coexistence of the two systems and allows users of the two systems to communicate in a transparent way during the migration.

A provisioning mechanism has been put in place at Asterisk level so as to be able to direct the SIP firmware and the configuration to each Cisco station without human intervention.



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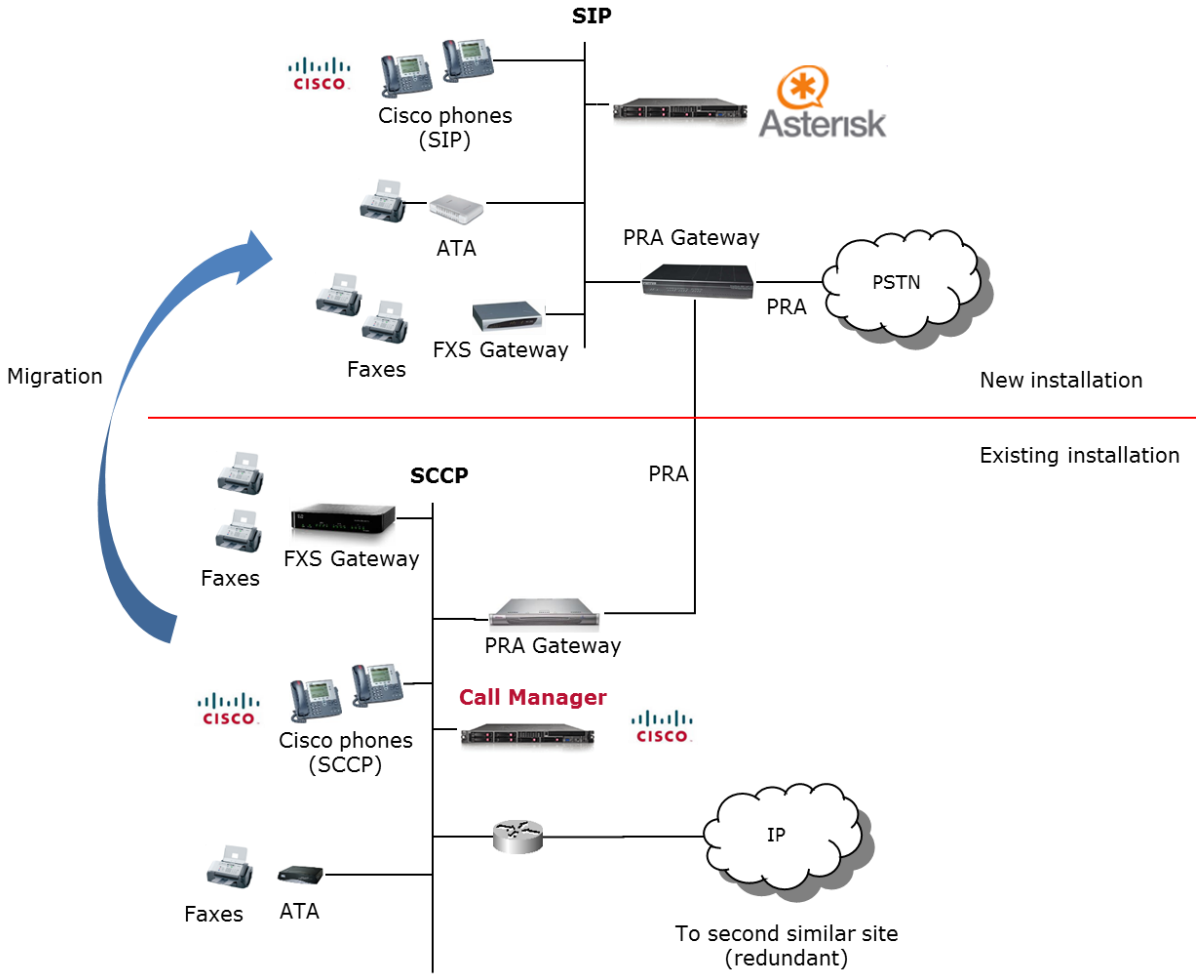
The Province had stations of the following models: 7905, 7906, 7910, 7911, 7912, 7940 and 7942. Only the 7910 has not been able to be retained as there is no SIP firmware for this model. The type 7905 and 7912 models work very well but Cisco has sometimes taken shortcuts in the development of firmware (incomplete translations of the interface for example). The stations of type 7906, 7911 and other recent stations have a perfect behaviour in SIP.

5. Placing in production

All the extensions have been imported or created at Asterisk level along with the voicemail, call flows, IVRs etc.

Pascal François, IT Department of the Province of Luxembourg: *"The placing in production in the proper sense of the term took place outside of hours; the stations were rebooted so as to re-provision ourselves in SIP. This rebooting took place very simply by remotely deactivating/reactivating the PoE (Power over Ethernet) parameter at the level of the switches. The placing in production took place in a half-day."*



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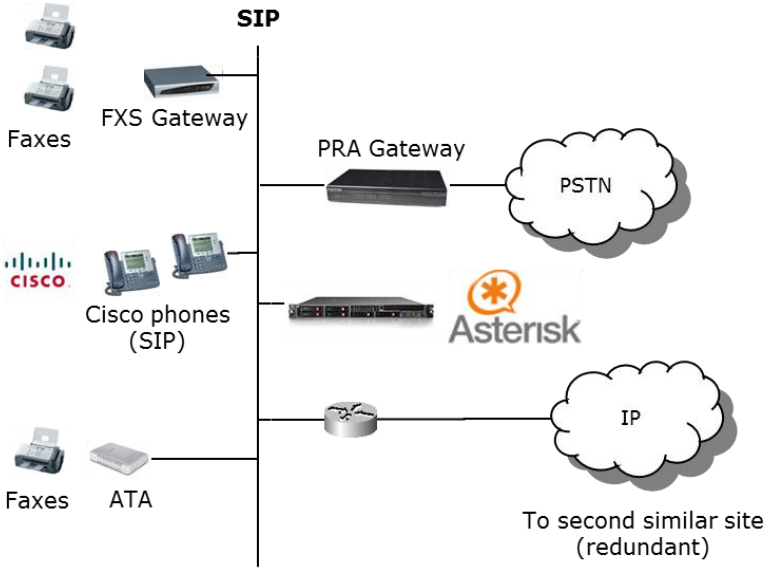
6. Situation after migration



At the end of the migration of the stations and faxes, the Cisco gateways and Call Managers were switched off and physically uninstalled.

7. Evolutions of the installation

As the IT staff of the Province had been trained in the solution put in place and played an active part in its deployment, it was easy for them to place it in production at other sites in an autonomous manner.

Cédric Breny, IT Department of the Province of Luxembourg: *"The Cisco solution only covered 3 sites. We migrated them to Asterisk in Q3 2011. In Q4 2011, we ourselves extended the Asterisk solution to 7 sites, and this on the same two servers and without any need for an additional licence. In the long run around one hundred sites will be equipped.*

Moreover, it will subsequently be possible for the Province to put in place an SIP trunk to a VoIP operator in place of the existing PRAs, which will have a significant impact on the price of communications."

Links:

Province de Luxembourg: www.province.luxembourg.be
Asterisk : www.asterisk.org
Cisco Systems : www.cisco.com
Eyepea: www.eyepea.eu

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Any question about this document: information@eyepea.eu